Catalog Home

Undergraduate Academic Catalog
2014-2015

Southern Polytechnic State University in the University System of Georgia

1100 South Marietta Parkway
Marietta, Georgia 30060-2896

Southern Polytechnic State University is a comprehensive university in the University System of Georgia. Our academic, professional, outreach, and service programs embrace all aspects of technology, including the practical applied skills **(techne)** needed to solve today's real-world problems and the theoretical knowledge **(logos)** necessary to meet tomorrow's challenges. SPSU graduates are well prepared to lead the scientific and economic development of an increasingly complex state, nation, and world.

Our mission is to serve both traditional and non-traditional students at the undergraduate, graduate, and continuing education levels, in engineering and engineering technology, the sciences, applied liberal arts, business and professional programs. We work to develop the broader community's intellectual, cultural, economic, and human resources. Facilitated by our innovative faculty, dedicated staff, and supportive campus environment, our learning community empowers SPSU students with the ability and vision to transform the future.

About This Catalog

The statements set forth in this catalog are for informational purposes only and should not be construed as the basis of a contract between a student and this institution.

While the provisions of this catalog will ordinarily be applied as stated, Southern Polytechnic State University reserves the right to change any provision listed in this catalog, including but not limited to academic requirements for graduation and various fees and charges without actual notice to individual students.

Every effort will be made to keep students advised of such changes. It is especially important to note that it is the responsibility of the student to keep apprised of current graduation requirements for a particular degree program and current academic procedures.

Southern Polytechnic State University is an equal educational and employment opportunity institution and does not discriminate on the basis of race, color, sex, religion, creed, national origin, sexual orientation, age, or disability.

President's Message

Welcome to Southern Polytechnic

Southern Polytechnic is a place where students are educated for life and for leadership in an increasingly technological world. We prepare our students for their very first job after graduation, with the skills that make them highly

marketable and successful. We feel it is just as important that a Southern Polytechnic education also prepares students for the last job in their careers. Thus, our courses and programs are structured to enable men and women to adapt, grow, and continue to learn over the years, developing the leadership skills needed to implement the vision of a technological future.

Our vision statement describes us well:

"Southern Polytechnic State University is a comprehensive university with a unique purpose. Through a fusion of technology with the liberal arts and sciences, we create a learning community that encourages thoughtful inquiry, diverse perspectives, and strong preparation of our graduates to be leaders in an increasingly technological world."

"The university - faculty, staff, students, and graduates - aspires to be the best in the world at finding creative, practical, and sustainable solutions to real-world problems and improving the quality of life for people around the globe."

Students at SPSU learn skills beyond the essential technological and scientific knowledge that qualifies our graduates to contribute to some of the fastest growing fields in the nation. They also learn traditional liberal arts skills that enable them to think critically, communicate clearly and persuasively, solve problems collaboratively, and develop an international perspective in an increasingly global marketplace.

At Southern Polytechnic, we are proud of our faculty and staff. We are motivated and challenged by our students. We are excited for our graduates. We appreciate the positive, participatory relationships we enjoy with our community and with prominent leaders in business and industry who help shape the nature of our educational vision. We also appreciate your interest in our university.

Again, welcome to Southern Polytechnic. We invite you to make your next visit a personal one to our campus.

Dr. Lisa A. Rossbacher
President

General Information

Calendar

Fall 2014

13 August	Classes Begin
1 September	Labor Day Holiday
26-28 November	Thanksgiving Holiday (Faculty, Students)
1 December	Last Day of Classes
3-9 December	Final Exams
13 December	Commencement

Spring 2014

5 January	First Day of Classes
19 January	Martin Luther King, Jr. Holiday
2-6 March	Spring Break
27 April	Last Day of Classes for Spring
29 April - 5 May	Final Exams
11 May	Commencement

Summer 2014

12 May	First Day of Classes
25 May	Memorial day Holiday
3 July	Holiday

For a more detailed calendar, point your web browser to http://www.spsu.edu/registrar/calendarpointer.html

For Your Information

Admissions	678/915-7281
Dean of Students	678/915-4102
Financial Aid	678/915-7290
President	678/915-7230
Registrar	678/915-4200
University Relations	678/915-7351
Vice President for Academic Affairs	678/915-7206
Vice President for Business and Finance	678/915-7232
Vice President for Student and Enrollment Services	678/915-3720
Continuing Education	678/915-7240

For additional phone numbers and contacts, see the online Campus Directory

From outside the Atlanta Metro area (For Admissions Information Only) 800-635-3204
Southern Polytechnic State University
1100 South Marietta Parkway
Marietta, Georgia 30060-2896

Campus Directory

Southern Polytechnic State University has an online Campus Directory available to contact offices on campus. This directory is available online at directory.spsu.edu.

Student Rules and Regulations

The rules and regulations for Southern Polytechnic State University students are contained in catalog sections on Academic Regulations and Student Life Regulations. Rules and regulations governing student conduct may also be found in the Student Handbook. Each student is expected to be familiar with these rules and regulations. The student is also expected to be a law-abiding citizen and to obey the laws of the City of Marietta, Cobb County, the State of Georgia, and the United States.

Responsibility for Notices

Students are expected to be aware of the contents of all general notices. Students are also expected to keep the university apprised of their current mailing address and to check their SPSU e-mail frequently. All official notifications to the student body, groups of students, or individual students are issued by way of e-mail.

University Police and Crime Statistics

Southern Polytechnic is committed to a safe, healthy environment in which our students, faculty and staff can grow professionally and personally. The University promotes strong safety policies and prompt reporting and investigation of any actions or events that would harm the well being of any student, employee, or faculty member.

The University Police employs police officers who comply with certification, training, and all other requirements of the Peace Officers Standards and Training Council of Georgia. Our officers have arrest powers on Southern Polytechnic property and on any public or private property within five hundred yards of property under the control of the Board of Regents. Our officers conduct preventive patrols on campus including the residence halls, secure University-owned property, investigate reported crimes at the university, conduct educational programs and workshops to promote personal safety, and actively work to prevent and detect crime throughout the Southern Polytechnic community. Our disclosure report can be found at police.spsu.edu.

Accreditation

Southern Polytechnic State University is an accredited, coeducational, residential university offering associate, baccalaureate and master's degrees.

Southern Polytechnic State University is regionally accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). Southern Polytechnic State University is accredited to award associate, baccalaureate and master's degrees. Contact the Commission on Colleges at www.sacscoc.org.

The Civil, Computer, Electrical, Industrial, Mechanical, and Telecommunications Engineering Technology programs are accredited by the Engineering Technology Accreditation Commission of ABET at www.abet.org.

The Civil, Construction, Electrical, Mechatronics, Mechanical, Software and Systems Engineering programs are accredited by the Engineering Accreditation Commission of ABET (www.abet.org).

The Bachelor of Science with major in Surveying and Mapping is accredited by the Applied Science Accreditation Commission of ABET (www.abet.org).

The Bachelor of Science with major in Computer Science, Bachelor of Science with a major in Information Technology, and the Bachelor of Science with a major in Computer Game Design and Development are accredited by the Computing Accreditation Commission of ABET (www.abet.org).

The Bachelor of Architecture program is accredited by The National Architectural Accrediting Board, Inc. (NAAB) at www.naab.org.

The Bachelor of Science program in Construction Management and the Master of Science in Construction Management are accredited by The American Council for Construction Education (ACCE) at www.acce-hq.org.

The Bachelor of Science program in Construction Management Facility Management Concentration is accredited by the International Facility Management Association (IFMA) www.ifma.org

The Master of Business Administration, B.S. in Management, B.A.S. in Management, and B.A. in Management are accredited by The Association of Collegiate Business Schools and Programs (ACBSP) at www.acbsp.org

Degrees and Certificates Offered

Southern Polytechnic State University offers a broad range of programs of study. In addition to the degree programs, SPSU also offers certificates in the following areas. Admissions requirements vary, depending on the certificate.

Bachelor of Arts

| • Computer Science, BA
| • English and Professional Communication, BA
| • Mathematics, Education Track, BA
| • New Media Arts, BA

Bachelor of Architecture

| • Architecture, BARCH

Bachelor of Apparel and Textiles Technology

| • Apparel and Textiles, BAT

Bachelor of Applied Science

| • Information Technology, BAS
| • Manufacturing Operations, BAS
| • Supply Chain Logisitics, BAS

Bachelor of Science

| • Biology, B.S.
| • Biology, Education Track, BS
| • Chemistry, BS
| • Chemistry, Education Track, BS
| • Civil Engineering Technology, BS
| • Civil Engineering, BS
| • Computer Engineering Technology, BS
| • Computer Game Design and Development, BS
| • Computer Science, BS
| • Construction Engineering, BS
| • Construction Management, BS
| • Electrical Engineering Technology, BS
| • Electrical Engineering, BS
| • Environmental Engineering Technology, BS
| • Environmental Science, B.S.
| • Industrial Engineering Technology, BS
| • Information Technology, BS
| • Information Technology, BS (Online) WebBSIT
| • International Studies, BS
| • Mathematics, BS
| • Mechanical Engineering Technology, BS
| • Mechanical Engineering, BS
| • Mechatronics Engineering, BS
| • Physics, BS
| • Physics, Electrical Engineering Concentration, BS
| • Physics, Mechanical Engineering Concentration, BS
| • Physics, Teacher Education Concentration, BS
| • Political Science, BS
| • Psychology, BS
| • Software Engineering, BS
| • Surveying and Mapping, BS
| • Systems Engineering, BS
| • Technical Communication, BS

| • Telecommunications Engineering Technology, BS

Associate of Science Transfer Degree

| • General Studies, A.S.

Non-Degree

| • Aerospace Engineering Minor
| • Apparel and Textiles Minor
| • Architecture Minor
| • Biology Minor
| • Chemistry Minor
| • Computer Game Design and Development Minor
| • Computer Science Minor
| • Construction Management Minor
| • Engineering Design Graphics Minor
| • Environmental Science Minor
| • Geographical Information Systems Minor
| • History Minor
| • Industrial Engineering Technology Minor
| • Information Technology Minor
| • International Studies Minor
| • Latin American Studies Minor
| • Logistics Minor
| • Manufacturing Engineering Technology Minor
| • Mathematics Minor
| • Nuclear Engineering Minor
| • Physics Minor
| • Political Science Minor
| • Pre-Law Minor
| • Professional Writing Minor
| • Psychology Minor
| • Public Policy Minor
| • Quality Principles Minor
| • Renewable Energy Engineering Technology Minor
| • Software Engineering Minor
| • Spanish Minor
| • Technical Communication Minor

Certificate

| • Apparel Product Development Certificate
| • Geographical Information Systems Certificate
| • Land Development Certificate
| • Land Surveying Certificate
| • Logistics Certificate
| • Production Design Certificate
| • Project Management Construction Certificate
| • Quality Principles Certificate
| • Spanish Professional Certificate (Undergraduate)

Other certificates may be available. Check our web site for additional information.

Admissions Information

General Information

Admission to Southern Polytechnic State University (SPSU) is made without regard to race, color, national origin, sex, sexual orientation, disability or age. Admission is based on a number of factors depending upon your admissions type of entry and previous educational experience. The admission requirements for the University have been developed in accordance with the rules and regulations of the Board of Regents for the University System of Georgia.

Falsification

Approval for admission is valid only for the term specified at the time of acceptance and does not imply that approval will be granted for a term not specified. The University reserves the right to withdraw admission prior to or following enrollment if the student becomes ineligible as determined by the standards of the University of the Board of Regents or if the student has falsified application materials.

Other Admission Requirements

SPSU reserves the right to require any applicant for admission to take appropriate standardized tests in order that the institution may have information bearing on the applicant's ability to pursue successfully the program of study for which the applicant wishes to enroll.

Special Students

Special students and all other students of classifications not covered in these policies shall be expected to meet all admission requirements prescribed by Southern Polytechnic State University.

Appeals

Appeals of the University's formal admission decision may be filed with SPSU's Director of Admission. Contact the Office of Admission for additional instructions on the appeal process.

Admission Procedures and Deadlines

General Information

All applications for admission to Southern Polytechnic State University must have all required credentials on file in the Admission Office by the application deadline date for the semester in which the applicant plans to enroll. The application deadline dates for each semester are as follows:

Semester	Priority Deadline Date
Summer	April 1
Fall	June 1
Spring	October 1

All international applicants are required to submit all admissions documents to the Office of Admission at least **three months before** the registration date of the semester in which the student plans to enroll.

Required Documents

Unless otherwise noted for a specific admission type/category, the application file is complete and ready for review when the Office of Admission (Southern Polytechnic State University, 1100 South Marietta Parkway, Marietta, Georgia 30060-2896) has received the following:

- A completed Undergraduate Application for Admission to Southern Polytechnic State University
- A $40.00 non-refundable application processing fee (check or money order made payable to Southern Polytechnic State University)
- Official scores on required college entrance tests (typically SAT or ACT. Some applicants may also be required to present TOEFL scores, or COMPASS scores)
- Official high school and college transcripts (mailed directly from those institutions)

Applicants with international credentials may be required to send their educational credentials to an approved SPSU professional evaluation service before being considered for admission.

Note: All new accepted applicants must submit a valid Certificate of Immunization to the SPSU Office of Admission.

Verification of Lawful Presence

In accordance with Board of Regents Policy 4.3.4 any student applying for in-state tuition will be required to provide validation of their lawful presence in the United States and proof of Georgia residency in order to be granted in-state tuition status.

Special Accommodations

SPSU does not discriminate on the basis of an individual's disability and is committed to providing students with full and equal enjoyment of services, facilities and goods on campus as required by law. If you are a student with a qualified disability and are in need of a reasonable accommodation, you must contact the Office of Disability Services. That office will provide you the necessary information and assistance to make your accommodation request.

Admission from High School

The Required High School Curriculum (RHSC), SAT/ACT scores, and the high school academic grade point average are all key factors considered in freshman admission decisions.

Required High School Curriculum

In order to be admitted, freshmen are required to complete the University System of Georgia's Required High School Curriculum (RHSC) requirements at either:

- A regionally accredited high school
- Or a University System recognized high school

A minimum of 17 RHSC units are required in the following subject areas:

Course	Units	Required Course Emphasis

English	4	Literature (American, English, World) integrated with Grammar and Usage and Advanced Composition Skills
Mathematics	4	Algebra I, Algebra II, and Geometry (Math 1, 2, and 3 for students who graduate from a Georgia Public School in 2012 or later) and a fourth year to include courses such as Advanced Algebra and Trigonometry, Algebra III, Pre-calculus, Discrete Mathematics, Calculus, AP Calculus, Statistics, IB Mathematics, Analysis
Science	4	Must include at least one lab course from Life Science and one lab course from the Physical Sciences
Social Science	3	Must include U.S. History and World History
Foreign Language	2	Must be in the same language and must emphasize speaking, listening, reading, and writing

Regular Freshman Admission Standards (Full Admission)

Regular freshmen are applicants who are recent high school graduates and who will be attending college for the first time.

SPSU's minimum requirements for admission as a regular freshman include the following:

- Graduation from
    - A regionally accredited high school
    - Or from a high school accredited by the Georgia Accreditation Commission
    - Or from a high school accredited by an approved University System of Georgia agency
    - Or from a public school under the authority of the State Department of Education
- Completion of the 17 required RHSC units.
- An academic High School GPA of at least a
2.5 Minimum scores on the ACT or SAT as follows:

Test	Minimum Score
SAT I Critical Reading	500
SAT I Math	500
ACT-English	21
ACT-Math	21

Limited Freshman Admission Standards

Limited Admission

The University System permits SPSU to admit a limited number of traditional freshmen each year who do not meet all   the minimum requirements listed above, but whose records are sufficiently strong enough to show promise for success   at the University.

SPSU's minimum requirements for limited freshman admission include the following:

- | Graduation from:
  - | A regionally accredited high school
  - | Or from a high school accredited by the Georgia Accreditation Commission
  - | Or from a high school accredited by an approved University System of Georgia agency
  - | Or from a public school under the authority of the State Department of Education
- | Completion of the 17 required RHSC units
- | Have an academic High School GPA of at least a 2.5
- | Minimum scores on the SAT or ACT as follows, and a combined score of 950:

Test	Minimum Score
SAT I Critical Reading	450
SAT I Math	450
ACT-English	18
ACT-Math	18

A freshman applicant may apply as early as the end of his or her junior year in high school. After the receipt of all   required documents, (juniors should include their planned senior year subjects on their high school transcript), the   Admission Office will notify the applicant of his or her admission status.

Alternatives for Home Schooled Applicants and for Others

Applicants, including home schooled students, who have not graduated from an approved or accredited high school, may validate the RHSC requirement in an alternative way. These students should submit a portfolio of high school level   work that substantiates completion of required high school curriculum courses equivalent to those listed in the RHSC   table above. Please see the admissions office for further information about the portfolio. Minimum SAT or ACT   test scores for these students are (valid for admission during the 2012-2013 school year only).

Test	Score
SAT I – Critical Reading	500
SAT I – Math	500
SAT I – Total	1120
ACT English	21
ACT Math	21

ACT Composite	24

Joint Enrollment/Early Admission/The ACCEL Program

Southern Polytechnic State University recognizes the need to provide academically talented high school students with opportunities for acceleration of their formal academic programs. There are three programs available to talented students:

Joint Enrollment

A joint enrollment student continues his/her enrollment in high school as a junior or senior and enrolls in courses for college credit.

Early Admission

An early admission student enrolls as a full-time college student following completion of the junior year in high school.

The ACCEL Program

The ACCEL Program is a joint enrollment program that allows high school, typically juniors and seniors, to take approved college courses. Courses earned through the ACCEL Program carry both college credit and high school Carnegie unit credit. ACCEL is a state funded program that provides dual enrollment tuition assistance for qualified public and private high school students. Students must be at least 16 years old, meet a certain set of requirements and submit necessary paperwork to participate. Students interested in this program should contact their High School Counselor to obtain the necessary paperwork.

Admission Requirements

- Admission requirements for joint enrollment or early admission are:
- Minimum scores of 530 on the SAT I Critical Reading (21 ACT-English) 530 on the SAT I Math (21 ACT-Math)
- Minimum academic high school GPA of 3.0
- On-track for completion of RHSC requirements by the end of the senior year in high school
- Written consent of the parent or guardian (if student is a minor)

Students who do not necessarily meet all of the above criteria but who demonstrate very high academic abilities through their SAT performance may be permitted to enroll in appropriate college courses. Specifically:

- Students with a score of at least 700 on the SAT I Critical Reading (31 ACT-English) may be permitted to enroll in courses that require advanced verbal ability.
- Students with a score of at least 700 on the SAT I Math (31 ACT-Math) may be permitted to enroll in courses that require advanced mathematics ability.
- Students with a total score of 1370 (math and critical reading) on the SAT I (31 ACT-Composite) may be permitted to enroll in appropriate courses.

Advanced Placement Opportunities

Southern Polytechnic State University welcomes students who have pursued accelerated academic course work

while   in high school or through recognized national standardized programs. Such programs include:

| College Level Examination Program (CLEP)
| College Board's Advanced Placement (AP)
| International Baccalaureate (IB)
| DANTES (D.S.S.T.)

Students may receive college credit for certain courses based on scores received in the above tests. The criteria for credit awarded under these testing programs is available on this site: www.spsu.edu/undergraduate/admission/apclepibcourses.htm. Please contact the academic department that sponsors the course before taking a any exam not listed to ensure that the exam has been approved for credit. Official score reports for AP and IB must be sent from the testing agency to SPSU to be considered for credit.

Please note that in order to receive credit for HIST 2111, HIST 2112 or POLS 1101 and satisfy the legislative requirements for graduation, the student must also complete HIST 2911 with a grade of "C" or better.

Admission from Other Colleges

General Information

Transfer applicants for admission are students who have earned college credit at regionally accredited collegiate institutions and wish to transfer to SPSU to pursue a degree.

Students planning to transfer from another college must have transcripts sent directly from all colleges attended to our   admissions office without regard to the applicant's wishes concerning transfer credit for courses.

The application deadline dates for each semester are as follows:

Semester	Deadline Date
Summer	April 1
Fall	June 1
Spring	October 1

Required Documents

Unless otherwise noted for a specific admission type/category, the application file is complete and ready for review when the Office of Admission (Southern Polytechnic State University, 1100 South Marietta Parkway, Marietta, Georgia 30060-2896) has received the following:

| A completed Undergraduate Application for Admission to Southern Polytechnic State University
| A non-refundable application processing fee (check or money order made payable to Southern Polytechnic State University)
| Some applicants may be required to present TOEFL scores, or COMPASS scores
| College transcripts (mailed directly from colleges attended)

High school transcripts and SAT I or ACT scores are generally not required for applicants with 30 or more semester hours of acceptable transfer credit. If there is any doubt that you have the required transfer work, you should submit these documents as well.

Transfer applicants with international credentials may be required to send their educational credentials to an approved SPSU professional evaluation service before being considered for admission.

Transfer Admission

Transfer Freshman Admission Standards

Applicants with fewer than 30 semester hours of acceptable transfer credit will be considered under the following policies:

- Applicants must meet the same admission requirements as freshman admitted from high school.
- Applicants must have completed and exited all required remedial courses at their previous institution.
- Applicants must be in good standing.
- Applicants must have at least a 2.0 cumulative college GPA.

Transfer Admission Standards for Sophomores and Upperclassmen

Transfer applicants with sufficient transferable hours to be classified as a sophomore, junior or senior at SPSU will be considered under the following policies:

- Applicants must have completed and exited all required remedial courses at their previous institution.
- Applicants must be in good standing.
- Applicants must have at least a 2.0 cumulative college GPA.

Award of Transfer Credit

Transfer Credit, Policy for Acceptance of

Transfer credit is awarded in accordance with the policies of the University System of Georgia, accrediting agencies, and SPSU. Courses under consideration for transfer credit are evaluated by the department chair whose department is primarily responsible for the course.

Transfer credit should not be confused with course substitutions. A course might not be equivalent to any course offered at SPSU, but still have enough content to be considered as a substitute for a course within a degree program. In this case, transfer credit would be awarded for free elective hours and a course substitution petition would be initiated and processed through the curriculum committee.

To be considered for transfer credit, courses must normally:

- Represent college or university-level work
- Have been completed with a grade of "C" or better
- Have been taken at institutions holding college-level accreditation by a United States regional accrediting authority.
- Be equivalent to courses at SPSU with regard to
    - Credit hours
    - Course content
    - Level of instruction
- Not have been in a subject for which the student received a failing grade at SPSU

Special considerations for transfer of University System of Georgia (USG) Core Curriculum courses:

Students transferring from one USG institution to another are protected by USG policy governing the transfer of core

courses. See section 2.4.9 of the USG academic affairs handbook for details. Students completing courses in areas A, B, C, or E will be given full credit when transferring to a different institution. Students completing courses in areas D or F will be given full credit when transferring to a different institution if the major field of study remains the same.

Grades of "D" are transferable for all USG core courses except:

| ENGL 1101 requires "C" or better
| ENGL 1102 requires "C" or better
| MATH 1111 requires "C" or better
| MATH 1113 requires "C" or better

If students transfer the entire USG Core (60 semester hours) for a given major (without changing majors), the total credit hours required for the transfer student's baccalaureate degree at SPSU will not exceed the total credit hours required for a student who completed the USG Core at SPSU in that same major. Students who feel they have not been given appropriate consideration for the transfer of USG core courses should appeal to the core chief transfer officer.

Evaluation of Courses for Transfer Credit

In order for SPSU to perform an evaluation of transfer credits, the student

| must provide official transcripts containing all the courses being considered,
| must be accepted for admission to SPSU,
| must provide course descriptions, syllabi, or other documentation on course content if requested by SPSU, and
| may be tested for proficiency in courses that were not USG Core courses.

The amount of transfer credit awarded can be limited by:

| Residency requirements defined in Academic Regulations
| The applicability of transferring courses to the chosen major
| Performance of the student during proficiency evaluations

Responsibility for transfer credit decisions at SPSU:

The Student has responsibility for providing complete and correct information (including course descriptions, syllabi, and other required documents).

The Chair of the department at SPSU in which the subject is taught has responsibility for determining whether transfer credit will be awarded.

The Chair of the student's major program of study has responsibility for determining whether transfer courses are applicable to that degree program.

The Registrar is responsible for determining restrictions and limits on amounts of transfer credit that can be granted.

The Registrar has final authority in checking compliance with university-wide academic standards and graduation requirements.

The core chief transfer officer is the contact person for students, faculty, advisors, records and admissions personnel, and academic administrators when problems related to transfer of Area A–F course work across USG institutions occur.

Additional Information for Students Transferring from Outside the University System of Georgia

All undergraduate students must successfully complete course work or satisfactorily pass examination(s) on the history of the United States, history of Georgia, United States Constitution and Georgia Constitution prior to receiving a degree from a USG institution. SPSU satisfies this requirement by embedding an examination in certain core courses. Students who transfer to SPSU from an institution located outside the University System of Georgia and who have completed

U.S. History or American Government must complete HIST 2911 to satisfy the United States and Georgia history and Constitution requirements.

Transfer Credit for Courses Earned Outside the United States

Transfer credit for courses completed at institutions of higher learning outside the United States shall be subject to the same criteria as those courses earned in the United States, but outside the University System of Georgia.

In addition, the student is also responsible for the following:

| International transcripts must be evaluated by an evaluation service. Evaluation services must be a current member of the National Association of Credential Evaluation Services (NACES).
| International course descriptions must have been translated by a recognized translation service and certified as a true and correct translation.
∑ The institution at which the credit was earned:

| Must have been evaluated and endorsed/certified/accredited by a nationally-known evaluation agency, or have a well-established international reputation for quality instruction
| Must be offering degrees and course work at the college or university level

Technical College System of Georgia (TCSG) Transfer Program

Southern Polytechnic implemented a system-wide articulation with the Technical College System of Georgia (TCSG). This articulation will provide the opportunity for SPSU to offer a range of B.S. and B.A.S. level technological programs on a statewide basis, with the TCSG institutions as our partners. The initial set of programs were made available in Fall 2009 and include pathways from approximately thirty TCSG Associates degrees into Information

Technology (B.A.S.), Manufacturing Operations (B.A.S.), Business Management (B.A.S.), Supply Chain Logistics (B.A.S.), Electrical Engineering Technology (B.S.), Industrial Engineering Technology (B.S.), Mechanical/Electromechanical Engineering Technology (B.S.), and Surveying and Mapping (B.S.). (Future offerings are being considered in Health Information Technology (B.A.S.)).

In this articulation, the TCSG institution will offer roughly the first two years of the programs including some of the USG core, and SPSU will offer the second two years of the programs. The TCSG portion will be offered mainly "live" on their campuses, with some online offerings. The SPSU portion will be offered in a format where most of the content is offered online with laboratories being offered low-residency. In a low-residency laboratory, students will take groups of laboratory experiments on two or three Saturdays during a semester, either on the SPSU or at a designated TCSG campus. The curricula of the TCSG institutions will be aligned with the SPSU curriculum to allow the maximum degree possible of direct transferability.

Articulation agreements have been signed by all of the SACS-COC accredited TCSG college presidents as well as the leadership at the TCSG system office.

If you would like more information on admission, program offerings and participating TCSG's, see tcsg.spsu.edu. Current majors include:

| Manufacturing Operations
| Supply Chain Logistics
| Information Technology
| Mechanical Engineering Technology
| Electrical Engineering Technology
| Industrial Engineering Technology

Special Admission Categories

SPSU has a number of special categories other than those for freshman and transfer applicants.

Nontraditional Freshman Admission Standards

Nontraditional freshman are those students who:

| Have not attended high school or college within the previous five years
| Have earned fewer than 30 transferable semester hours of credit
| Hold a high school diploma from an accredited secondary school or a GED certificate which satisfies the minimum requirement of the State of Georgia

Applicants eligible for review in this category are exempted from the SAT/ACT and Required High School Curriculum requirements; however, all other admission requirements must be met. These students will be required to take the COMPASS Exam and score 80 on the Reading, 74 on the Writing and 43 on the Algebra exams. The COMPASS Exam is given on the campus of SPSU.

Transient Students

Transient students are those students attending Southern Polytechnic State University for a limited period of time, usually one semester, and who are expected to return to their previous college at the beginning of the next semester.

Transient credit earned at Southern Polytechnic State University may not be applied toward the residency requirement. A transient applicant must submit to the Admission Office:

| A completed Undergraduate Application for Admission to Southern Polytechnic State University
| A transient letter from the Registrar of his or her college (good for the semester of application only)
| The transient letter must indicate that the applicant is in good standing and eligible to return to the home institution
| A non-refundable application processing fee (check or money order made payable to Southern Polytechnic State University)

It is the responsibility of the transient applicant to determine (with assistance from his or her home college) the course(s) he or she should take on the SPSU campus.

Post-Baccalaureate/Non-Degree

The non-degree category exists for those students who have previously earned a baccalaureate degree from a regionally accredited institution and who wish to enroll in undergraduate courses for personal or professional reasons instead of degree completion.

Students applying for this non-degree status must submit to the Admission Office:

| A completed Undergraduate Application for Admission to Southern Polytechnic State University
| A non-refundable application processing fee (check or money order made payable to Southern Polytechnic State University)
| An official transcript from the institution that awarded the initial degree

Students who are admitted under this category and later decide to pursue a degree must furnish official transcripts from all colleges attended and meet transfer admission requirements.

Audit Students

Persons not seeking a degree from Southern Polytechnic State University yet wishing to gain knowledge from courses taught here may apply for admission as audit students.

An audit student is required to file:

| A completed Undergraduate Application for Admission to Southern Polytechnic State University
| A non-refundable application processing fee (check or money order made payable to Southern Polytechnic State University)
| Official proof of graduation or official copy of scores on the GED test

An auditor will receive grades of "V" and will not receive transferable credits. In order to become a regular student, auditors must meet regular entrance requirements. An audit student may not change to regular student status after beginning a course as an auditor. The audit grade "V" may never be used as a basis for gaining credit in any course.

Students Sixty-two Years of Age or Older

Citizens of the State of Georgia who are 62 years of age or older may attend Southern Polytechnic State University without payment of fees (except for supplies and laboratory or shop fees) **when space is available** in a course scheduled for resident credit.

To be eligible for participation under this amendment to the Georgia Constitution, such persons:

| Must present a birth certificate or other comparable written documentation of age to the Registrar's Office at the time of registration
| Must meet all University System and Southern Polytechnic State University admission requirements,
| Must meet all University System, Southern Polytechnic State University, and legislated degree requirements if they are degree-seeking students

Undergraduate Certificate Program Admission Requirements

Applicants applying for Undergraduate Certificate programs must meet the same admissions requirements as those who are seeking an undergraduate degree.

International Students

Admission of Students with Non-U.S. Academic Credentials

Admission of students whose secondary education was completed outside of the United States system of education may be considered for admission with:

| Acceptable foreign credentials
| English language proficiency as described below

Academic Admissibility of Freshman Students Foreign Credentials

Students seeking to gain admission as freshmen must have:

| Academic performance as described by a certificate, diploma, or other documents generally equivalent to U.S. college preparatory studies

| Official or certified true copies of all secondary school records, with a certified English translation

(The University reserves the right to require foreign credentials to be evaluated by an approved professional foreign credential evaluation service at the expense of the applicant.)

English Proficiency

Students whose first language is not English and whose language of instruction throughout secondary school was not in English are required to demonstrate English proficiency.

Non-native speakers of English who:

| Transfer from institutions of higher education outside of the U.S. where English was not the language of instruction

| Have less than 30 semester hours of college credit

May be exempted from the SAT requirements; however, they must take the following tests with minimum scores as indicated:

Test	Minimum Score
Paper-based TOEFL or	550
Computer-based TOEFL or	213
Internet-based TOEFL	79
IELTS	6.5
AND	
COMPASS	80 Reading
	74 Writing
	43 Algebra

The COMPASS examination is administered on the campus of SPSU.

Academic Admissibility of Transfer Students Foreign Credentials

Students seeking to gain admissions as transfer students must have:

| Academic performance equivalent to a 2.0 transfer grade point average from all colleges/universities previously undertaken by the student

| Official or certified true copies of all secondary school records, with a certified English translation is required

(The University reserves the right to require foreign credentials to be evaluated by an approved professional foreign credential evaluation service at the expense of the applicant.)

Additional Requirements for International Applicants

In addition to meeting the regular admission requirements, international applicants needing a student visa (F-1 or J-1) must complete a Financial Affidavit. The Financial Affidavit must show ability to meet the financial obligations of tuition, fees and living expenses before an I-20 or acceptance letter will be issued.

Current (less than one year old) letters of financial support must accompany the Financial Affidavit. Financial Affidavit forms are available in the Admission Office.

All international students must purchase medical insurance made available through Southern Polytechnic State University.

Sources for Test Scores and Required Forms

SAT I and II Tests	ACT Tests
College Entrance Examination Board Box 6200 Princeton, NJ 08541 or register online at http://www.collegeboard.com SPSU's Institutional Code: 5626	American College Testing Program P.O. Box 414 Iowa City, Iowa 52243 or register online at http://www.act.org SPSU's Institutional Code: 0865
SAT I and II Tests	**ACT Tests**
College Entrance Examination Board Box 6200 Princeton, NJ 08541 or register online at http://www.collegeboard.com SPSU's Institutional Code: 5626	American College Testing Program P.O. Box 414 Iowa City, Iowa 52243 or register online at http://www.act.org SPSU's Institutional Code: 0865
Admission Application & Immunization Forms	**TOEFL Exams**
SPSU Office of Admission 1100 South Marietta Parkway Marietta, GA 30060 or on SPSU's Website: http://www.spsu.edu	Educational Testing Services P.O. Box 6151 Princeton, NJ 08541, USA or http://www.toefl.org SPSU's Institutional Code: 5626

Financial Aid Information

Steps to Apply for Financial Aid and Cost of Attendance

Usually, step one in applying for financial aid is to fill out the Free Application for Federal Student Aid (FAFSA), which is available online at www.fafsa.ed.gov

Although applications are processed until all federal funds are expended, students who apply by the March 1st deadline have a greater chance of receiving financial aid than those who apply late.

Aid awarded to a student one year does not mean that he or she is eligible to receive aid in a subsequent year, unless the student continues to demonstrate need as defined by the U.S. Department of Education. An application, each year, is required to continue to receive financial aid.

Information concerning financial aid may be obtained by writing to:

Director of Financial Aid
Southern Polytechnic State University
1100 South Marietta
Parkway Marietta, Georgia
30060-2896

or by calling the Office of Scholarships and Financial Aid at 678/915-7290 or 800/635-3204, or email at finaid@spsu.edu.

Cost of Attendance

Average first-time-full-time Cost of Attendance for an on campus student 2014-2015

Cost of Tuition and Mandatory Fees:

Tuition and Fees $6,944
Room and Board $9,130

Cost determined by Lifestyle:

Books and Supplies
$1,700 Personal
Expenses $1,700
Transportation $1,200
Loan Fees $60

Total Estimated Cost of Attendance: $20,734

Types of Financial Aid

| The Federal Pell Grant
| The Federal Supplemental Educational Opportunity Grant (FSEOG)
| The Federal Work Study Program (FWSP)
| The Federal Direct Loan Program

Depending on financial need, the maximum that a student may borrow from the combined Subsidized and Unsubsidized Direct Loan Program is:

Class	Dependent	Independent
Freshman	$5,500	$9,500
Sophomore	$6,500	$10,500
Junior/Senior	$7,500	$12,500

The total undergraduate loan amount is $31,000 for Dependent students and $57,500 for Independent students.

The PLUS Direct Loan Program enables parents with good credit histories to borrow funds for each child who is enrolled at least half-time and is a dependent student. Students whose parents are denied a parent plus loan are eligible   for additional loan funds.

The HOPE Scholarship Program provides financial assistance to students attending Georgia post-secondary institutions who achieve academic excellence throughout their high school studies.

To be eligible for HOPE, a student must:

- Be a Georgia resident
- Have graduated from a Georgia High School in 1993 or later
- Have earned a cumulative grade point average of at least 3.0 in all academic classes
- And meet other regulatory requirements

Payment for Non-credit Courses

For a student to receive financial aid funds for remedial work, the course work must be necessary for the student to pursue the eligible post secondary program. Students may not receive financial aid funds to pay for courses that they audit.

Satisfactory Academic Progress

Federal law requires students receiving federal student aid to maintain satisfactory academic progress as defined by the institution. The Satisfactory Academic Progress (SAP) requirements are separate from the regulations governing academic probation and suspension.

Southern Polytechnic State University's SAP requirements include:

- a maximum time frame requirement,
- a completion rate requirement, and
- a cumulative grade point average requirement.

Aid recipients must meet each of the three in order to be considered to be making SAP and to continue to receive financial aid.

Maximum Time Frame Requirement

Financial aid recipients must complete their program within 150% of the published length of the program. To figure the maximum time frame:

- First check the catalog to determine the number of credit hours required for graduation in a particular major.
- Second, multiply the required number of credit hours by 150%.
- Third subtract the number of credits transferred in toward the major.

Example: A student majoring in Construction transfers in 50 semester credit hours. It takes 128 semester hours to earn a degree; therefore, the student's maximum time frame is (128 x 150%) - 50 = 142. This student's financial aid eligibility is exhausted once he or she has attempted 142 semester hours at SPSU.

Completion Rate Requirement

In order to complete a program of study within the required time frame, the aid recipient must complete 67% of the hours attempted to date at SPSU. Credit hours attempted will be cumulative and will include all hours in which the student was enrolled at the end of the official drop/add period each academic term and received a grade of A, B, C, D, F, W, WF, I, IP, S, and U.

Cumulative Grade Point Average Requirement

Undergraduate students receiving financial aid must maintain a cumulative grade point average (GPA) at or above the 2.1 minimum required for graduation. Graduate students receiving financial aid must maintain a cumulative grade point average at or above the 3.00 minimum required for graduation. The cumulative grade point average will be computed by dividing the number of quality points earned by the total credit hours attempted for which the student received grades of A, B, C, D, F, WF, or I. No quality points are earned for an F, WF, or I.

How Often Will SAP Be Checked?

Percentage completion rates and cumulative GPA requirements will be monitored at the end of each semester. If a student is not making SAP at the end of any term, they will be placed in one of two categories:

Financial Aid Probation

Students with a GPA of less than the required 2.00 and/or Students with a completion rate less than the required 67%.

Financial Aid Suspension

Any student on financial aid probation and still not making SAP.

Students on Financial Aid Probation may receive financial aid. If the student does not achieve the required completion rate and cumulative GPA requirement by the end of the probationary term, he/she will be placed on Financial Aid Suspension until the requirements are met. Students on Financial Aid Suspension may not receive financial aid.

Financial Information

Registration and Fee Payment

SPSU offers multiple registration periods, each with an assigned fee payment deadline, for currently enrolled students to give them the opportunity to secure a schedule for a coming term.

The registration process is not complete until payment of tuition and fees is completed. Students who have signed an official award letter, (which signifies acceptance of the financial aid) and have registered for classes are assumed to be students who will attend classes.

The fee payment deadlines for each registration period are published each term in the academic calendar and on the SPSU website at www.spsu.edu/tuitionfees.

Failure to pay tuition and fees by the published deadline date can cause the cancellation of your registration.

Payment of fees and other charges may be made with:

| Cash
| Checks
| Approved financial aid
| Approved Credit cards

Registration fees may be paid on the SPSU web site using credit cards (except VISA). On-line transactions are fully encrypted for the safety of both the student and the university.

Students who register for courses and pay appropriate fees using any acceptable method of payment are considered enrolled and space is reserved in the class(es) for the duration of the term.

Students are encouraged to register and pay tuition and fees as early as possible to avoid the risk of losing their schedules.

All payments returned to the University due to insufficient funds are subject to a $30.00 or 5% of the face value returned check fee. Any outstanding returned check payments will be turned over to either a collection agency or the State Attorney General's Office for further legal collection action. All accounts turned over to a third party for legal collections will be subject to an additional collection cost (in addition to the original debt owed to the University).

Other Fees

Tuition and Fees

Tuition and fees vary according to a student's starting term and status. For a complete listing of current tuition and fees, please visit www.spsu.edu/tuitionfees. At times, additional fees can be charged over and above the fees listed in this catalog.

Academic Credit by Examination

Students who wish to attempt academic credit by examination shall be charged a testing fee of $50.00. An official receipt from the Business Office must be presented prior to taking the examination. Acceptance of the fee from a student does not imply that the credit by examination has been approved by the university. All requests for credit by examination are subject to approval by the academic department and by the Registrar.

Transportation Fee

Students who are currently enrolled are charged a transportation fee to cover the cost of the maintenance of the transportation infrastructure including parking lots, sidewalks, overhead covers, and other amenities, and may register a vehicle for parking on campus without further cost. For additional information and a copy of university parking regulations, contact the University Transportation.

Graduation Fee

Every student receiving a degree must pay a graduation fee of $40.

International Student Health Insurance

Based on the guidelines provided by the American College Health Association and NAFSA: the Association of International Educators, Southern Polytechnic State University requires international students on F-1 and J-1 visas to purchase the endorsed SPSU International Student Insurance policy. Payment of this fee is mandatory and should be paid directly to the Business Office along with payment of tuition and miscellaneous fees. Purchase of this insurance policy is mandatory each semester.

Refunds

The Board of Regents of the University System of Georgia and the Department of Education establishes the refund policy for the university. The refund schedule is published on the Tuition & Fees site at www.spsu.edu/tuitionfees/refundinfo.htm.

Refunds of fees and charges will be made only upon official withdrawal from all classes through the Registrar's Office. A student who partially withdraws (withdraws from some classes, but is still registered in other classes) after the official drop/add period does not receive a refund.

Where applicable, any refunds resulting from unearned financial aid will first be returned to the Title IV programs, other sources of aid, and/or finally to the student. The student must repay all funds to the university that are determined to be "unearned financial aid" that resulted from the calculated refund.

Residency Classification for Fee Payment

Purposes

A person's legal residence is his or her permanent dwelling place. It is the place where he or she is generally understood to reside with the intent of remaining there indefinitely and returning there when absent. There must be a concurrence of actual residence and of interest to acquire a legal residence.

Because a proportion of financial support for the operation of public institutions of higher education in Georgia comes from the citizens through the payment of taxes, the determination of whether a student is classified as a resident or a nonresident of the state is a significant matter. The fees paid by resident students cover only a portion of the total cost of their education in the University System. Therefore, Georgia taxpayers are contributing part of the necessary funds to provide quality education for the citizens of the state.

Students are responsible for registering under the proper residency classification. Any student classified as a nonresident who believes that he or she is would like to be reclassified as a legal resident may petition to the Registrar's Office for a change of status.

The Board of Regents establishes all rules regarding residency classification. For additional information visit this site: www.usg.edu/regents/policymanual/400.phtml

Student Services

Bookstore

The Southern Polytechnic State University bookstore is located on the lower level of the Student Center. In addition to new and used textbooks, you can also purchase software, reference books, school supplies, engineering supplies, calculators, SPSU apparel, greeting cards, health and beauty aids, drinks, and snacks.

On the last day of registration and the first week of classes, the bookstore is open for extended hours.

Please visit us to find more information and purchase your books online at www.spsu.edu/bookstore.

Career and Counseling Center

Counseling Services

The Career and Counseling Center offers a variety of counseling services to help students succeed. The Center provides counseling for personal, academic, and career concerns.

Personal concerns such as anxiety, depression, relationship problems, low self-esteem, low self-confidence, and communication issues can make it very difficult for students to gain the most from the university and from their classes. Professional counselors provide time limited **individual and/or group sessions for students** seeking confidential assistance with these and other personal issues.

Part of the career development process involves increasing self-understanding in such areas as values, life goals, interests, and skills. **Counselors can help students increase their self-understanding and learn how to match their personal characteristics with the work environments that a university education makes possible for them.**

Academic concerns center on more effective time management, study skills and dealing with test anxiety. Counselors can assist students in identifying deficiencies in these areas to make the overall academic experience more successful. Many students find university work more difficult than they expected and find that it strains their abilities.

Counselors can assist students in developing skills to manage stress, overcome test anxiety, improve test-taking strategies, enhance memory and better understand their learning style. The Career and Counseling Center provides a

variety of assessments to assist students in clarifying and/or confirming their goals.

Counselors provide outreach programs on many topics, including stress management, anxiety, depression, relationship building, procrastination and other student concerns (a detailed list can be found on the Center's website at www.spsu.edu/counselingservices/index.htm.)

All counseling services are **free of charge**, confidential, and **are available by appointment**. Counseling staff members are also available for consultation with SPSU faculty and staff who are concerned about specific situations and/or individuals.

Career Services

The Career and Counseling Center provides job search assistance for graduates and for students seeking full-time, part-time, temporary and on-campus employment. The Center provides assistance to students in preparing for the job search and obtaining employment suited to their career goals and aspirations, but can never guarantee employment for any student or graduate. Services offered include:

- Assisting in resume preparation
- Offering career search workshops and mock interviews
- Access to Jobs and career database (Career Link)
- On-campus interviews **and/or information sessions**

Students are encouraged to make use of career services as early as possible during their stay at Southern Polytechnic. **Degree candidates should begin the job search process at least two semesters prior to their graduation.**

On-Campus Employment

There are two kinds of on-campus positions for students: College Work Study (from funds awarded by the Financial Aid Office) and Student Assistants (from funds that are allocated to the department). Undergraduate students seeking on-campus employment should begin their search by registering in the Career Link database. International students should begin the job search process in the ATTIC.

Alumni assistance: Job search assistance for alumni includes web registration in the **CAREER LINK** (jobs) database on the Center's web page. Alumni may attend any skillshop sessions offered by the Center and career fairs sponsored by the Center.

Experiential Education (Cooperative Education and Internship)

Southern Polytechnic State University offers it's students the opportunity to gain valuable work experience directly related to their academic majors through a University sponsored experiential education program. Students interested in either program should attend an orientation session or should complete the online orientation session (dates and links posted on the Career and Counseling Center's website).

Benefits of participating in Cooperative Education or an Internship include:

- Providing career related hands-on work experience
- Earning a competitive salary for school and tuition expenses
- Learning the company culture
- Networking with professionals in your field
- Helping get your foot in-the-door for full-time employment
- Developing self-confidence
- Establishing valuable contacts for letters and references
- Gaining practical experience in the work environment
- Helps students in their career decision making process

| Provides substantial support for education expenses

Cooperative Education (Co-op)

Co-op is founded on the principle that learning takes place through practical experience as well as through academic achievement. Students participating in the co-op program alternate school and work.

Co-op students are required to follow all guidelines set forth by the Career and Counseling Center, as well as the rules and regulations of the University. In addition to university requirements, students must meet any additional co-op requirements set forth by the co-op employer. Students unable to maintain university or company co-op requirements may be given one probationary term to correct deficiencies before being withdrawn from the co-op program.

The Career and Counseling Center refers students to employers after they have been approved as a co-op applicant (Note that acceptance as a co-op applicants does not guarantee a student's employment in a co-op position). The employer has the final decision regarding offering co-op employment. Upon acceptance of a co-op position, the student is expected to remain with their co-op employer for a minimum of three (3) co-op work terms. In addition to Career Services referrals, co-op participation can also be started through student self-referral. Students and employers must meet program requirements and guidelines (contact program coordinator for details).

Students with metro-Atlanta co-op assignments may live in Southern Polytechnic State University housing. In addition, students with local co-op work assignments are eligible to participate in all co-curricular, intramural, and health service activities on campus with the payment of the regular student athletic, activity, and health fees. Although no credit is awarded (students receive a grade of 'S' or 'U'), the university views co-op students as active, continuing, full-time students during their periods of approved work experience.

Although neither the student nor the employer makes a commitment for full-time employment upon completion of the co-op program, many SPSU co-op students are offered career employment with their co-op employers. Satisfactory completion of both requirements for graduation and co-op guidelines make an undergraduate student eligible to receive recognition for participation in the co-op program on their Southern Polytechnic State University diploma and academic record.

Internship Program

The Southern Polytechnic State University Internship program is a short-term or time-limited work experience in a professional environment. It is designed to enhance academic, personal, and professional development and will assist students in making a smooth transition from the classroom to the world of work, and to provide students with insight about potential careers. Usually, an internship is a one-time experience for a student who has attained at least some academic preparation in a professional field.

Co-op and Internship Eligibility and Requirements for Undergraduate Students

| Be a registered, full-time student at the time of application to the program and during the semester prior to going to work (i.e., carry at least 12 hours fall and spring and 6 hours during the summer)
| Have and maintain a minimum 2.00 GPA (many employers require higher averages)
| Have completed at least 24 semester hours of academic credit toward their degree
| Must have completed at least one semester at SPSU
| Attend an orientation session (can be online) and meet with the program coordinator, and
| Co-op applicants must commit to participate in a minimum of three (3) alternating co-op work terms with the same employer

Students must be fully authorized to work in the United States to participate in the co-op program.

International Students

Must obtain written eligibility authorization from the International Services Coordinator in the ATTIC before beginning **EACH** working assignment. Due to the INS regulations, International students are not permitted to Intern more than one and a half-academic years for undergraduates and one academic year for graduates. Once an Internship is obtained, International students **MUST** return to the International Services Coordinator to complete additional paperwork. International students failing to do so will be **DROPPED** from the Internship Program.

Dining Services

There are four food service facilities on campus. Stingers Restaurant is the home of the University's board plan operation. There are 3 retail operations on campus The Grill (located on the lower level of the student center), Mondo's Sub Shop (located on the first floor of the Atrium Building), and Spork (located near the Housing Office). Catering and Concession services are provided by Chartwells Food Service.

For more information go to www.dineoncampus.com/spsu/

Emergency Locator Service

Emergency assistance in locating a student is provided by the Vice President of Student and Enrollment Services Office at 678/915-3720 from 8:00 a.m. until 5:00 p.m., Monday through Friday. The University Police Department provides emergency assistance in locating students on weekends and after 5:00 p.m. on weekdays at 678/915-5555.

If the University Police determine that a student (for whom a missing person report has been filed) has been missing for more than 24 hours, then within the next 24 hours they will:

| | Notify the individual identified by the student to be contacted in this circumstance;
| | If the student is under 18 years old, notify a parent or guardian; and
| | In cases where the student is over 18 and has not identified a person to be contacted, notify appropriate law enforcement officials.

Extended University

Extended University (EU) is an administrative unit reporting to the Vice President for Academic Affairs. The mission of EU is to provide services to SPSU, the business community and the community at large by extending, enhancing and expanding the traditional teaching, scholarship and service roles of the university to new clients, in new formats and through the infusion of new technologies. Extended University includes a variety of programs and service units that are described here below. For more information regarding these programs and services, contact the EU Dean's Office at 678/915.7338 or stop by J-377.

Continuing Education Center (CEC)

The Continuing Education Center is responsible for providing all non-credit professional continuing education instruction sponsored by the university. CEC sponsors open enrollment programs in computing, engineering, business, quality, and communications. CEC also offers customized corporate training. CEC Certificate Programs feature a sequential set of courses designed to provide a body of knowledge in selected areas. Currently available certificates include:

| | Business Intelligence
| | AutoCAD Professional Certification
| | CISCO Certified Network Associate (CCNA)
| | Professional Project Management Certificate Program
| | Lean Six Sigma Certification Training
| | Accelerated Training in Healthcare Information Technology

Call 678/915-7240 for additional information or check the CEC web site at www.spsu.edu/cec.

Southern Polytechnic Applied Research Corporation (SPARC)

The Southern Polytechnic Applied Research Corporation (SPARC) provides support to Southern Polytechnic faculty in research, development and the application of technology within their areas of expertise. This support includes the identification of opportunities, development of proposals and the administration of grants and contracts upon award. The Applied Research Corporation is committed to providing growth opportunities for faculty and students and establishing Southern Polytechnic State University as a leading center of applied technology. For more information go to www.spsu.edu/sparc.

Office of Sponsored Programs (OSP)

The Office of Sponsored Programs has overall responsibility for the administration of grants, contracts and sub-awards, as well as compliance with state and federal regulations. Pre-award services include identifying funding opportunities and working with faculty to prepare proposals for submission. Post-award activities include tracking expenses, supplying reports to faculty and interfacing with the business office. For more information call 678/915-3159, visit the web site at www.spsu.edu/sponsoredprograms or stop by J-354.

eCore

eCore -- short for electronic core-curriculum -- allows University System of Georgia (USG) students the opportunity to complete the first two years of their collegiate careers in an online environment. eCore courses are taught entirely online, except for the occasional proctored exam. eCore courses are designed, developed, taught and supported by faculty and staff from the USG. Extended University coordinates eCore for SPSU and is available to answer all eCore questions. For more information go to www.spsu.edu/ecore.

English Language Services (ELS)

ELS Language Centers provide a unique opportunity for foreign students to learn English as a second language or to improve their English proficiency. ELS distinguishes itself as the finest in English language instruction by providing excellent customer service. ELS Language Centers have become the world's largest network of campus-based, English language instruction centers with over 30 locations throughout the United States. ELS provides full-time daily classes year-round in four-week terms. In addition, ELS offers specialized programs that are customized to fit your needs. For more information go to www.els.edu/atlanta.

Honor Society

Superior scholastic achievement in engineering technology is recognized by membership in the Tau Alpha Pi National Honor Society. The original chapter of this society was founded on the Southern Polytechnic State University campus in 1953, and its members have not only demonstrated high academic achievements, but have also maintained various leadership positions in campus organizations.

For further information on SPSU's local Tau Alpha Pi chapter, please visit the web site at tap.spsu.edu.

HornetCard

HornetCard is your university identification card. Every student, faculty and staff member at SPSU can get a HornetCard in the Campus Services office located on the 2nd floor of the student center. Your HornetCard is used for access to Univeristy facilities, events, and services. All privileges granted by the use of this card are provided solely for the person described on the card.

For more information about HornetCard and its services go to www.spsu.edu/hornetcard

Library

General Information – The Lawrence V. Johnson Library collection consists of 128,000 volumes and about 200 print and electronic journal titles. An increasingly popular service is access to over 8,000 e-books.

GALILEO – Georgia Library Learning Online, popularly known as GALILEO, is an initiative funded by the University System of Georgia that allows access to online databases, including full-text and full-image files. Faculty and students have access to more than 300 databases as well as library catalogs. Additionally, students who bring their laptops will be able to access GIL, GALILEO and the Internet for research purposes in any area of the Library which has wireless access.

GIL – The automated library union catalog, GIL, lists materials held by libraries throughout the state of Georgia. Materials from libraries nationwide may be obtained through the Interlibrary Loan service in the Reference Department. GILExpress is a self- initiated, free service to request materials from other University System of Georgia Libraries.

Additional information about services offered at the Johnson Library may be accessed at www.spsu.edu/library/library.html; or, patrons may enter queries via email to reference@spsu.edu.

Post Office

The Southern Polytechnic Post Office is located next to the Bookstore and is open 9:00 a.m. to 5:00 p.m. Monday through Friday. Post Office boxes are available for rental by the term.

Recreational Sports

Mission

The Recreational Sports Department shares in the educational mission of the university by offering opportunities to experience interpersonal growth, social development, improve physical and mental health, and to develop lifetime leisure skills for a healthier lifestyle. The Department organizes, administers, and promotes a broad program of competitive, recreational, fitness, and wellness programs for students, faculty, and staff.

The Intramural Sports program provides students with the opportunity to compete on a competitive and recreational level. The program administers over 20 different leagues/tournaments throughout the academic year. Flag Football, Basketball, Soccer, Softball, Golf, and Bowling are just some of the intramural programs offered. Students also have an opportunity to learn new skills by officiating our leagues (and earn some extra money).

A wide range of fitness and wellness classes are also programed by the Recreational Sports Department. Aerobics, Yoga, abs, cycling, and swimming are just a few of the class offerings. Classes are free to all students.

Recreational Facilities

The Recreation and Wellness Center, offers many recreational opportunities to the student. A state of the art weight room that includes free weights, machine weights, plate loaded machines, and cardiovascular equipment highlights the facility. The facility also boasts a large multipurpose gym that accommodates 2 basketball courts, 2 volleyball courts, 4 badminton courts, and a perimeter jogging/walking area. The Recreation and Wellness Center also has 2 racquetball courts, locker rooms/showers, and a pool complete with an outdoor sunbathing area. The pool can be used for recreation, lap, and competitive swimming. The Department of Recreational Sports and Campus Health Services are housed in the Recreation and Wellness Center.

The Southern Polytechnic Outdoor Recreation Complex provides 3 softball fields. The intramural sports program makes use of these fields throughout the year with flag football, soccer, and softball leagues. Also included in the complex is a half-mile jogging trail.

Student Center

The Joe Mack Wilson Student Center is located in the center of campus, just west of "the Globe". The Student Center houses many student services, including Student Government Association, the Game Room, Student Life, Campus Services, the bookstore, the Grill, and the Post Office. There are also many spaces within the student center that are available for student groups to reserve for events and meetings.

For more information about the Student Center go to www.spsu.edu/studentcenter

Student Health Services

The school nurse, who is on duty Monday through Friday in the clinic located in the Recreation and Wellness Center, provides limited outpatient services for minor illnesses and injuries. If further treatment is necessary, she will refer the student to an urgent care facility located near the campus. Due to the limits on the health services provided by Southern Polytechnic State University, each student is encouraged to have adequate health and accident insurance through either a personal or family insurance policy. The University offers an optional medical insurance policy. Information is available at www.studentinsurance.com.

International students are required to have private health insurance protection. Southern Polytechnic State University is not responsible for any medical expenses incurred by international students beyond those that are covered by the Student Health Fee.

Student Housing

SPSU offers nearly 1800 on-campus student housing beds. In addition to providing a convenient and economical home for students, on-campus living also provides a great learning opportunity. Living on campus contributes to the educational development of each student through exposure to students of varied backgrounds, experiences, and personal philosophies. The Department of Housing and Residence Life is staffed by 9 full-time professionals along with 50 Resident Assistants. The primary function of the Housing and Residence Life staff is to create and maintain a desirable environment for all residents.

All students who have been accepted to Southern Polytechnic State University will need to visit the Housing and Residence Life website at www.spsu.edu/housing for application information. On-campus housing is required for all first-year students. However, this requirement may be waived if you will be living at home with a parent/guardian. Please contact our office for more information.

Howell Residence Hall and Hornet Village Suites are reserved for traditional first-year freshmen only. There is also a mandatory meal plan for all residence hall residents. Our on-campus apartments, University Courtyard and University Commons, are available to upperclassmen students. Consideration of a roommate request will be given providing the request is mutual and space is available.

For more information about student housing go to www.spsu.edu/housing.

Housing payments are due in full each semester. If you have any additional questions you may contact the Department of Housing and Residence Life by calling 678/915-7335 or by sending an email to housing@spsu.edu.

Application

Every student interested in living on campus at Southern Poly must submit a housing application, which can be found online in Banner. Space is limited, so it is important to submit your housing application early. A mandatory, non-refundable $200 application fee is required of everyone completing an application to live on-campus. The fee will be added to your student account and can be paid online or in person at the Business Office. Please understand that completing an application does not guarantee housing will be assigned. When the housing application and fee have been received, a notification of housing status will be sent by our office. In the case of space not being available, the

reservation fee will be refunded. We will do our best to accommodate all preferences with regards to roommate requests and building placement. Roommate requests should be so marked on the housing application by all involved students.

Student Life

Mission

Student Life creates a sense of place as an academic support unit that empowers, prepares, and develops students at SPSU through high-quality social, leadership, educational, and service programs. Student Life aligns with the mission and vision of the university to help our students recognize and achieve their potential to transform their lives and impact their futures.

About Us

The Student Life Office is the hub of co-curricular activity on campus that includes Journey New Student Orientation, student organizations, campus activities, fraternities & sororities, student government, cultural programming, leadership development, and volunteer opportunities; we have something for everyone.

The events offered by the Student Life Office are sponsored by the Student Activity Fee that is paid by every student matriculated at Southern Polytechnic. Since the Student Activity Fee pays for these events, activities and outings, everything is FREE!

Student organizations allow our students to meet a variety of people, develop communication and leadership skills, practice the theories they learn in the classroom and create a wide web of networking possibilities that could lead to friendships, an internship, or even ultimately a job!

Our number one goal is to get each student connected, involved, develop a sense of community, and HAVE FUN!

For more information visit us at www.spsu.edu/studentlife

The ATTIC

The ATTIC (Advising, Tutoring, Testing, International Center) provides academic support services to students at SPSU. Located in the Student Center (A-160), the ATTIC houses Advising, Testing, Tutoring, International Student Services, Disability Services, and Multi-Cultural Affairs. For more information, call 678/915-7361.

Joint Enrollment Advising

The Joint Enrollment Advisor/Move On When Ready Advisor guides Joint Enrollment and Move On When Ready students in selecting courses they need for their high school graduation and for their college careers. The Advisor also works with high school counselors.

Tutoring

The ATTIC provides individualized assistance and small-group study options to Southern Polytechnic students. Tutors help students with core courses in English, chemistry, biology, mathematics, and physics. Tutoring occurs in the Student Center in rooms A-184 & A-185. The tutoring schedule can be viewed online at the ATTIC's website at www.spsu.edu/attic/tutoring.

 * Please Note: The schedule may vary from semester to semester.

Testing

The ATTIC administers the following tests:

Math Advisory Test (MAT)

SPSU students take the math test to determine the level of math placement. The test consists of college algebra and pre- calculus. MAT scores will determine the appropriate starting point in SPSU's math sequence. Students may obtain MAT scores from their academic advisor or a program representative during an advising session, from the Testing Coordinator, the Coordinator of Disability Services, or from Banner.

Placement is based on the following scale:

If your score is	On this test	Start in this Mathematics Course
23 or lower	MAT 1+2	MATH 1111 College Algebra
24 or higher	MAT 1+2	MATH 1113 Pre-calculus
26 or higher	MAT 1+2	MATH 2253 Calculus
AND		Or
8 or higher	MAT 3	MATH 2240 Elements of Calculus
28 or higher	MAT 1+2	MATH 1113 Pre-calculus OR
AND		MATH 2253 Calculus I OR
630 or higher	SAT	
OR		MATH 2240 Survey of Calculus
28 or higher	ACT (Math)	(MATH 1113 is recommended)

Students are eligible to take any mathematics course at SPSU for which they have met all prerequisites. The ATTIC and the Mathematics Program offer math tutoring.

COMPASS

Non-traditional students-students should take COMPASS. The test consists of writing, reading, and math sections. A proctoring fee must be paid in advance of the test. Students may call 678/915 -7361 to make an appointment to take the COMPASS test. COMPASS testing can also be scheduled online via www.spsu.edu/attic.

Disability Services

SPSU does not discriminate on the basis of an individual's disability and is committed to providing students with full and equal enjoyment of services, facilities and goods on campus as required by law. If you are a student with a qualified disability and are in need of a reasonable accommodation, you must contact the Office of Disability Services. The Disability Services Advisor coordinates academic support services for students who have a permanent qualified disability.

International Student Services

International Student Services advises the University's international student body, faculty, and staff on Immigration and Naturalization regulations. The coordinator provides student assistance with banking, social security, insurance, housing, employment, practical and curricular practical training, travel regulations, income tax, and the lottery.

International Student Services provides cultural, social, and educational programs. Baptist Collegiate Ministries, Friends of Internationals and AMIS (American Ministry of International Students) sponsor family and community activities.

The University Honors Program

The University Honors Program of Southern Polytechnic builds upon the university's excellent reputation for providing both theoretical and applied approaches to learning. Honor students are given the opportunity to develop their talents and skills in an expanded and enriched curriculum featuring seminar-size classes and independent research opportunities.

Admissions

All prospective Honors students must apply to the Honors Program. Incoming freshmen who have at least a 1200 SAT score or ACT equivalent and at least a 3.5 high school GPA will be guaranteed automatic admission to the Honors Program. Transfer students who have earned a 3.5 GPA for college-level coursework over 30 hours of credit also will be guaranteed automatic admission. Students who do not strictly meet these guidelines, but who have other achievements that show promise of academic excellence are encouraged to apply. Students may download an application from the web site www.spsu.edu/honors/. All prospective Honors students must apply to the Honors Program. Students who do not strictly meet these guidelines, but who have other achievements that show promise of academic excellence are encouraged to apply. Students may download an application from the web site www.spsu.edu/honors/.

Advantages

While the main advantage of participation in the Honors Program is the intellectual rigor of the curriculum, there are other advantages as well:

| Eligibility for Honors scholarships or out-of state tuition waivers as appropriate
| Special Orientation Programs
| Priority Registration
| Honors course designation on student transcripts
| Honors advising
| Social and extracurricular opportunities
| Recognition upon graduation: in the commencement program, on the diploma, and with an honorary symbol as part of the graduation regalia.

Program Guidelines

To earn the University Honors Scholar Diploma at Southern Polytechnic, students must complete 18 credit hours of Honors coursework and at least 6 of those hours must be upper division course-work. To earn the Departmental Honors Scholar Diploma, students must complete 6 hours of enriched upper division course-work or directed study.

The Honors Program offers several different types of honors courses so that students can meet the requirements.

| Honors Core Courses
| Honors Interdisciplinary Seminars
| Honors Research Assistant and Independent Study Opportunities.

Students must have a minimum graduation GPA of 3.4. All students must complete an Honors Paper to be bound and placed in the library. An Honors Presentation of this paper is also required.

Probation and Dismissal

Students in the Honors program that fall below the required GPA are placed on probation for one semester. A student on probation whose GPA does not meet the requirements at the end of their next enrolled semester will be dismissed from the honors program. Students who commit acts of academic dishonesty may also be dismissed from the program.

Additional Information

For additional information contact the University Honors Program at 678/915-3931 or email us at honors@spsu.edu. You can also visit our website at honors.spsu.edu.

University Transportation

University Transportation manages all of the parking and transportation services at SPSU. Parking on campus is available by permit only. All students pay a mandatory University Transportation Fee each semester. Your parking permit is included as a part of this fee. Visitors must park in one of the two visitor parking lots, located adjacent to the Student Center and on the first level of the parking deck. University Transportation also provides many other services including the Poly Trolley and ZipCar.

For more information about parking on campus or other University Transportation services go to www.spsu.edu/studentcenter.

Academic Regulations

Introduction and Student Responsibility

Students are expected to have read this section of the catalog and to be generally familiar with academic rules. Students are expected to consult this section of the catalog and follow the procedures that are outlined herein when the appropriate time in their academic tenure approaches. For example, students who are within a year of graduating should review the graduation section and comply with the time table for petitioning to graduate.

In a pedagogical setting, students are expected to develop the ability to read and follow instructions as part of their educational experience. Academic advisors are available to help students interpret what they've read and to encourage appropriate actions. However, it is the student's responsibility to ask questions when in doubt, and to seek out information from official sources rather than to allow rumor to dictate actions.

Student Records

In accordance with the policy of the Board of Regents of the State of Georgia and under the provisions of the Family Education Rights and Privacy Act of 1974 (FERPA), Southern Polytechnic State University maintains various educational records for each matriculating student.

These records are considered confidential and will not be released for use outside the institution without the written consent of the student. Exceptions as authorized by the Act are noted.

Directory Information

Southern Polytechnic maintains student information in various forms. Students who desire that "directory information" not be released without consent should so notify the Registrar's Office in writing. The following may be included as "directory information" unless notification is received to the contrary:

- student's name
- address
- e-mail addresses
- current enrollment status/rank (e.g. undergraduate or graduate; freshman, sophomore, junior, etc.)
- dates of attendance
- major field of study
- participation in officially recognized activities and sports
- degrees, honors, and awards received
- hometown
- weight and height of members of athletic teams
- prior college(s) attended
- photograph/image

More specific information regarding FERPA has been listed on the Registrar's Office website.

Student Email

The official means of communication between the university and students is email and that students are responsible for information sent to their email accounts.

Grading System
Grades

The following letter grades are used to specify the level of performance in academic courses and are computed into the grade point averages:

Grade	Definition
A	Excellent
B	Good
C	Satisfactory
D	Poor
F	Failure
WF	Withdrawal After Deadline

Lab Grades

For subjects including class and laboratory work, both portions are considered essential and the grades on each will be   combined at the end of the semester and reported as one. Failure in either class or lab may result in failure of the entire   course.

Other Grades

The following grades may be listed on the transcript. These grades are not used in grade point average calculations.

Grade	Definition
I	Incomplete
	This symbol indicates that a student was doing satisfactory work but, for **non-academic reasons** beyond his or her control was unable to meet the full requirements of the course. An Incomplete grade must be removed before the end of the following term; otherwise, the grade will be changed to an F. If an Incomplete grade is given, the student should not re-register for the course until the Incomplete grade has been satisfied or changed to another permanent grade.
IP	In Progress
	The In Progess grade indicates that credit has not been given in a course that requires a continuation of work beyond the term for which the student signed up for the course. This symbol cannot be substituted for an Incomplete grade.
K	Credit by Exam
	The K grade indicates that a student was given credit for the course via a credit by examination program approved by the institution's faculty (CLEP, AP, etc.).
S	Satisfactory
	The S grade indicates that credit has been given for the completion of degree requirements other than academic course work. The use of this symbol is approved for dissertation and thesis hours, student teaching, clinical practicum, internship, and proficiency requirements in graduate programs.
U	Unsatisfactory
	The U grade indicates unsatisfactory performance in an attempt to complete degree requirements other than academic course work. The use of this symbol is approved for dissertation and thesis hours, student teaching, clinical practicum, internship, and proficiency requirements in graduate programs.
V	Audit
	The Audit grade is assigned when a course has been audited. No credit is given. This grade may not be used at any future date as a basis for receiving course credit.

W	Withdrawal
	A Withdrawal grade is assigned when a student officially withdraws from a course before the midpoint of the term.
WM	Withdrawal for Military Reasons
	This symbol indicates a student was permitted to withdraw under the Board of Regents policy for military service refunds.

Grade Point Average

The grade point average or GPA is calculated by dividing the total quality points earned, by the total number of hours   of credit for which grades have been received. Some courses may be excluded.

At the close of each semester, a term GPA is calculated. An overall or cumulative GPA also exists that includes all coursework taken throughout all terms of attendance at SPSU. Grades from other institutions (excluding coursework completed as a part of cross registration) are not included in a student's cumulative GPA at Southern Polytechnic.

Credit earned at other institutions, credit by examination, credits for which quality points are not assigned, institutional   credit courses, and courses otherwise excluded by institutional policy are not considered when calculating the   cumulative grade point average for graduation purposes.

Grade	Quality Points Assigned
A	Four
B	Three
C	Two
D	One
F	Zero
WF	Zero

Grade Changes

Grades that have been assigned to a student by an instructor may be changed no later than the end of the third consecutive term following the term in which the grade was awarded. The instructor must initiate grade changes. Grades included in this provision are A, B, C, D, S, U, and F.

Grade Appeals

Grade appeals fall into a special category. Grades are assigned by professors based on an evaluation of a student's academic performance. A student who wishes to appeal a grade must present clear evidence that a grade was assigned   by some criteria other than an evaluation of academic performance. Appeals that proceed beyond the

professor who   issued the grade, must be in writing. The SPSU Student Handbook includes procedures for the appeal of grades.

Progress Reports

All faculty members shall make available to each student in their classes each semester, an evaluation of the student's academic progress in the class on or before the mid-date of the term. The evaluation must be in the form of graded/evaluated class assignments, examinations, papers or essays, or projects returned to the students on or before the deadline stated above. Instructors will make every effort to be available during their office hours for discussion of the student's progress in the course prior to the midpoint of the total grading period.

Semester Honors

Dean's List

Undergraduate students who have earned 12 or more hours with a scholastic average of 3.50 or better for the current term and who are not subject to any disciplinary action shall be on the Dean's List, which is published each term by the respective dean of each school.

Dean's Merit List

Undergraduate students who have earned 9 or more hours with a scholastic average of 3.50 or better for the current term and who are not subject to any disciplinary action shall be on the Dean's Merit List, which is published each term by the respective dean of each school.

Academic Standing

Good Standing

An undergraduate student is in good standing when he/she has a cumulative GPA of 2.00 or higher.

Probation

A student whose cumulative GPA falls below 2.00 at the end of the term will be considered for placement on the probation list by the Undergraduate Student Status committee.

A student will remain on the probation list until the terms of probation are satisfied or until the student is moved to the suspension list by virtue of continued unsatisfactory academic progress or returns to good standing.

Students may register for a maximum of 13 hours while on probation.

Suspension

A student who does not satisfy the terms of probation or who does not improve academic progress after having been placed on probation may be suspended at the discretion of the Undergraduate Student Status committee.

Reinstatement

Students who have been suspended may appeal for reinstatement to the Undergraduate Student Status committee. A letter from the student detailing the reasons why the appeal should be considered must be submitted, along with any supporting materials (doctor's notes, support letters from faculty, etc.).

Repeated Courses

Students may repeat courses as many times as they choose. However, for the purposes of calculating the institutional GPA, only the last attempt will be used. Other attempts remain on the transcript, but are not used in calculating the institutional GPA. A course must have the same subject code, course number, and title to be considered the same. Courses that have the same subject code and course number, but have varied topics may be excluded from this policy.

A student may not use the same course more than once in satisfying graduation requirements.

GPAs calculated for financial aid and other purposes may count all attempts.

Credit for Duplicate Courses or Dual Credit

Credit may not be awarded for the same course twice or for courses deemed so similar as to be considered the same. For example if a student completes PHYS 1111 and PHYS 1111L (Trigonometry based Physics I), and then takes PHYS 2211 and PHYS 2211L (Calculus based Physics I), only one course may be counted as hours earned. Only one course may be used for graduation purposes.

Exclusion of Previous Major Courses from the Institutional GPA

Students may request that certain courses taken for a previous major be excluded for graduation GPA and hours purposes. Students should discuss this action with their program advisor first to determine its benefit potential. All courses that were unique to the excluded program will be excluded under this rule.

For example, if a mathematics course is part of the degree requirements for a management degree, and the student requests exclusion, the mathematics course would be excluded along with all management and related courses.

In order to qualify for previous major course exclusion, the student must have officially declared the previous major at some point and submit a completed Petition to the Faculty to Exclude Previous Major Courses form to the Registrar's office.

Academic Renewal

Undergraduate students who have been readmitted or reinstated after a period of absence of five (5) calendar years or longer are eligible for academic renewal, provided they have not attended any post-secondary school during the five years. Academic renewal for the student signals the initiation of a new grade point average to be used for determining academic standing.

This provision allows University System of Georgia degree-seeking students who earlier had experienced academic difficulty to make a fresh start and have one final opportunity to earn an associate or bachelor's degree.

Academic renewal applies to institutional grade point averages only and many financial aid regulations require inclusion of all attempted courses to be included in any award process. Students considering academic renewal should contact Financial Aid regarding its impact on financial aid.

Credit Hour

One credit hour typically corresponds to one hour per week of classroom work for a semester, or to three clock hours or its equivalent of laboratory work per week for a semester. Certain exceptions do exist.

Maximum Credit Hours/Course Load

Students may register for a maximum of 18 hours during fall and spring semesters and 12 hours during the summer. Academic department chairs can authorize up to 21 hours in fall and spring and up to 13 hours in summer. Requests for additional hours beyond what is administratively authorized must be requested as a Petition to the Faculty   and approved by the Undergraduate Student Status committee.

Students who are on academic probation may only register for 13 hours.

Auditing Courses

Auditing a course gives a student the opportunity to attend a class without penalty or risk. The student must declare an   audit status before or during the drop/add period for the term in the Registrar's office. Changes in audit status cannot   be made after drop/add closes.

Courses taken under the audit status carry the same tuition and fees as courses taken in the usual way. Audit courses count at full value in determining the number of credit hours for which the student is enrolled.

The grade of "V" (Visited) is assigned when a course has been audited. No academic credit will be given, and this grade has no impact on the GPA. This grade or course may not be used at any future date as a basis for receiving academic course credit or credit by examination for the same course.

Enrollment Classification

Students are classified at the end of each term based on the number of credit hours earned. These hours include all earned college level credit at Southern Polytechnic, plus any accepted transfer credit.

Classification	Hours Earned
Freshman	0-29
Sophomore	30-59
Junior	60-89
Senior	90 and above

Enrollment Status

Southern Polytechnic uses the following metric to determine the enrollment status of each undergraduate student enrolled. Enrollment verifications generated by the Registrar's office use the definitions below.

Part-Time	Half-Time	¾ Time	Full-Time
Less than 6 Hours	6-8 hours	9-11 hours	12 hours or more

Continuous Enrollment

To remain continuously enrolled, a student must not have an absence of two or more consecutive terms of matriculation at Southern Polytechnic, including summer semester. Continuous enrollment is required in order to continue to use the catalog in effect at the time of admission.

Withdrawal from Classes

A withdrawal is defined as discontinuing participation in a course or courses during a specified time period after the close of drop/add (or registration period) but before the midpoint of the term. Students who withdraw during this time earn a grade of W.

The grade of W does not count in the student's cumulative GPA, but the grade does count in total attempted hours. Numerous grades of W may impact eligibility for financial aid.

Refunds associated with withdrawals are made only in the case where a student withdraws completely from all classes for a term.

Withdrawals After the Midpoint

Students who withdraw from classes after the midpoint of the term will receive grades of WF. In cases of hardship or extenuating circumstances, a Petition to the Faculty to Withdraw after the Deadline may be submitted to request that a grade of W be granted instead.

Military Withdrawal

Servicemembers who are called to active duty or who are deployed during the term may be eligible to withdraw from classes and the institution for military reasons. Official orders must be presented to staff in the Registrar's office.

Transient Authorization

Southern Polytechnic State University students planning to attend another institution for one semester and then return to Southern Polytechnic State University should complete a transient letter authorization form, available from the Registrar's Office.

Cross Registration

Southern Polytechnic participates in the cross registration program established among the member institutions of the Atlanta Regional Consortium for Higher Education (ARCHE). The purpose of cross registration is to provide opportunities for enriched educational programs and experiences by permitting students at any ARCHE institution to take courses at any other member institution. A student may cross-register only for:

1. Courses for which the student has met the prerequisites, and
2. Courses not offered at the home institution for the given term.

Students may not attend Southern Polytechnic and another institution concurrently for transfer purposes except under this cross registration program.

Attendance

There are no formal institutional regulations regarding class attendance. Each classroom or laboratory instructor sets his or her own attendance policy. However, instructors should report the names of students who do not attend to the Registrar's office. Within the first calendar week of classes, or the first laboratory meeting, of the term the instructor will notify the students in writing of the attendance policy for that class. It is the prerogative of the instructor to determine and impose grade penalties for absences. Students are responsible for all course material covered and any

academic consequence of their absences. In some cases, federal and state laws require that attendance be recorded and reported.

Attendance or participation in a class for which a student has not registered and paid is strictly prohibited.

Engagement Status Reporting

Engagement Status Reports (or early warning grades) are reported by instructors early in the term to identify students who are not attending (for federal financial aid reporting regulations) and to identify students who could be in academic trouble. Students must attend class in order to retain financial aid for the term, and students who may be struggling academically should respond to resources offered for assistance.

Student Activity Absence

Students who are absent because of participation in approved university activities such as field trips and athletic events will be permitted to make up the work missed during their absences. The student is responsible for reporting such absences to the instructor and for arranging with the instructor for make up work. This policy is not to be construed as blanket permission to miss classes and any excessive absence may result in failure of the class.

Late Instructor

Should the instructor be late in meeting a class or a laboratory period, students will wait a minimum of fifteen minutes. If during the fifteen-minute waiting period no notification to remain is given, students may leave without penalty.

Disruptive Behavior and Academic Dishonesty

A faculty member reserves the right to remove any student from his or her course if the student's behavior is of a disruptive nature or if there is evidence of academic dishonesty. In instances of disruptive behavior and/or academic dishonesty, the faculty member will discuss the circumstances with the student(s) before taking final action. In the event that the student cannot be reached, he or she will be given the grade of "Incomplete" until such time as he or she can be contacted. The student has the right to appeal the faculty member's decision following the progression below.

1. Department Chair of the faculty member
2. School Dean, as appropriate
3. Vice President for Academic Affairs (if necessary)

If a student is removed from a course under this provision, a grade of F will result. A grade of F issued under these circumstances shall not be superseded by a voluntary withdrawal, and will be included in the student's cumulative grade point average calculated for graduation purposes.

Catalog and Curriculum Appeals

Matters requiring Petitions to the Faculty include requests for consideration for exceptions to policies published in the catalog or as formal institutional Policies and Procedures. Examples include:

| Extension of the time limit for converting a grade of I
| Exceptions to residency requirements

Completed Petitions should be submitted to the Registrar's office for routing to the appropriate committee.

If the petition is approved, the matter should be resolved. If the petition is denied, and the student feels that he or she has grounds for an appeal, the following steps are followed:

| The student should discuss the petition with the Registrar to determine the basis for refusal, to be informed of the appeals procedure in his or her particular case, and to be informed of any additional information or documentation that may be desirable, helpful, and/or required.

- Upon written request for appeal to the Registrar's Office, all related information is forwarded to the Vice President for Academic Affairs for review. The Vice President may approve or refuse the appeal.
- If the Vice President for Academic Affairs denies the appeal, upon written request to the Vice President for Academic Affairs, the student may appeal to the President. All related information will at that time be forwarded to the President for review.
- The President may approve or deny the appeal. The President is the final level of appeal.

Graduation

Catalog for Graduation Evaluation

Each student is responsible for determining the appropriate catalog to be used for academic advisement and for evaluation of graduation requirements. Catalog selection applies only to the course requirements of that catalog; all other academic procedures and graduation requirements must be satisfied according to regulations in effect at the time of graduation.

A student may elect to be evaluated for graduation from any catalog in effect during the time he or she has been enrolled, provided that enrollment has been continuous. If a student changes majors, he/she will be evaluated for graduation using the catalog in effect at the time of the change, or any catalog in effect during subsequent periods of continuous enrollment.

Students readmitted or reinstated will be evaluated for graduation from the catalog in effect at the time of readmission or reinstatement, or any catalog in effect during subsequent periods of continuous enrollment.

For further information on the selection of an appropriate catalog, contact your major Department Chair or advisor.

General Requirements

An undergraduate student is eligible for graduation when he or she has:

- Completed satisfactorily the required number of hours for the degree
- Passed all required courses for the degree
- Achieved the necessary grade point average (2.00 for undergraduates)
- Paid all required fees, fines, and other financial obligations
- Filed an official "Petition of Admission to Candidacy for a Degree" through the Department Chair to the Registrar's Office
- Passed an examination on U.S. and Georgia History, and the provisions of the Constitutions of the U.S. and the State of Georgia (Credit for U.S. History or American Government satisfies this requirement; undergraduate degree only)
- Satisfied any program related requirements
- Merited the recommendation for the degree by the faculty and the President of the university
- Earned 25% of the major hours required for the degree in residence at SPSU
- Earned in residence at SPSU the last 20 credit hours required for an associate degree 30 credit hours required for a bachelor's degree 45 credit hours required for a bachelor of Architecture degree. Note: Coursework completed as a transient student is not included as resident work.

Graduation Petitions

A student must submit a formal petition for "Admission to Candidacy for a Degree" to the Registrar's Office in accordance with the published deadline. The fee can be paid at the Business office with check or money order or online via Banner.

All fall semester petitions for students not in school summer should be made in the spring semester of that year, and co-op students should petition the term before a work term if the work term immediately precedes the term of anticipated graduation.

Graduation Honors

To graduate with honors, a student must have earned a minimum of 40 hours in residence for the associates degree and a minimum of 60 hours in residence for the bachelor's degree. Honors will be awarded based on the GPAs listed below.

Honor	Minimum Scholastic GPA
Summa Cum Laude	3.90
Magna Cum Laude	3.70
Cum Laude	3.50

Graduating with honors should not be confused with participation in the Honors Program at Southern Polytechnic.

Minor

Minors require 15-18 hours of credit and nine hours at the upper division level (3xxx-4xxx) in a specified minor area. Six hours of the upper division requirement must be completed at Southern Polytechnic. Transfer credit may be used to satisfy the other requirements for the minor.

Residency Requirement (Hours Earned in Residence)

Students who wish to earn a degree from Southern Polytechnic State University must have completed 25% of the major required hours as course work in residence at the institution. "In residence" is defined as courses for which a student has registered at SPSU.

Courses for which the student registers at SPSU including cross-registration are considered to be in residence. Coursework completed as a transient student at another institution, transfer credit, credit by examination (including CLEP, AP, IB, etc.) are not considered to be in residence.

In addition to earning 25% of the major hours required for the degree in residence at SPSU, a student must earn in residence the last:

- 20 credit hours required for an associate degree
- 30 credit hours required for a bachelor's degree
- 45 credit hours required for a bachelor of Architecture degree

Second Bachelor's Degree or a Dual Major

Students who complete requirements for a second bachelor's degree may either declare a dual major or earn two diplomas. Though subtle, the difference is distinct. If a student declares a dual major and completes the degree requirements for both majors, he or she would petition for graduation on a single form and would receive a single diploma with both majors listed.

If a student would rather have a second diploma, the student must apply for graduation using two separate forms and

pay two graduation fees.

To obtain a second bachelor's degree from Southern Polytechnic State University, a student must:

- Complete all required courses for the degree, and
- Earn credit for a total of at least 30 new hours in excess of the requirements for any previous SPSU degrees earned.

Requirements for a dual major are listed in the Curricula sections. However, in general, there are specific courses that must be completed and the above criteria must be met. Currently, only mathematics and physics offer dual majors.

Certificate Programs

Students admitted to a certificate program may apply the courses completed for the certificate toward a degree program if they are accepted to a degree program. Students admitted to a degree program may be awarded a related certificate based on completion of the courses in the certificate program provided they also apply for the certificate.

Students who wish to apply for a certificate should contact their academic department or the Registrar's Office for instructions on how to proceed.

Credit by Examination

Awarded at the Discretion of the Department Chair

Student evaluation by standardized and/or program examinations may be used at the discretion of the Department Chair as a basis for awarding credit for some courses. These evaluations are available only to currently enrolled students. A fee will be charged before the evaluation.

In order to receive credit by examination, the student must check with the appropriate Department Chair about the applicability of credit by examination for the course(s) under consideration. If credit by exam is appropriate, the student must present a completed Request for Credit by Examination form to staff in the Business office and pay the requisite fee. The Business Office will validate the form and forward it to the Department Chair responsible for the course(s) in question.

After the evaluation, the Department Chair will make his or her recommendation for credit to the Registrar's Office. The Registrar will notify the student of the final disposition of the credit.

Credit by exam may not be awarded for a course previously failed or audited at SPSU.

The USG Core Curriculum

The USG Core Curriculum

Core Curriculum

The University System of Georgia has a Common Core designed to make transfer from one system institution to another as smooth as possible with a minimum of credit loss. Learning Outcomes have been established as Goals (Areas) A-F and Goals (Overlays) I-III.

Curriculum Framework for the Core

Learning Goal A1: Communication Outcomes

Students will demonstrate an ability to write and communicate effectively in various modes and media.

Students will demonstrate an ability to analyze and interpret written texts and materials.

Learning Goal A2: Quantitative Outcomes

Students will demonstrate a strong foundation in mathematical concepts, processes and structure.

Learning Goal B: Institutional Options

Students will critically analyze the role in and impact of science and technology on society.

Students will demonstrate an ability to analyze and interpret oral and written arguments and materials.

Learning Goal C: Humanities, Fine Arts and Ethics

Students will evaluate and synthesize information to support ideas and solve problems.
Students will demonstrate an ability to make informed aesthetic judgments about the arts and other forms of cultural expression.

Learning Goal D: Natural Science, Mathematics and Technology

Students will understand and apply basic scientific principles, theories and laws.

Students will demonstrate an ability to effectively apply symbolic representations to model and solve problems.

Learning Goal E: Social Sciences

Students will demonstrate a broad understanding of the history, political system, and culture of the United States.

Students will describe the historical evolution and contemporary impact of political, economic, and social relationships among multiple nations and states across several centuries.

Students will demonstrate a broad theoretical understanding of how humans behave and interact in various situations.

Students will describe and compare how political, social, economic, religious, and historical factors affect various people, cultures, and societies, primarily outside the United States.

Learning Goal F: Courses Related to the Program of Study

The learning outcomes for Area F are appropriate for each program of study.

Learning Goal I: US Perspectives

Students will demonstrate a broad understanding of the history, political system and culture of the United States.

Learning Goal II: Global Perspectives

Students will describe and compare how political, social, economic, religious and historical factors affect various people, cultures and societies, primarily outside of the United States.

Learning Goal III: Critical Thinking

Students will evaluate and synthesize information to support ideas and solve problems.

Core Courses

Listed below are Southern Polytechnic State University core-curriculum courses and the credit hours for those courses.

Learning Goal A1: Communication Outcomes

Both courses are required.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**

Area Total: 6 Credits

Learning Goal A2: Quantitative Outcomes

One course is required. See your academic advisor for information regarding course selection.

| MATH 1111 - College Algebra **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area Total: 3-4 Credits

Learning Goal B: Institutional Options

Both courses are required.

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area Total: 4 Credits

Learning Goal C: Humanities, Fine Arts and Ethics

Two courses are required. Take one course from the group Literature of the World and one course from Art and

Culture of the World.

Literature of the World

Take one course from this group.

| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

Art and Culture of the World

Take one course from this group.

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**
| FREN 2001 - Intermediate French I **3 Credits**
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| FREN 2002 - Intermediate French II **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

Area Total: 6 Credits

Learning Goal D: Natural Science, Mathematics and Technology

A minimum of three courses is required. Take two lab science courses from the Sciences group and one course from the Mathematics group.

Sciences Group

Take any two lab science courses from this group for a total of 8 hours. (Chemistry and Physics courses require the course plus the lab.)

| ASTR 1000K - Introduction to the Universe **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**

| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**

Mathematics Group

Take one course from this group for a total of 3 or 4 hours.

| MATH 1113 - Pre-calculus **4 Credits**
| MATH 2240 - Survey of Calculus **3 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area Total: 11-12 Credits

Learning Goal E: Social Sciences

Take one course from each group below. Four courses are required.

American Perspectives Group

Take one course from this group. The course will satisfy the legislative requirements and US Perspectives overlay requirement.

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

Historical Perspectives Group

Take one course from this group.

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**

| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

Behavioral Science Perspectives Group

Take one course from this group.

| ECON 1101 - Introduction to Economics **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

Global Perspectives Group

Take one course from this group. This course will satisfy the Global Perspectives overlay requirement as well.

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Area Total: 12 Credits

Area F: Courses Related to the Major Program of Study

Eighteen credits are required. This Area is made of lower division courses (numbered below 3000) that are related to the program of study. Courses in this Area are prerequisites to major courses at higher levels. See your academic advisor or your academic department for the required courses in this area.

NOTE: Additional hours from Areas A and D may carry over to Area F or general degree requirements.

Area Total: 18 Credits

Learning Goal I: US Perspectives

One course is required. The course used in the American Perspectives group of Area E may be used for this requirement as well.

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

Learning Goal II: Global Perspectives

One course is required. The course used in the Global Perspectives group of Area E may be used for this requirement as well.

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Learning Goal III: Critical Thinking

One course is required.

| STS 2400 - Science, Technology, and Society **2 Credits**
This course may also be used in Area B.

Core Total: 60 Credits

eCore

eCore — short for electronic core curriculum — allows University System of Georgia (USG) students the opportunity to complete the first two years of their collegiate careers in an online environment. eCore courses are taught entirely online except for the occasional proctored exam. eCore offers courses in a variety of subjects that are designed, developed, taught and supported by faculty and staff from the USG.

eCore has its own calendar that varies slightly from the SPSU academic calendar. Additional information about eCore (including courses offered, course descriptions, cost, textbook information, etc.) is available online at spsu.edu/ecore and ecore.usg.edu. SPSU also has an eCore Equivalency Chart available at spsu.edu/ecore/equivalency_chart.htm.

Courses taught in eCore are listed below.

| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| COMM 1100 - Human Communications **3 Credits**
| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENVS 2202 - Environmental Science (ECORE) **3 Credits**
| ETEC 1101 - Electronic Technology in the Educational Environment **2 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 2111 - United States History to 1877 **3 Credits**
| MATH 1101 - Introduction to Mathematical Modeling **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
| MATH 1401 - Intro to Statistics **3 Credits**
| MATH 1501 - Calculus I **4 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHIL 2010 - Introduction to Philosophy **3 Credits**
| POLS 1101 - American Government **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**

| SOCI 1101 - Introduction to Sociology **3 Credits**
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

Areas of Study by School

Southern Polytechnic State University

School of Architecture and Construction Management

Architecture

The Architecture Program

SPSU is the only public state institution in Georgia to offer a five-year professional degree: the Bachelor of Architecture degree. The curriculum is organized as a 2+3 program. The Design Foundation constitutes the first two years and its curriculum is designed to introduce basic skill sets, fundamentals of design and building technologies. The last three years constitute the Professional program whose curriculum is designed to enhance the students understanding of the relationship between people and the built environment, the role of technology and structures in design, the importance of history and theory to design and introduce the broader challenges of urbanism. Students must pass a portfolio and curriculum review to proceed from the Design Foundation to the Professional Program.

The Architecture Program offers unique educational opportunities for its students including: the Summer Workshop, the Focus Studio: a research based studio with an invited studio critic, and an individually structured thesis project. The Architecture Program also offers students organized travel opportunities within the U.S. and abroad, including a summer program in Dessau, Germany.

Vision and Mission

The mission of the Architecture Department is to expand and extend the University's mission into the realm of Architecture, preparing students for professional practice in the design, planning, development and stewardship of the built environment. The Architecture Program fosters invention, creativity and craft through hands-on exploration that is the foundation of technological innovation. Moreover, knowledge of culture diversity, communication, history and criticism is seen as inseparable from the application of such innovation. This holistic process is "the making of architecture."

The Faculty

Edwin Akins   *Assistant Professor*

Kathryn Bedette	*Associate Professor*
William J. Carpenter	*Professor*
Michael J. Carroll	*Assistant Professor*
C. Richard Cole	*Professor and Dean School of ACM*
Durham Crout	*Associate Professor*
Bronne Dytoc	*Assistant Professor*
Ameen Farooq	*Professor*
Tim Frank	Assistant Professor
Mine Hashas	*Associate Professor*
Pyo-Yoon Hong	*Assistant Professor*
Elizabeth Martin	*Assistant Professor*
Marietta Monaghan	Lecturer
Peter Pittman	*Associate Professor*
Gernot Riether	Assistant Professor
Anthony Rizzuto	*Associate Professor and Department Chair*
Arief Setiawan	Lecturer
Ermal Shpuza	*Associate Professor*
Robert Tango	*Associate Professor*
M. Saleh Uddin	*Professor*
Christopher Welty	*Associate Professor*
Pegah Zamani	*Assistant Professor*

Departmental Staff

Cathy Smith	*Administrative Assistant*
Mary Neely	*School of ACM Advisor*
David Easterwood	*Media and Digital Resources Supervisor*
Dave Peeples	*Architecture Wood Shop, Digital Fabrication Lab, and Building Operations Supervisor*

NAAB Accreditation

In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes three types of degrees: the

Bachelor of Architecture, the Master of Architecture and the Doctor of Architecture. A program may be granted a 6-year, 3-year or 2-year term of accreditation, depending on the extent of its conformance with established educational standards.

Doctor of Architecture and Master of Architecture degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree that, when earned sequentially, constitute an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

The NAAB grants candidacy status to new programs that have developed viable plans for achieving initial accreditation. Candidacy status indicates that a program should be accredited within 6 years of achieving candidacy, if its plan is properly implemented. In order to meet the educational requirement set forth by the National Council of Architectural Registration Boards, an applicant for an NCARB Certificate must hold a professional degree in architecture from a program accredited by the NAAB; the degree must have been awarded not more than two years prior to initial accreditation. However, meeting the educational requirement for the NCARB Certificate may not be equivalent to meeting the education requirement for registration in a specific jurisdiction. Please contact NCARB for more information.

Southern Polytechnic State University, Department of Architecture offers the following NAAB- accredited degree:

    5- year B. Arch (153 undergraduate credits)

Areas of Study

Architecture Minor

Minor in Architecture for non-architecture majors, provides a focused exposure to the varied dimensions of design, critical thinking and application while exercising restraint on time to complete. Students who change their major from Architecture to another major or discipline of their choice can get a Minor in Architecture after fulfilling it's course requirements. Students complete a major in a Program to be awarded with a Minor in Architecture. Minor in Architecture will not be substituted with Certificate in Architectural Studies. All studio and lecture courses must be passed with a minimum grade of "C". All studios should be taken in sequence.

Architecture Minor

| ARCH 1001 - Design Foundation I **4 Credits**
| ARCH 1002 - Design Foundation II **4 Credits**
| ARCH 1241 - Design Communication I **2 Credits**
| ARCH 2003 - Design Foundation III **4 Credits**
| ARCH 2004 - Design Foundation IV **4 Credits**
| ARCH 2242 - Design Communication II **2 Credits**
| ARCH 2311 - Environmental Tech I - Systems Selection and Materials **3 Credits**
| ARCH 2112 - Architecture Culture II - The Renaissance through 1850 **3 Credits**
| ARCH 2211 - Architecture Structures I - Introduction to Structures **3 Credits**

Minor Program Total: 29

Architecture, BARCH

[5 Year Professional Degree]

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| Sciences - Lab Science - Any Lab Science **4 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 American Context , One Course **3 Credits**
| Group 2 World History , One Course **3 Credits**
| Group 3 Behavioral Science , One Course **3 Credits**
| Group 4 Cultures and Societies , One Course **3 Credits**

Area F

| ARCH 1001 - Design Foundation I **4 Credits**
| ARCH 1002 - Design Foundation II **4 Credits**
| ARCH 1241 - Design Communication I **2 Credits**
| ARCH 2003 - Design Foundation III **4 Credits**
| ARCH 2242 - Design Communication II **2 Credits**
One credit from MATH 1113 and one credit from MATH 2253 will be added to Area F.

Requirements

Architecture

| ARCH 1000 - Orientation to Architecture **2 Credits**
| ARCH 2111 - Architecture Culture I: Early Civilizations & Medieval **3 Credits**
| ARCH 2004 - Design Foundation IV **4 Credits**
| ARCH 2112 - Architecture Culture II - The Renaissance through 1850 **3 Credits**
| ARCH 2211 - Architecture Structures I - Introduction to Structures **3 Credits**
| ARCH 2311 - Environmental Tech I - Systems Selection and Materials **3 Credits**
| ARCH 3011 - Architecture Studio V **4 Credits**
| ARCH 3012 - Architecture Studio VI **4 Credits**
| ARCH 3113 - Architecture Culture III - 1850 through 1945 **3 Credits**
| ARCH 3116 - Urban Planning and Design Theory **3 Credits**
| ARCH 3211 - Architecture Structures II: Steel and Wood **4 Credits**
| ARCH 3212 - Architecture Structures III: Concrete and Lateral Loads **3 Credits**
| ARCH 3313 - Environmental Technology II: Human Comfort, Sustainability and HVAC Systems: **3 Credits**
| ARCH 3314 - Environmental Technology III: Natural & Artificial Lighting, Electrical Systems & Vertical Circulation: **3 Credits**
| ARCH 4013 - Architecture Studio VII **4 Credits**
| ARCH 4014 - Architecture Studio VIII **4 Credits**
| ARCH 4114 - Architecture Cultures IV: 1945-Current **3 Credits**
| ARCH 4224 - Professional Practice I - Codes and Technical Documents **3 Credits**
| ARCH 5412 - Professional Practice II - Cost Control **2 Credits**
| ARCH 5413 - Professional Practice III - Practice and Ethics **3 Credits**
| ARCH 5593 - Thesis Prep **2 Credits**
| ARCH 5998F - Focus Studio **4 Credits**
| ARCH 5999R - Thesis Research S/U **1 Credits**
| ARCH 5999T - Thesis Studio **4 Credits**
| Electives **17 Credits**
| ARCH 39X1 - Special Topics **1 to 4 Credits**
| ARCH 49X1 - Directed Study **1 to 4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Degree Program Total: 153

Construction Management

Offering:

The Bachelor of Science in Construction Management
The Masters of Science in Construction Management

Professional Certificate in Project Management
Professional Certificate in Land Development
Professional Certificate in Specialty Construction
Professional Certificate in Facilities Management
Professional Certificate in Highway Project Management
On- Line Professional Certificate in Specialty Construction

Management Construction

Minor in Construction Management

M4+T=Success

To succeed, construction professionals must manage money, materials, manpower, machinery, and time as effectively as possible. At Southern Polytechnic, students master these skills in a degree program that makes the most of their schedules and budgets.

The BS Construction Management degree program was first accredited by the American Council of Construction Education (ACCE) in February 1992. Accreditation was renewed in February 1997, February 2003, and February 2009. We are accredited to February 2016. As Georgia's senior accredited Construction Management degree program, we cover a broad range of topics, offer afternoon and evening courses, and use flexible formats. Hands-on learning and our solid reputation make our graduates market-ready for one of the nation's largest industries and one of the region's highest growth professions. In the Southeast, the drive for growth has led construction firms to branch out into new

market segments by focusing on the education, health care, water, waste, and transportation markets. To compete in this booming industry, aspiring construction professionals increasingly turn to Southern Polytechnic's Bachelor and Masters of Construction Management to develop the business skills needed to complete projects on time and within budget.

What is Construction Management?

Key construction management skills include scheduling, estimating and project management. These skills are utilized during the planning, design and construction of projects from inception to completion and work to control cost, time and quality, based on given drawings and specifications.

Concentrations in Construction Management

General Contracting

Land Development
Specialty (MEP) Construction Facilities Management

Heavy Construction Management

We also offer a minor in Construction Management for students in other majors.

What can I do with a Construction Management Degree?

Construction Management graduates work in various organizations including, but not limited to: general contracting firms, developers, specialty contractors, Fortune 500 companies, banks, highway construction and others.

Typical job titles for Construction Management graduates are:

Construction Manager
Project Engineer
Project Manager
Estimator
Owner/Representative
Office Engineer

Our department's growing reputation outside the U.S. attracts a high proportion of international students, creating a multi-ethnic environment that reflects the increasingly diverse workplace. Drawing on these varied backgrounds, our students learn to look at challenges from many different angles and to use ingenuity in targeting solutions with the greatest value.

Construction Management is a discipline which is designed to instill in future constructors the skills, knowledge and understanding necessary to make the critical decisions which will guide the production and management processes of the largest industry in the United States.

In CM Major the traditional areas of business, engineering, and architecture are combined with specialized courses in construction. Completion of this curriculum prepares the Construction Manager to work with other project team members in managing the construction process.

Graduates in this field will help solve the complex technical and managerial problems in the building process, and can look forward to challenging careers which provide a full range of outlets for their creative efforts.

The subjects are taught so as to develop skills as well as instill knowledge. The intent is to create a professional who works well in team situations. The course work frequently uses cases or projects to simulate the working environment. A constant effort is made to help the student develop an analytical, practical, and realistic approach to problem solving and decision-making.

Our accredited Construction program provides an opportunity for students to choose one or more of following four concentrations:

- **General** - focuses on project management and the construction process from the general contractor perspective
- **Heavy Construction Management** - focuses on horizontal construction including pavements, roads, bridges,utilities, stormwater systems, and similar construction projects. The concentration prepares a professional to lead Project Management including estimating and scheduling aspects of a horizontal construction project
- **Specialty** - focuses on the mechanical and electrical managerial aspects of construction
- **Land Development** - focuses on the entrepreneurial and economic aspects of construction from the owner or developer perspective

| **Facilities Management** - focuses on the repair, maintenance, refurbishment and upgrade of existing facilities Upon graduation most students pursue careers with construction firms.

Typical entry-level positions include:

> Project engineer
> Safety engineer
> Assistant superintendent
> Assistant project manager
> Scheduling engineer
> Assistant cost engineer
> Quality control engineer
> Assistant estimator

Opportunities are not limited to these areas, however, as many graduates start their careers with equipment or material suppliers, development firms, specialty contractors, lenders, or owners.

The demand for constructors in Georgia, and particularly in the Atlanta region, is so great that employers have been forced to recruit out-of-state to hire graduates with construction management degrees. As a result, the program at Southern Polytechnic State University was established through the seed money of the members and associate members of the Georgia Branch of the Associated General Contractors of America, Inc. Southern Polytechnic State University is a member of Associated Schools of Construction (ASC). The fundamental objective of the ASC is to establish, advance, and sustain construction education as a unique and progressive academic discipline. The establishment and nurturing of the construction program is evidence of Southern Polytechnic State University's commitment to this objective.

The Faculty

Our faculty members belong to numerous professional organizations including the ABC, AGC, AIC, ASCE, ASEE, ASHRAE, CMAA, GUCA, MECA, NAHB, and NECA. Many students belong to student chapters of the above organizations, enabling virtually all graduates to find employment prior to graduation. The estimated average starting salary for B.S. Construction graduates is $50,300, based on a 2008 annual salary survey. For more information on our courses and industry affiliations, visit www.spsu.edu/cnst. Our Award-winning faculty includes Dr. John Mench (retired), recipient of 2007 Georgia Society of Professional Engineer of the Year Award in Education, and SPSU Outstanding Faculty of the Year Award of the year 2010; Dr. Khalid Siddiqi, recipient of the Outstanding Educator Award (2005) from Associated Schools of Construction (ASC) and SPSU Teacher of the Year 2003 Award; and Dr. Pavan Meadati received 2013 Excellence in Teaching Award from Associated Schools of Construction (ASC).

Hussein Abaza, *Associate Professor*
Zuhair El-Itr, *Professor*
Maureen Weidner, *Lecturer*
Shariar Makarechi, *Assistant Professor*
Pavan Meadati, *Associate Professor*
Brandi Williams, *Assistant Professor*
Charner Rogers, *Assistant Professor*
Khalid M. Siddiqi, *Professor and Department Chair*
Parminder Juneja, Assistant Professor
Al Eckert, Lecturer

Construction Management Certificate Programs

SPSU's Construction Management Department offers five Certificate programs namely:

| Project Management Certificate
| Highway Project Management Certificate
| Land Development Certificate
| Specialty Construction Certificate (also available online)
| Facilities Management Certificate

Certificate programs are offered to provide training and education for students and working professionals in various areas of construction. Students can usually complete requirements in 3 to 4 Semesters. The credits earned through the certificate programs may also be applied toward completing a B. S. degree in Construction.

Admission Requirements:

Applicants must meet all SPSU admissions requirements for undergraduate admission.

Areas of Study

Construction Management Minor

Requirements

To be eligible for a minor in Construction Management, the student must complete the following courses:

| CM 2000 - Construction Graphics **3 Credits** *
| CM 3000 - Computer Applications in Construction **3 Credits** *
| CM 3110 - Residential and Light Construction Methods **3 Credits**
| CM 3410 - Construction Quantity Surveying **3 Credits**
| CM 4510 - Construction Scheduling **3 Credits**

Total Hours: 15 Credits

NOTE: Students who have the prerequisite knowledge in these courses may substitute courses of greater or equal credit from the following list with the consent of the CM Department Chair:

| CM 3411 - Construction Estimating Software **2 Credits**
| CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
| CM 4511 - Construction Scheduling Software **2 Credits**
| CM 4560 - Construction Project Management **3 Credits**

Construction Management, BS

Area A:

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B:

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C:

| Group 1 - Take One Course from the Literature Group **3 Credits**
| Group 2 - Take One Course from the Art and Culture Group **3 Credits**

Area D: Laboratory Sciences

| Group 1 - Any Two Lab Sciences (PHYS 1111, PHYS 1111L required and CHEM 1211, CHEM 1211L recommended) *See Note 2 for PHYS 1111, PHYS 1111L **8 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits** recommended for Area D– **See Note 2**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| Group 2 - MATH 2240 - Survey of Calculus **3 Credits**

Area E: Social Sciences

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits** recommended for Area E– **See Note 1**
| Group 4 - Cultures and Societies **3 Credits**

Area F:

| MGNT 3145 - Legal Environment of Business **3 Credits**
| CET 2200 - Introduction to Structures **4 Credits**
| SURV 2200 - Construction Measurements **4 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MGNT 3205 - Management Information Systems **3 Credits**

Major-CM Courses

| ECON 1101 - Introduction to Economics **3 Credits** (if needed)
| PHYS 1111 - Introductory Physics I **3 Credits** (If Needed)
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits** (If Needed)
| ACCT 2101 - Principles of Financial Accounting **3 Credits**

- CM 1000 - Orientation to Construction and Development **2 Credits**
- CM 2000 - Construction Graphics **3 Credits**
- CM 3000 - Computer Applications in Construction **3 Credits**
- CM 3040 - Building Information Modeling Applications I **3 Credits**
- CM 3110 - Residential and Light Construction Methods **3 Credits**
- CM 3180 - Mechanical and Electrical Building Systems **4 Credits**
- CM 3410 - Construction Quantity Surveying **3 Credits**
- CM 3500 - Building Codes **2 Credits**
- CM 4510 - Construction Scheduling **3 Credits**
- CM 4710 - Construction Safety **4 Credits**
- CM 4760 - Construction and Real Estate Property Law **3 Credits**
- CM 4900 - Capstone Project **3 Credits**
- MGNT 3105 - Management and Organizational Behavior **3 Credits**
- Concentration required (see choices below) **21-22 Credits**

General Concentration

- CM 3210 - Applied Structures **4 Credits**
- CM 3260 - Temporary Structures **3 Credits**
- CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
- CM 3620 - Construction Finance and Feasibility **4 Credits**
- CM 4560 - Construction Project Management **3 Credits**
- CM 4800 - Construction Management Technique **3 Credits**

Land Development Concentration

- CM 3310 - Introduction to Development **3 Credits**
- CM 3430 - Construction Estimating for Development **3 Credits**
- CM 3620 - Construction Finance and Feasibility **4 Credits**
- CM 3710 - Site Planning **4 Credits**
- CM 4570 - Development Process I **4 Credits**
- CM 4620 - Development Process II **3 Credits**

Specialty Concentration

- CM 3280 - Building Mechanical and Electrical Codes and Loads **4 Credits**
- CM 3480 - Mechanical and Electrical Systems Estimating **4 Credits**
- CM 4560 - Construction Project Management **3 Credits**
- CM 3190 - Sustainable Construction **3 Credits**
- CM 4480 - Design/Build MEP Systems **4 Credits**

Facilities Management

| CM 3190 - Sustainable Construction **3 Credits**
| CM 3290 - Facilities Management **4 Credits**
| CM 3620 - Construction Finance and Feasibility **4 Credits**
| CM 4190 - Sustainable Operation & Maintenance **4 Credits**
| CM 4560 - Construction Project Management **3 Credits**
| CM 4620 - Development Process II **3 Credits**

Heavy Construction Management Concentration

| CM 3160 - Construction Equipment **3 Credits**
| CM 3170 - Heavy Construction Practices **4 Credits**
| CM 3230 - Heavy Materials & Temporary Structures **4 Credits**
| CM 3440 - Heavy Estimating **4 Credits**
| CM 4230 - Soils & Earthmoving **4 Credits**
| CM 4560 - Construction Project Management **3 Credits**

Degree Program Total: 128

Note:

Note 1*: If ECON 1101 was taken to satisfy Area E, Group 3, a 3-hour Construction Elective can be substituted.*

Note 2*: If PHYS 1111 , PHYS 1111L were taken to satisfy Area D, Lab Science, a 4-hour Construction Elective can be substituted.*

Land Development Certificate

The Certificate in Land Development provides training and education to members of the real estate and land development field in construction and land development principles and practices. Students can complete the requirements in 3-4 semesters. These courses may also be applied toward completing a B.S. degree in Construction Management upon acceptance to SPSU.

Prerequisites must be met prior to enrollment in certain certificate courses.

Required Courses:

| CM 3310 - Introduction to Development **3 Credits**
| CM 3710 - Site Planning **4 Credits**
| CM 4570 - Development Process I **4 Credits**
| CM 3110 - Residential and Light Construction Methods **3 Credits**

Subtotal: 14 Credits

*may substitute courses from electives list if competency can be demonstrated

Elective Courses:

| CM 2000 - Construction Graphics **3 Credits**
| CM 3410 - Construction Quantity Surveying **3 Credits**
| CM 3430 - Construction Estimating for Development **3 Credits**
| CM 4510 - Construction Scheduling **3 Credits**
| CM 4620 - Development Process II **3 Credits**

Subtotal: 7 Credits (minimum)

Certificate Program Total: 21 Credits (minimum)

Project Management Construction Certificate

The professional Certificate in Project management is designed for working professionals who wish to further their knowledge in Construction Project Management. The certificate will also be useful for those individuals who wish to make a career change to the construction industry, or to those people who find themselves in the construction industry without first gaining a background in construction.

Prerequisites must be met prior to enrollment in certain certificate courses.

Required Courses:

| CM 2000 - Construction Graphics **3 Credits**
| CM 3000 - Computer Applications in Construction **3 Credits**

| CM 3110 - Residential and Light Construction Methods **3 Credits** OR
| CM 3160 - Construction Equipment **3 Credits**

| CM 4560 - Construction Project Management **3 Credits**
| CM 3620 - Construction Finance and Feasibility **4 Credits**

Subtotal: 11-12 Credits
Elective Courses:

| CM 3410 - Construction Quantity Surveying **3 Credits**
| CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
| CM 4510 - Construction Scheduling **3 Credits**
| CM 4760 - Construction and Real Estate Property Law **3 Credits**

Subtotal: 9+ Credits

Certificate Program Total: 20+ Credits

School of Arts and Sciences

Biology and Chemistry

Biology

Offering:

Bachelor of Science in Biology

Visit www.spsu.edu/biology for more information.

The Bachelor of Science (BS) degree provides students a program of study in modern biology with optional tracks in biochemistry and molecular biology, pre-health professional studies, general biology, bioinformatics, and biotechnology.

The fast-moving discipline of biology is generating exciting careers, from medical scientist to genetic engineer and patent prosecution attorney. At Southern Polytechnic, you will learn in small classes and work in laboratories equipped with the newest scientific instrumentation. Faculty teach both labs and classes, including core courses offered both day and night. Bring a curious mind to our programs, and we'll help you develop a broad technical base for unlimited professional opportunities.

Balancing traditional studies with the growing emphasis on biotechnology, the Biology program gives students the knowledge and experience they need for advanced degrees or immediate employment. The general track offers the most diverse course work, and three others focus on particular interests: molecular/biochemistry, pre-professional, and bioinformatics. Students can also pursue independent research in our labs, which feature high-speed centrifuges, thermal cyclers, environmental chambers, and other modern research tools.

Today the pace of technological change doubles every 18 months, and key developments are occurring in molecular science. Collaborating on experiments will prepare you for team-based work, whether your dream job is safeguarding public health, analysis of DNA samples, or creating gene therapies for "incurable" diseases. Many of our students plan on medical school, but our program prepares you for many careers that blend science with business, law, pharmacy, and other professions.

Biology students in all tracks are strongly encouraged to avail themselves of SPSU's cooperative education or

internship linkages with industry as an integral part of their educational experience.

Faculty:

Mark Sugalski, *Ph.D., Chair of the Department of Biology and Chemistry*

Thomas Nelson, *Ph.D., Professor and Dean of Arts and Sciences*

Marcia Hesser, *Ph.D., Biology Lecturer*

Adrienne King, *Ph.D., Assistant Professor*

Jennifer Louten, *Ph.D., Assistant Professor*

Peter Sakaris, *Ph.D., Assistant Professor*

Rajnish Singh, *Ph.D.,* Associate *Professor*

Tseng Tsai-Tien, *Ph.D., Assistant Professor*

Matthew Weand, *Ph.D., Assistant Professor*

Nicole Smith, *Biology Lab Coordinator*

Biology career options:

Agribusiness expert
Conservation manager
Dentist
Dietitian
Drug design and developer
Environmental lawyer
High school teacher or university professor
Laboratory technician
Pharmacist
Physician
Physical or occupational therapist
Research molecular biologist or biochemist
Scientific editor
Veterinarian

Chemistry Offering:

Bachelor of Science in Chemistry
Bachelor of Science in Chemistry with Teacher Education Track leading to grades 6-12 certification

Visit www.spsu.edu/chem for more information.

The Chemistry Program at Southern Polytechnic State University is part of the Department of Biology and Chemistry in the School of Arts and Sciences. The Bachelor of Science degree in Chemistry was approved by the Board of Regents in August, 2007. A minor in Chemistry is also offered. The Chemistry major offers three concentrations- General Chemistry and Materials Science, and a Teacher Education Track leading to certification.

The Chemistry major is designed to prepare students for careers in the traditional chemical sciences, as well as in biotechnology, environmental chemistry, and materials chemistry. The concentration of job growth in the

pharmaceutical, medical, biotechnological, scientific and technical arenas has fueled the growth of opportunities within the chemistry industry as related to the development of new drugs and products used to combat illness and disease. Chemists are also needed to monitor and measure air and water pollutants to ensure compliance with local, state, and federal environmental regulations. Graduates trained in nanotechnology, the next frontier in material science, will likely participate in the development and manufacture of new materials that will help to solve new problems.

The Chemistry major with the Teacher Education track will provide the same strong chemistry program, plus the course work and experiences that will prepare students for a successful career in teaching high school chemistry. See Teacher Education.

The Faculty:

Jack Duff, *Senior Lecturer*

Daniel Ferreira, *Ph.D, Assistant Professor*

Lu Kang, *Ph.D., Assistant Professor*

Rajnish Singh, *Ph.D., Associate Professor*

Zvi Szafran, *Ph.D., Professor and Vice President for Academic Affairs*

Wei Zhou, *Ph.D.,* Associate *Professor*

Environmental Sciences

Offering:

Bachelor of Science in Environmental Science

Students completing this program will be prepared for positions in federal and state agencies, industry, or graduate and advanced professional programs in the environmental sciences. Graduates will be education in assessment and regulation of environmental pollution, sustainable management and conservation of wildlife and natural resources, and conducting environmental research. SPSU's BS degree program in Environmental Science will produce graduates that can address growing environmental needs and challenges within metro Atlanta and throughout the state of Georgia.

Faculty:

Mark Sugalski, *Ph.D., Chair of the Department of Biology and Chemistry*

Thomas Nelson, *Ph.D., Professor and Dean of Arts and Sciences*

Daniel Ferreira, *Ph.D, Assistant Professor*

Adrienne King, *Ph.D., Assistant Professor*

Peter Sakaris, *Ph.D., Assistant Professor*

Matthew Weand, *Ph.D., Assistant Professor*

Teacher Education

Offering:

Bachelor of Science in Biology with teacher education track leading to grades 6-12 certification
Bachelor of Science in Chemistry with teacher education track leading to grades 6-12 certification
Bachelor of Science in Physics with teacher education track leading to grades 6-12 certification
Bachelor of Arts in Mathematics with teacher education track leading to grades 6-12 certification

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Teacher certification will be provided by the Georgia Professional Standards Commission (PSC) after SPSU is approved by the PSC and accredited by the National Council for Accreditation of Teacher Education (NCATE). Approval and accreditation will follow PSC/NCATE campus visit in the winter of 2013. Therefore, SPSU's first teacher candidates will graduate in the Spring 2013. Questions should be directed to the Teacher Education Office in J-353.

Our professors are professionals with high school teaching and leadership experience, academic credentials, and experiences in teacher preparation.

The Faculty:

Alan Gabrielli, *Professor Emeritus, SPSUTeach Co-Director*
Cassandra Mathious, Master Teacher
George W. Stickel, *Associate Professor, Teacher Education Director and SPSUTeach Co-Director*
Jan Nourollahi, Master Teacher

Students pursuing this degree must complete:

The Core Curriculum	60
Required Courses	30
Education Courses	33

Areas of Study

Biology Minor

To be eligible for a minor in Biology, the student must complete:

- A minimum of 18 semester hours of BIOL or BIOC coursework
- 9 of the 18 hours in BIOL/BIOC must be above the 2199 level
- Students who use BIOL 2107/BIOL 2107L and/or BIOL 2108/BIOL 2108L to satisfy Core D requirements cannot use these courses to satisfy requirements of the minor

Biology, B.S.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
  Take any 2 of the courses below (with labs) for a total of 8 hours:
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**

Note:

PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L may be taken instead of PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L

Area E

| Group 1 - American Context **3 Credits**

| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

Take any 4 courses (with labs) from the list below for a total of 18 hours*. (*Includes 2 carry-over credits from Area A and Area D.) Courses used as Area D requirements may not be selected.

| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**

Note:

PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L may be taken instead of PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L

Common Biology Major Requirements

A grade of "C" or better must be earned in all courses (excluding core areas A-E and free electives).

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| BIOL 3000K - Genetics **4 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| A Biology major must complete one program track (see below).

General Biology Track Requirements

| BIOL 3300K - Ecology **4 Credits**
| BIOL 4480 - Evolution **3 Credits**
| At least 5 additional BIOL or BIOC courses above 2199 (excluding track requirements), with **at least one course** from each of the **Cellular Form and Function group** and the **Organismal Form and Function group 17-21 Credits**
| Free Electives **9-13 Credits**

Cellular Form and Function group

| BIOL 3100K - Microbiology **4 Credits**
| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4410 - Immunology **3 Credits**
| BIOL 4470 - Plant Physiology **3 Credits**

Organismal Form and Function group

| BIOL 3700K - Ichthyology **4 Credits**
| BIOL 4100K - Entomology **4 Credits**
| BIOL 4110 - Parasitology **3 Credits**
| BIOL 4200K - Zoology **4 Credits**
| BIOL 4400K - Human Physiology **4 Credits**
| BIOL 4440K - Botany **4 Credits**
| BIOL 4460K - Human Anatomy **4 Credits**

Biochemistry & Molecular Biology Track Requirements

| BIOL 3200K - Applied Molecular Biology Laboratory **4 Credits**
| BIOL 3310K - Molecular Biology **4 Credits**
| BIOC 3112K - Biochemistry II **4 Credits**
| At Least 4 additional BIOL or BIOC courses above 2199 (excluding track requirements) **12-16 Credits**
| Free Electives 9 – **13 Credits**

Bioinformatics Track Requirements

| BIOL 2500K - Bioinformatics I - Tools & Databases **4 Credits**
| BIOL 3310K - Molecular Biology **4 Credits**
| BIOL 4510K - Bioinformatics II **4 Credits**
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 3153 - Database Systems **3 Credits**
| At least 3 additional BIOL or BIOC courses above 2199 (excluding track requirements) **9 – 12 Credits**
| Free Electives **2 – 5 Credits**

Biotechnology Track Requirements

| BIOL 3100K - Microbiology **4 Credits**
| BIOL 3310K - Molecular Biology **4 Credits**
| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4350K - Cell and Tissue Culture **4 Credits**
| BIOL 4600K - Biotechnology **4 Credits**
| At Least 3 additional BIOL or BIOC courses above 2199 (excluding track requirements) **9-11 Credits**
| Free electives **6-8 Credits**

Pre-Health Professional Track Requirements

| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4400K - Human Physiology **4 Credits**
| BIOL 4460K - Human Anatomy **4 Credits**
| At Least 4 additional BIOL or BIOC Courses Above 2199 (excluding track requirements) **12-16 Credits**
| Free Electives **9-13 Credits**

Degree Program Total: 120

Biology, Education Track, BS

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**

| Group 2 - Art and Culture of the World **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**
| BIOL 3000K - Genetics **4 Credits**
| BIOL 3300K - Ecology **4 Credits**
| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4200K - Zoology **4 Credits**
| BIOL 4440K - Botany **4 Credits**
| BIOL 4480 - Evolution **3 Credits**
Elective Credits **8 Credits** (Choose 2 from following)
| BIOL 3310K - Molecular Biology
| BIOL 4400K - Human Physiology
| BIOL 4460K - Human Anatomy
| BIOL 4600K - Biotechnology

Education Courses

| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 126

Chemistry Minor

Requirements

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| 10 additional hours of upper division (3000 level or higher) Chemistry or Biochemistry courses.

Total Hours: 26

Chemistry, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits**
Take any 2 of the courses below (with labs):
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

Take any 4 courses (with labs) from the list below. Courses used as Area D requirements may not be selected.

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| NOTE: 1 credit each from Area A and Area D Math will be used to add to the 18 hours required in Area F.

Chemistry Major Requirements

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| CHEM 2601 - Chemical Literature **2 Credits**
| CHEM 3100K - Analytical Chemistry **5 Credits**
| CHEM 3300K - Instrumental Analysis **4 Credits**
| CHEM 4411 - Inorganic Chemistry **3 Credits**
| CHEM 4111K - Physical Chemistry I **4 Credits**
| CHEM 4112 - Physical Chemistry II **3 Credits**
| CHEM 4112L - Physical Chemistry II Lab **1 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| A Chemistry major must complete one program track (see below).
| 1 Hour from Area A Math and Area D Math will be added to the total hours in the major.

General Chemistry Track

| Four additional BIOC, CHEM, MATH, or Science electives at the 3000 level or higher. **12-16 Credits**
| Free electives **11-15 Credits**

Materials Science Track

| MSCI 3101K - Introduction to Material Science **4 Credits**
| CHEM 4412 - Main Group Inorganic Chemistry **3 Credits**
| CHEM 4415 - Solid State Chemistry **3 Credits**
| Upper-level CHEM elective **3-4 Credits**
| Free electives **13-14 Credits**

Total Hours: 120 Hours

Chemistry, Education Track, BS

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of

students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits***
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**

| CHEM 3100K - Analytical Chemistry **5 Credits**
| CHEM 3300K - Instrumental Analysis **4 Credits**
| CHEM 4111K - Physical Chemistry I **4 Credits**
| CHEM 4112 - Physical Chemistry II **3 Credits**
| CHEM 4112L - Physical Chemistry II Lab **1 Credits**
| CHEM 4411 - Inorganic Chemistry **3 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**

Education Courses

| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 120

*NOTE

The following Physics sequences are recommentend to satisfy AREA D

PHYS 1111 /PHYS 1111L & PHYS 1112 /PHYS 1112L OR

PHYS 1211/PHYS 2211L & PHYS 2212 /PHYS 2212L

Environmental Science Minor

Requirements

| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| BIOL 3300K - Ecology **4 Credits**

Electives - Choose 7+ credits from the list below

| BIOL 3600 - Freshwater Biology **3 Credits**
| BIOL 3650 - Marine Biology **3 Credits**

| BIOL 4400K - Human Physiology **4 Credits**
| CHEM 3150K - Environmental Chemistry **4 Credits**
| ENGL 3015 - Environmental Writing **3 Credits**
| ENVS 3100K - Soil & Water Science **4 Credits**
| ENVS 3350 - Oceanography **3 Credits**
| ENVS 3000 - Environmental Science Seminar **1 Credits**
| GEOG 4101 - Geographic Information Systems **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| ENVS 4300 - Environmental Ethics **3 Credits**

Minor Program Total: 15-18 Credits

Environmental Science, B.S.

Core Requirements

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| STS 2400 - Science, Technology, and Society **2 Credits**
| COMM 2400 - Public Speaking **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

Environmental Science majors MUST take the courses listed below to satisfy prerequisites for the major courses.

| MATH 2253 - Calculus I **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**

| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
One credit from MATH 1113 & MATH 2253 will be added to Area F to complete the 18 hour requirement.

Environmental Science Major Requirements

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| BIOL 3000K - Genetics **4 Credits**
| BIOL 3300K - Ecology **4 Credits**
| BIOL 4200K - Zoology OR BIOL 4440K - Botany **4 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| CHEM 3150K - Environmental Chemistry **4 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| ENVS 4300 - Environmental Ethics **3 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| ENVS 3100K - Soil & Water Science **4 Credits**
| ENVS 4500 - Environmental Science Internship **3 Credits**
| Environmental Science Electives (see approved courses below) **12 Credits**

Environmental Science Electives (12 semester hours from the list below)

| BIOL 3100K - Microbiology **4 Credits**
| BIOL 3250K - Ecosystem Ecology **4 Credits**

| BIOL 3500 - Biostatistics **3 Credits**
| BIOL 3600 - Freshwater Biology **3 Credits**
| BIOL 3700K - Ichthyology **4 Credits**
| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CET 3310 - Water Treatment and Distribution **2 Credits**
| CET 3320 - Wastewater Collection and Treatment **2 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4330 - Solid Waste Management **3 Credits**
| CHEM 3100K - Analytical Chemistry **5 Credits**
| CHEM 3200K - Atmospheric Chemistry **3 Credits**
| CHEM 3300K - Instrumental Analysis **4 Credits**
| SURV 2110 - Introduction to Mapping **4 Credits**
| ENVS 3150K - Environmental Toxicology **4 Credits**
| ENVS 3250 - Natural Resource Management **3 Credits**
| ENVS 3450 - Conservation Biology **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**

Degree Program Total: 121

Digital Writing and Media Arts
Writing and New Media

Offering:

The Bachelor of Arts in Writing and New Media

Our Bachelor of Arts in Writing and New Media degree is not your typical B.A. in Writing. Our program emphasizes the role and place of text and image within a world increasingly dependent upon writing and new media proficiency. Our project-driven courses challenge students to implement real-world applications in nearly every class. Specialized course-work and individual attention allow graduates to begin work immediately, satisfying the demand for professionals who can communicate using both text and image.

As part of the Bachelor of Arts in Writing and New Media, students take a number of courses across three content areas: textual production, visual production, and media and cultural studies. Our textual production area focuses on written communication through course offerings such as new media writing, journalism, and creative writing. Our visual production area offers students a chance to engage with visual media in courses such as film and video production, applied graphics, and digital photography. Finally, our media and cultural studies area combines hands-on production with a study of media in courses such as social media integration, publishing for new media, and media, culture, and society. In addition, students study classical rhetoric, develop high-level computer skills, and produce a portfolio that demonstrates their writing and new media proficiency to potential employers in fields such as new media publishing, freelance writing, content creation, mass communication, and marketing.

The Faculty:

Kami Anderson, *Assistant Professor*
Jeanne Bohannon, Assistant Professor
Terry Carter, *Professor*
Donna Colebeck, *Lecturer*
Laura Beth Daws, *Assistant Professor*

Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Kelsey Harr-Lagin, *Instructor*
Keith B. Hopper, *Professor*
Monique Logan, *Instructor*
Iraj Omidvar, *Associate Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Associate Professor* and Department Chair
Cassie Race, *Instructor*
Nancy L. Reichert, *Associate Professor*
Cheryl Shinall, *Lecturer*
Pete Rorabaugh, *Assistant Professor*
Erin Sledd, *Instructor*
Herbert J. Smith, *Professor*
Debora Stefani, *Instructor*
Charlotte Stephenson, *Instructor*
Beth Stutzmann, *Senior Lecturer*
Katherine Taylor, *Instructor*
Uttam Kokil, Assistant Professor
Michael Lahey, Assistant Professor
Robin Mathis, *Lecturer*

The Program:

The Bachelor of Arts in Writing and New Media is designed to prepare students for a variety of communication careers.

Possible positions include:

Multimedia Developer and Designer
Video Production
Professional writer
Information designer
Multimedia specialist
Website designer and content developer

The program also can serve as a pre-professional background for students who plan to attend graduate school.

Students pursuing the degree must complete:

The Core Curriculum
Required upper-division courses in writing and
new media
Upper level area distribution in Textual Production, Visual Production, and
Media and Cultural Studies
Free electives

Students must make a grade of at least a C in all upper level classes.

New Media Arts

Offering:

The Bachelor of Arts in New Media Arts

The Bachelor of Arts in New Media Arts provides students with an opportunity to develop the technical and artistic skills needed to serve as practitioners in the fields of multimedia development and design, web design, and video production. As a degree that straddles two worlds--the fine and the applied arts--the degree program encourages both creativity and practical application. Students will have an opportunity to develop a strong foundation in the traditional fine arts and learn to translate these skills to new media contexts. They will also learn to approach the technical aspects of new media applications from the sensibilities of an artist as well as a technician.

With its balance between the artistic and technical aspects of new media production, the new media arts degree program should prepare students to meet a growing marketplace need for multimedia artists and to rise to the top of the pack of individuals competing for these positions. While providing an undergraduate degree option for students interested in entering careers in the fine and applied arts, it would also provide appropriate preparation for graduate study.

The Faculty:

Kami Anderson, *Assistant Professor*
Jeanne Bohannon, Assistant Professor
Terry Carter, *Professor*
Donna Colebeck, *Lecturer*
Laura Beth Daws, *Assistant Professor*
Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Kelsey Harr-Lagin, *Instructor*
Keith B. Hopper, *Professor*
Monique Logan, *Instructor*
Iraj Omidvar, *Associate Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Associate Professor* and Department Chair
Cassie Race, *Instructor*
Nancy L. Reichert, *Associate Professor*
Pete Rorabaugh, *Assistant Professor*
Cheryl Shinall, *Lecturer*
Erin Sledd, *Instructor*
Herbert J. Smith, *Professor*
Debora Stefani, *Instructor*
Charlotte Stephenson, *Instructor*
Beth Stutzmann, *Senior Lecturer*
Katherine Taylor, *Instructor*
Uttam Kokil, Assistant Professor
Michael Lahey, Assistant Professor
Robin Mathis, *Lecturer*

The Program:

The Bachelor of Arts in New Media Arts is designed to prepare students for a variety of multimedia artist careers.

Possible positions include:

Web Design
Video Production
Multimedia Development and Design
Multimedia Artist

The program also can serve as preparation for students who plan to attend graduate school.

Students pursuing the degree must complete:

> The Core Curriculum, Areas A-E
> Required core courses in the major, Area F
> Basic required courses in the major
> Additional required courses in the major
> Free electives

Students must make a grade of at least a C in all upper level classes.

Technical Communication

Offering:

> Bachelor of Science in Technical Communication

Southern Polytechnic's degree in technical communication ranks among the best in the nation. Our faculty in Technical Communication includes two winners of the coveted Jay R. Gould award for outstanding teaching from the Society for Technical Communication. Because we are housed in a small engineering tech school, we can offer a much wider range of courses than similar programs at more traditional schools, and we have the up-to-date hardware and software to support them. You will get a solid grounding in rhetoric as well as hands-on experience with new media tools and technologies.

With our TCOM degree, you will learn much more than just how to use words effectively—you will have opportunities to learn document design, graphics, multimedia, web design, and video production as well as science and environmental writing, proposal writing, and medical communication.

Students in other majors can minor in technical communication through a range of campus-based and online course offerings. For students interested in distance learning options, Southern Polytechnic also offers a 15-credit undergraduate certificate in technical communication delivered entirely online.

Many TCOM courses are taught using a combination of on-site and online sessions that students with jobs especially appreciate. We make sure we offer enough late-afternoon and evening courses so that working students can make steady progress toward their degree.

The Faculty:

Kami Anderson, *Assistant Professor*
Jeanne Bohannon, Assistant Professor
Terry Carter, *Professor*
Donna Colebeck, *Lecturer*
Laura Beth Daws, *Assistant Professor*
Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Kelsey Harr-Lagin, *Instructor*
Keith B. Hopper, *Professor*
Monique Logan, *Instructor*
Iraj Omidvar, *Associate Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Associate Professor* and Department Chair
Cassie Race, *Instructor*
Nancy L. Reichert, *Associate Professor*
Cheryl Shinall, *Lecturer*
Pete Rorabaugh, *Assistant Professor*
Erin Sledd, *Instructor*
Herbert J. Smith, *Professor*

Debora Stefani, *Instructor*
Charlotte Stephenson, *Instructor*
Beth Stutzmann, *Senior Lecturer*
Katherine Taylor, *Instructor*
Uttam Kokil, Assistant Professor
Michael Lahey, Assistant Professor
Robin Mathis, *Lecturer*

The Program:

The Bachelor's program in Technical Communication is designed to prepare students for a variety of communication careers.

Technical Communication - Bachelor of Science Possible positions include:

Technical writer
Documentation specialist
Technical editor
Information designer
Multimedia specialist
Proposal writer
Graphics specialist
Instructional designer or training specialist
Website designer and content developer

The program also can serve as a pre-professional background for students who plan to attend graduate school.

Students pursuing the degree must complete:

The Core Curriculum
Required upper-division courses in technical communication
A concentration in one area of technical communication
Additional elective courses in the major
Free electives

Students must make a grade of at least a C in all upper level classes.

Areas of Study

English and Professional Communication, BA

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature of the World **3 Credits**
| Group 2- Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Science **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
  Or
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Course in Behavioral Science **3 Credits**
| Group 4- Course in Cultures and Societies **3 Credits**

Area F

Required Courses, 12 Credits
| COMM 2170 - Introduction to Media Studies **3 Credits**
| ENGL 2030 - Research in Professional and Critical Writing **3 Credits**
| TCOM 2020 - Introduction to the Professions **3 Credits**
| ENGL 2500 - Language and Meaning **3 Credits**
Choose Two Courses, 6 Credits
| COMM 2000 - Business Communication **3 Credits**
| COMM 2065 - Cross-Cultural Communication **3 Credits**
| COMM 2150 - Ethics and Communication **3 Credits**
| Other coursework, as approved by the Department (6 Credits Max)
| Any Foreign Language, 2001 or higher (6 Credits Max)

Upper Level Required Courses (19 Credits)

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| COMM 3160 - Media Theory and Practice **3 Credits**
| ENGL 3045 - New Media Writing **3 Credits**
| ENGL 3100 - Rhetoric: History, Theory, and Practice **3 Credits**
| ENGL 4110 - Writing in Collaborative Environments **3 Credits**
| ENGL 4800 - Project Portfolio **3 Credits**
| TCOM 3400 - Foundations of Design for the Web **3 Credits**

Upper Level Area Distribution (27 Credits)

| A minimum of 6 credit hours must be taken in each of the three tag areas.
| No more than 6 credits may be at the 2000 level.
| Up to 6 credits outside of courses listed below, with departmental approval.

1. **Textual Production Area**

   COMM 2000 - Business Communication
   COMM 3250 Newspaper Practicum
   ENGL 3081 Studies in Genre
   ENGL 3082 Science and Literature
   ENGL 3010 Science Writing
   ENGL 3025 Creative Writing Workshop
   ENGL 3040 Article and Essay Workshop
   ENGL 3045 New Media Writing
   TCOM 3015 Environmental Writing
   TCOM 3020 Grant and Proposal Writing
   TCOM 4000 Professional Editing

2. **Visual Production Area**

   ARTS 2010 Intro to Drawing
   ARTS 3010 Drawing for New Media
   ARTS 3000 Visual Thinking
   ARTS 3170 Digital Photography
   TCOM 3430 Foundations of Graphics
   TCOM 4040 Applied Graphics
   TCOM 4170 Film and Video Production
   TCOM 4400 Advanced Design for the Web

3. **Media & Cultural Studies Area**

   ENGL 3180 Film as Literature
   ENGL 4010 Publishing for New Media
   ENGL 4170 Media and Narrative
   COMM 3060 Media, Culture, and Society
   COMM 3065 International Communication
   TCOM 4045 Foundations of Multimedia
   TCOM 3145 Social Media Integration

Free Electives (15 credits)

Degree Program Total: 121

For additional information about the B.A. program, contact the Digital Writing and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu. You can also visit our website at etcma.spsu.edu.

New Media Arts, BA

The Bachelor of Arts in New Media Arts provides students with an opportunity to develop the technical and artistic

skills needed to serve as practitioners in the fields of multimedia development and design, web design, and video production. As a degree that straddles two worlds--the fine and the applied arts--the degree program encourages both creativity and practical application. Students will have an opportunity to develop a strong foundation in the traditional fine arts and learn to translate these skills to new media contexts. They will also learn to approach the technical aspects of new media applications from the sensibilities of an artist as well as a technician.

With its balance between the artistic and technical aspects of new media production, the new media arts degree program should prepare students to meet a growing marketplace need for multimedia artists and to rise to the top of the pack of individuals competing for these positions. While providing an undergraduate degree option for students interested in entering careers in the fine and applied arts, it would also provide appropriate preparation for graduate study.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature of the World **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
  OR
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies **3 Credits**

Area F

Required Courses 6 Credits
| ARTS 2020 - History and Principles of Design **3 Credits**
| COMM 2170 - Introduction to Media Studies **3 Credits**
Studio Courses, Choose Three- 9 Credits

| ARTS 2010 - Introduction to Drawing **3 Credits**
| ARTS 2110 - Painting and Mixed Media **3 Credits**
| ARTS 2220 - 2D and 3D Design **3 Credits**
| ARTS 2903 - Music Theory **3 Credits**
Choose One- 3 Credits
| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**

MAJOR REQUIREMENTS

Basic Required Courses in the Major (24 Credits)

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ARTS 3000 - Visual Thinking **3 Credits**
| ARTS 3100 - History of New Media Arts **3 Credits**
| COMM 3160 - Media Theory and Practice **3 Credits**
| ARTS 4100 - Media Arts Studio **3 Credits**
| ENGL 3045 - New Media Writing **3 Credits**
| TCOM 3430 - Foundations of Graphics **3 Credits**
| TCOM 3400 - Foundations of Design for the Web **3 Credits**
| ARTS 4800 - Senior Portfolio **3 Credits**

Additional Courses in the Major (18 Credits; Choose 6)

| ARTS 3010 - Drawing for New Media **3 Credits**
| ARTS 3170 - Digital Photography **3 Credits**
| ARTS 4270 - Advanced Digital Video **3 Credits**
| ARTS 4600 - Directed Study **3 Credits**
| ARTS 4700 - Internship **3 Credits**
| ARTS 4903 - Special Topics **3 Credits**
| CGDD 3103 - Application Extension and Scripting **3 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**
| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| COMM 3060 - Media, Culture, and Society **3 Credits**
| ENGL 3180 - Film as Literature **3 Credits**
| ENGL 4170 - Media and Narrative **3 Credits**
| TCOM 4040 - Applied Graphics **3 Credits**
| TCOM 4045 - Foundations of Multimedia **3 Credits**
| TCOM 4170 - Film and Video Production **3 Credits**
| TCOM 4175 - Animation Design, 2D **3 Credits**
| TCOM 4400 - Advanced Design for the Web **3 Credits**

Free Electives

Free Electives 18 Credits

Degree Program Total: 121

For additional information about the B.A. program, contact the Digital Writing and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu. You can also visit our website at etcma.spsu.edu.

Professional Writing Minor

After taking COMM 2000, Business Communication, **take only 12 more hours**, 9 of which must be at the 3000 or 4000 level, to receive a Minor in Professional Writing. Your minor credential will be designated on your SPSU transcript provided you earn a C or better in each course.

Requirements

| COMM 2000 - Business Communication **3 Credits**

Additional Courses Choose Four of the Following (12 credits)

Students majoring in Business Administration are required to take COMM 2000 as part of their existing program of study. TCOM 2010 will serve as a blanket substitution for COMM 2000 for Business Administration students interested in Professional Writing minor.

This minor is not available to students majoring in either Technical Communication or English and Professional Communication.

| COMM 3035 - Organizational Communication **3 Credits**
| COMM 3040 - Health Communication **3 Credits**
| COMM 3050 - Journalism **3 Credits**
| ENGL 3010 - Science Writing **3 Credits**
| ENGL 3015 - Environmental Writing **3 Credits**
| ENGL 3020 - Proposal Writing **3 Credits**
| ENGL 3025 - Creative Writing Workshop **3 Credits**
| ENGL 3040 - Article and Essay Workshop **3 Credits**
| ENGL 4010 - Publishing for New Media **3 Credits**
| TCOM 4000 - Professional Editing **3 Credits**

Total Hours: 15

Technical Communication Minor

After taking TCOM 2010 Technical Writing, you will take **only 12 more hours,** 9 of which must be at the 3000 or 4000 level. If you earn a grade of "C" or better in each course, your minor credential will be designated on your SPSU transcript.

Requirements (6 credits)

| TCOM 2010 - Technical Writing **3 Credits**
| TCOM 2020 - Introduction to the Professions **3 Credits**
  OR
| TCOM 2030 - Research in Technical Communication **3 Credits**

  Students whose major already requires TCOM 2010 should take TCOM 2020 **and** TCOM 2030 (blanket substitution will apply).

Additional Courses for Minor (9 credits)

Choose any class with the TCOM course prefix, 3000-level or higher.
This minor is not available to students majoring in either Technical Communication or English and Professional Communication.

Total Hours: 15

Technical Communication, BS

With our TCOM degree, you will learn much more than just how to use words effectively—you will have opportunities to learn document design, graphics, multimedia, web design, and video production as well as science and environmental writing, proposal writing, and medical communication.

Students in other majors can minor in technical communication through a range of campus-based and online course offerings.

Many TCOM courses are taught using a combination of on-site and online sessions that students with jobs especially appreciate. We make sure we offer enough late-afternoon and evening courses so that working students can make steady progress toward their degree.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature of the World **3 Credits**

| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
OR
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4-Cultures and Societies **3 Credits**

Area F

Required Courses- 9 Credits
| TCOM 2010 - Technical Writing **3 Credits**
| TCOM 2020 - Introduction to the Professions **3 Credits**
| TCOM 2030 - Research in Technical Communication **3 Credits**
Choose Three- 9 Credits
| ARTS 2010 - Introduction to Drawing **3 Credits**
| COMM 2000 - Business Communication **3 Credits**
| COMM 2065 - Cross-Cultural Communication **3 Credits**
| COMM 2150 - Ethics and Communication **3 Credits**
| COMM 2170 - Introduction to Media Studies **3 Credits**
Any programming language (recommended CSE 1301J)

Major Requirements

Upper Level Required Courses in the Major (18 Credits)

| ENGL 3100 - Rhetoric: History, Theory, and Practice **3 Credits**
| ENGL 4110 - Writing in Collaborative Environments **3 Credits**
| TCOM 3120 - Technical Communication: Theory and Practice **3-0-3 Credits**
| TCOM 3400 - Foundations of Design for the Web **3 Credits**
| TCOM 3430 - Foundations of Graphics **3 Credits**
| TCOM 4800 - Project Portfolio **3 Credits**

Additional Courses in Major (12 Credits)

| Take any ARTS, COMM, ENGL, or TCOM Course
| No more than 6 credits may be at the 2000 level.

| Up to 6 credits outside of the Department with departmental approval.
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Major Concentrations

Choose one concentration from the following: (Information Design or Digital Media and Graphics)

Information Design (15 Credits)

| TCOM 3020 - Proposal Writing **3 Credits**
| TCOM 3030 - Instructional Design **3 Credits**
| TCOM 3045 - Fundamentals of Information Design **3 Credits**
| TCOM 3070 - User Assistance **3 Credits**
| TCOM 3145 - Social Media Integration **3 Credits**
| TCOM 3245 - Analytics and Search Engine Optimization (SEO) for Communicators **3 Credits**
| TCOM 4000 - Professional Editing **3 Credits**
| TCOM 4045 - Foundations of Multimedia **3 Credits**
| TCOM 4120 - Usability Testing **3 Credits**

Digital Media and Graphics (15 Credits)

| ARTS 2010 - Introduction to Drawing **3 Credits**
| ARTS 3000 - Visual Thinking **3 Credits**
| ARTS 3170 - Digital Photography **3 Credits**
| TCOM 3145 - Social Media Integration **3 Credits**
| TCOM 4045 - Foundations of Multimedia **3 Credits**
| TCOM 4040 - Applied Graphics **3 Credits**
| TCOM 4170 - Film and Video Production **3 Credits**
| TCOM 4175 - Animation Design, 2D **3 Credits**
| TCOM 4400 - Advanced Design for the Web **3 Credits**

Degree Program Total: 121

For additional information about the B.S. program, contact the Digital Writing and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu. You can also visit our website at etcma.spsu.edu.

Mathematics

Offering:

Bachelor of Science in Mathematics
Bachelor of Arts in Mathematics with Teacher Education Track leading to grades 6-12 certification

A Bachelor of Science in Mathematics encompasses the breadth of Mathematics and its applications in a small, friendly, and supportive setting. Courses in differential equations, analysis, calculus, discrete mathematics, and linear and abstract algebra combine a theoretical and applied understanding of these areas. Additional courses in Physics and Computer Science explore how Mathematics can be used to solve real-world problems.

Programs in Mathematics - The programs in Mathematics are designed to prepare the student for further study in mathematics, education, or other subjects or for employment in a variety of fields.

Mathematics is the foundation upon which all other technical fields rest, and as such, is the perfect choice for students who have a profound mathematical curiosity, and a desire to apply their problem solving skills. The soaring demand for employees with specialized mathematical expertise allows graduates to follow a wide variety of career paths. Many work in fields that, while not specifically described as mathematical, require clear reasoning, logical thought, and a love and understanding of mathematics. Persons with degrees in mathematics may be found pursuing such diverse careers as actuarial science, education, consulting, systems analysis and quality control, and jobs in industry or government. Others go on to graduate work in mathematics or other mathematics-related fields, such as Computer Science.

The B.S. degree candidate will, through the nature of the mathematics electives and the opportunities offered by other programs, have a scientifically and technically oriented program which allows entry into many fields of science, engineering, and technology as well as education and business.

The B.A. candidate will have a strong background in mathematics coupled with the necessary education courses that will lead to teacher certification.

Through the second major in Mathematics and the minor in Mathematics, students in other fields may acquire a substantial background and competence in Mathematics.

Our professors are professionals with a sincere commitment to teaching. The Mathematics Department at SPSU boasts a faculty that includes a National Science Foundation grant recipient, four University System of Georgia Teaching/Learning Grant recipients, as well as several awards for outstanding teaching by the Student Government Association and the SPSU faculty.

The Faculty:

Keshav Raj Acharya, *Lecturer*
Dhruba Adhikari, *Assistant Professor*
Zhu Cao, *Assistant Professor*
Shangrong Deng, *Associate Professor*
Meighan I. Dillon, *Professor*
Steven R. Edwards, *Professor*
Joseph N. Fadyn, *Professor*
Joel C. Fowler, *Associate Professor*
William Griffiths, *Assistant Professor*
Sarah Holliday, *Assistant Professor*
Yang Kang, *Lecturer*
Maurice J. LeBlanc III, *Lecturer*
Andrew G. McMorran, *Associate Professor and Department Chair*
Nicolae Pascu, *Assistant Professor*
Laura Ritter, *Assistant Professor*
Jennifer Vandenbussche, *Assistant Professor*
Long L. Wang, *Associate Professor*
Hua Xu, *Lecturer*
Taixi Xu, *Associate Professor*

The mathematics portion of the major under the B.S. degree consists of three components: Required Courses, Mathematics Electives, and Guided Electives. Although the Required Courses provide the bulk of the mathematics in the degree, they also provide a framework for other series of Mathematics courses to be included under Mathematics Electives and Guided Electives. Students planning to attend graduate school in Mathematics are urged to select these courses carefully in consultation with an advisor. Students planning to seek employment in business or industry should

consider a minor in a related field, such as computer science. A computer science minor can be completed within the Guided Electives of the Mathematics degree.

Teacher Education

Offering:

Bachelor of Science in Biology with teacher education track leading to grades 6-12 certification
Bachelor of Science in Chemistry with teacher education track leading to grades 6-12 certification
Bachelor of Science in Physics with teacher education track leading to grades 6-12 certification
Bachelor of Arts in Mathematics with teacher education track leading to grades 6-12 certification

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Teacher certification will be provided by the Georgia Professional Standards Commission (PSC) after SPSU is approved by the PSC and accredited by the National Council for Accreditation of Teacher Education (NCATE). Approval and accreditation will follow PSC/NCATE campus visit in the winter of 2013. Therefore, SPSU's first teacher candidates will graduate in the Spring 2013.

Questions should be directed to the Teacher Education Office in J-353.

Our professors are professionals with high school teaching and leadership experience, academic credentials, and experiences in teacher preparation.

The Faculty:

Alan Gabrielli, *Professor Emeritus, SPSUTeach Co-Director*
Cassandra Race, *Instructor*
Laura Speer, *Master Teacher*
George W. Stickel, *Associate Professor, Teacher Education Director and SPSUTeach Co-Director*

Students pursuing this degree must complete:

The Core Curriculum	60
Required Courses	30
Education Courses	33

Areas of Study

Mathematics Minor

To obtain a minor in Mathematics, the student must complete:

| MATH 2255

| An additional 14 semester hours of Mathematics courses at the 2300 level or higher
At least 9 of these additional 14 hours must be at the 3000 level or higher.

Courses used to fill other requirements at SPSU (excluding core areas A through E) may also be used to obtain a minor in Mathematics.

For example, if you take MATH 2306 to fulfill a requirement in the Management curriculum, you may also use it in a math minor. However, you may not use MATH 1113 to fulfill the math minor because it is in area A of the core curriculum.

TOTAL HOURS: 18

Mathematics, BS

Requirements

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take One Course From the Literature Group **3 Credits**
| Area C Group 2 - Take One Course From the Art and Culture Group **3 Credits**
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Science **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| CSE 1301 - Computer Science I **4 Credits**
| CSE 1302 - Computer Science II **4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 3310 - Introduction to Advanced Mathematics **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| MATH 3320 - Introductory Real Analysis I **4 Credits**
| MATH 3321 - Introductory Real Analysis II **4 Credits**
| MATH 4407 - Vector Analysis **3 Credits**
| MATH 4440 - Abstract Algebra **4 Credits**

| MATH 4451 - Capstone Mathematics Project **3 Credits**

Mathematics Electives (9 Credits)

Any mathematics course numbered 2300 or above, excluding those for which dual credit is not allowed.

Guided Electives (20 Credits)

May include additional mathematics courses or other courses chosen in consultation with an advisor. May not include mathematics courses numbered less than 2000, or courses for which dual credit is not allowed.

Degree Program Total: 121

Mathematics Second Major

A student completing the B.S. degree in a field other than Mathematics may receive a second major in Mathematics at the same time to accompany that degree by completing the following courses. Note that additional courses, which are the prerequisites to these courses, are required by implication.

Mathematics Second Major Requirements

| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 3310 - Introduction to Advanced Mathematics **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| MATH 3320 - Introductory Real Analysis I **4 Credits**
| MATH 3321 - Introductory Real Analysis II **4 Credits**
| MATH 4407 - Vector Analysis **3 Credits**
| MATH 4440 - Abstract Algebra **4 Credits**
| MATH 4451 - Capstone Mathematics Project **3 Credits**

Second Degree in Mathematics

Students who receive a degree from SPSU in a field other than Mathematics may receive a B.S. with a major in Mathematics by completing all the requirements for the Mathematics degree. The same courses may be used to fulfill requirements for both degrees, but there must be at least 30 semester hours used to fulfill the requirements for the Mathematics degree which are not used to fulfill the requirements for any other degree.

Mathematics, Education Track, BA

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally

renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
  CSE 1301 **3 Credits** (Choose from following)
| CSE 1301C - Programming & Problem Solving I
| CSE 1301E - C++ Programming for Engineers
| CSE 1301J - Programming & Problem Solving I

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 3310 - Introduction to Advanced Mathematics **3 Credits**
| MATH 3320 - Introductory Real Analysis I **4 Credits**
| MATH 3321 - Introductory Real Analysis II **4 Credits**
| MATH 3696 - Geometry **3 Credits**
| MATH 4407 - Vector Analysis **3 Credits**
| MATH 4440 - Abstract Algebra **4 Credits**
| MATH Electives **3 Credits**
| MATH 4451 - Capstone Mathematics Project **3 Credits**

Education Courses

| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| MAED 2010 - Functions and Modeling **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 123
Physics

Offering:

Bachelor of Science in Physics - General Concentration
Bachelor of Science in Physics - Electrical Engineering Concentration
Bachelor of Science in Physics - Mechanical Engineering Concentration
Bachelor of Science in Physics with a Teacher Education Track leading to 6-12 grades Certification

Visit physics.spsu.edu for more information.

A Bachelor of Science degree in Physics at Southern Polytechnic State University is a good choice for students desiring positions in industry that are on the cutting edge of engineering and science. These positions offer great opportunity at the entry level and a strong career path with excellent earning potential. A Physics major at SPSU can also add a Teacher Education Track leading to certification. See Teacher Education.

The flexibility afforded by a SPSU physics degree is most attractive. With the proper choice of a minor field of study, our physics majors are prepared to obtain employment in such diverse areas as science and/or engineering positions in industry, technical sales, or scientific programming.

Because most physics majors go on to graduate study, we offer a capstone review course. Those planning to work

immediately after graduation may opt to do independent projects that position them competitively for the marketplace.

Physics researchers are using lasers to detect biological and chemical agents, analyzing cell-based communications to learn how heart disease occurs, and testing pigments to authenticate works of art. This science is a keystone of technological progress; it also underlies all of engineering, and it is a useful second major for those pursuing degrees in mathematics, electrical or mechanical engineering technology. All of our physics students receive job offers that put them in the front lines of fascinating careers and maximize their earnings potential.

Our graduates have been hired by respected organizations like Applied Decision Analysis, Inc., Argonne Labs, Barco Chromatics, BellSouth Mobility, Cape International Management, Inc., Flexible Products Company, Georgia Department of Agriculture, Gallet & Associates, Hulsey Seed Laboratory, Inc., Institute of Paper Science & Tech, Inc., Law Engineering & Environment Serv. Inc., Lockheed, Lucas Body Systems NA, NASA, National Science Foundation, Nortel Telecommunications, Nova Engineering & Environment, Osmose Wood Preserving, Inc., Southern Company, and VA's CDI Corporation.

SPSU physics majors meet the educational portion of requirements for registration as a professional engineer in most states. For students wishing to continue in higher education at the graduate level, additional career paths are available in teaching, research, law, medicine, and engineering. There is a strong demand for high school physics teachers. Adding the Teacher Education track will prepare students for certification to teach secondary physics.

Advisors for our physics majors work closely with students in choosing electives to meet very individual career objectives. Students may also choose to earn double majors in physics and engineering technology.

Two significant advantages of majoring in physics at SPSU are our small, personalized classes and our outstanding distinguished faculty. All physics courses for our majors are taught by faculty holding Ph.D. degrees.

The Faculty:

David Garafolo, *Lecturer*
R. Luminda Kulasiri, *Associate Professor*
Russell S. Patrick, *Professor*
Philip E. Patterson, *Assistant Professor and Department Chair*
Kisa Ranasinghe, *Assistant Professor*
Eric A. Smith, *Lecturer*
Michael G. Thackston, *Professor*
James B. Whitenton, *Professor*

Teacher Education

Offering:

- Bachelor of Science in Biology with teacher education track leading to grades 6-12 certification
- Bachelor of Science in Chemistry with teacher education track leading to grades 6-12 certification
- Bachelor of Science in Physics with teacher education track leading to grades 6-12 certification
- Bachelor of Arts in Mathematics with teacher education track leading to grades 6-12 certification

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Teacher certification will be provided by the Georgia Professional Standards Commission (PSC) after SPSU is approved by the PSC and accredited by the National Council for Accreditation of Teacher Education (NCATE).

Approval and accreditation will follow PSC/NCATE campus visit in the winter of 2013. Therefore, SPSU's first teacher candidates will graduate in the Spring 2013.

Questions should be directed to the Teacher Education Office in J-353.

Our professors are professionals with high school teaching and leadership experience, academic credentials, and experiences in teacher preparation.

The Faculty:

Alan Gabrielli, *Professor Emeritus, SPSUTeach Co-Director*
Cassandra Race, *Instructor*
Laura Speer, *Master Teacher*
George W. Stickel, *Associate Professor, Teacher Education Director and SPSUTeach Co-Director*
Erin Sutherland, Physics Teacher

Students pursuing this degree must complete:

The Core Curriculum	60
Required Courses	30
Education Courses	33

Areas of Study

Physics Minor

To be eligible for a minor in Physics, the student must complete at least 15 hours of course work in physics with at least 10 hours in upper division physics courses.

Physics, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Choose One Course from the Literature Group **3 Credits**
| Group 2- Choose One Course from the Art and Culture Group   **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits**
Choose Any Two Lab Science Courses for a total of **8 Credits**
| ASTR 1000K - Introduction to the Universe **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science   **3 Credits**
| Group 4- Cultures and Societies   **3 Credits**

Area F

| PHYS 1211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| PHYS 2213 - Introduction to Thermal and Modern Physics **2 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**

Requirements

| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| PHYS 3210 - Mechanics I **4 Credits**
| PHYS 3410K - Electronics Laboratory **2 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**

| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4410K - Advanced Physics Laboratory **2 Credits**
| PHYS 4430 - Capstone Physics Project **1 Credits**
| PHYS 4250 - Quantum Theory of Two-State Systems **2 Credits**
| Directed Electives approved by the program **9 - 15 Credits**
| Upper Division Physics Electives/Concentrations **4 - 10 Credits**

Degree Program Total: 121
A Second Degree in Physics

Students who are earning B.S. degrees in other fields at Southern Polytechnic State University may also earn a second major in Physics.

SPSU students who wish to earn a second major in physics will be required to take the following 22 hours of course work:

Second Degree Requirements

| PHYS 3210 - Mechanics I **4 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3410K - **2 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4410K - Advanced Physics Laboratory **2 Credits**

Physics, Electrical Engineering Concentration, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature **3 Credits**

| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1- American Context **3 credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies   **3 Credits**

Area F

| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| PHYS 1211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Requirements

| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4240 - Solid State Physics **3 Credits**
| EE 3301 - Circuits Analysis I **4 Credits**
| EE 2501 - Digital Logic Design **4 Credits**
| EE 2401 - Semiconductor Devices **3 Credits**
| EE 3705 - Signals and Systems **3 Credits**
| EE 3401 - Engineering Electronics **4 Credits**
| EE 4201 - Control Systems **4 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| Free Electives **4 Credits**

Degree Program Total: 121

Physics, Mechanical Engineering Concentration, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies **3 Credits**

Area F

| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Requirements

| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| PHYS 2213 - Introduction to Thermal and Modern Physics **2 Credits**
| PHYS 3410K - Electronics Laboratory **2 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4240 - Solid State Physics **3 Credits**
| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| ENGR 2501 - Material Science **3 Credits**
| ME 3201 - Product Realization **2 Credits**
| ENGR 3125 - Machine Dynamics & Vibrations **3 Credits**
| Free Electives **2 Credits**
| ME 3501 - Dynamic Systems & Control Theory **3 Credits**
| ME 4501 - Vibrations & Controls Lab **1 Credits**

Degree Program Total: 121

Concentration in Mechanical Engineering

| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| ENGR 2501 - Material Science **3 Credits**
| ME 3201 - Product Realization **2 Credits**
| ENGR 3125 - Machine Dynamics & Vibrations **3 Credits**
| ME 3501 - Dynamic Systems & Control Theory **3 Credits**
| ME 4501 - Vibrations & Controls Lab **1 Credits**

Physics, Teacher Education Concentration, BS

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

- | ENGL 1101 - English Composition I **3 Credits**
- | ENGL 1102 - English Composition II **3 Credits**
- | MATH 1113 - Pre-calculus **4 Credits**

Area B

- | COMM 2400 - Public Speaking **2 Credits**
- | STS 2400 - Science, Technology, and Society **2 Credits**

Area C

- | Group 1- Literature **3 Credits**
- | Group 2- Art and Culture **3 Credits**

Area D

- | CHEM 1211 - Principles of Chemistry I **3 Credits**
- | CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
- | CHEM 1212 - Principles of Chemistry II **3 Credits**
- | CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
- | MATH 2253 - Calculus I **4 Credits**

Area E

- | Group 1- American Context **3 Credits**
- | Group 2- World History **3 Credits**
- | Group 3- Behavioral Science **3 Credits**
- | Group 4- Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

- | PHYS 2211 - Principles of Physics I **3 Credits**
- | PHYS 2211L - Principles of Physics Laboratory I **1 Credits**

- | PHYS 2212 - Principles of Physics II **3 Credits**
- | PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
- | MATH 2254 - Calculus II **4 Credits**
- | MATH 2255 - Calculus III **4 Credits**

Major Program of Study

- | SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
- | MATH 2306 - Ordinary Differential Equations **3 Credits**
- | PHYS 2213 - Introduction to Thermal and Modern Physics **2 Credits**
- | PHYS 3210 - Mechanics I **4 Credits**
- | PHYS 3220 - Electromagnetism I **3 Credits**
- | PHYS 3410 - Electronics Laboratory **2 Credits**
- | PHYS 3500K - Introduction to Computational Physics **3 Credits**
- | PHYS 3710 - Modern Physics **4 Credits**
- | PHYS 3720L - Modern Physics Laboratory **1 Credits**
- | PHYS 4210 - Quantum Physics **4 Credits**
- | PHYS 4230 - Thermal Physics **4 Credits**
- | PHYS 4410K - Advanced Physics Laboratory **2 Credits**
- | Physics Electives **4 Credits**

Education Courses

- | EDUC 1101 - UTeach Step 1 **1 Credits**
- | EDUC 1102 - UTeach Step 2 **1 Credits**
- | EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
- | EDUC 2010 - Knowing and Learning **3 Credits**
- | EDUC 2020 - Classroom Interactions **3 Credits**
- | EDUC 4030 - Project Based Instruction **3 Credits**
- | RSCH 3610 - Research Methods **3 Credits**
- | STS 3347 - Perspectives on Science and Math **3 Credits**
- | EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
- | EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 120

Social and International Studies

General Studies

Offering:

The Associate of Science Transfer Degree
General Studies Transfer Program

The Associate of Science General Studies Transfer Program is designed for students who wish to complete the core at SPSU and then transfer to another institution.

International Studies

Offering:

Bachelor of Science in International Studies
Minor in International Studies

The Faculty:

Albert Churella, *Associate Professor*
J. LaJuana Cochrane, *Associate Professor and Psychology Coordinator*
Ravi Ghadge, *Assistant Professor*
Stacy Grant-Williams, *Lecturer*
Marianne Holdzkom, *Assistant Professor*
Kyunghum Jung, *Assistant Professor*
Rebecca LeFebvre, *Lecturer*
Julie Newell, *Professor and Chair of Department*
Thomas J. Nisley, *Associate Professor*
Bernice Nuhfer-Halten, *Professor and Language Coordinator*
Thomas E. Rotnem, *Professor, International Studies Coordinator, and Political Science Coordinator*
Leigh Sharma, *Assistant Professor*
William Skutans, *Lecturer*
Carl Snook, *Assistant Professor*
Roger Soiset, *Lecturer*
Mark D. Vickrey, *Senior Lecturer*

By offering an International Studies degree with minors in a variety of areas, SPSU seeks to produce graduates who not only understand the political and economic processes of globalization, but also possess technological skills and knowledge that will allow them to deal with the new demands of the global economy.

Companies that will employ our graduates will be global ones, so it is necessary for their employees to understand the political, economic, cultural, as well as technical contexts in which their companies function.

The International Studies degree will prepare graduates for employment in:

Government
Graduate study
Intelligence
International
business Pre-law
Public policy
The military
The transportation industry
The travel industry
Work in the non-profit sector

Students pursuing this degree must complete:

The Core Curriculum   60

Required Upper Division Core in International Studies   24

A Minor	15-18
Directed International Electives	9
Free Electives	7-12

Any courses taken to satisfy degree program requirements in International Studies Required Upper Division Core, the student's Minor, and the student's Directed International Electives must be passed with a grade of "C" or better.

Political Science

Offering:

Bachelor of Science in Political Science

The Faculty:

Richard Bennett, *Associate Professor and Director of International Programs*
Albert Churella, *Associate Professor*
J. LaJuana Cochrane, *Associate Professor and Psychology Coordinator*
Jamye Hickman, *Assistant Professor*
Marianne Holdzkom, *Assistant Professor*
Julie Newell, *Professor and Chair of Department*
Thomas J. Nisley, *Assistant Professor*
Bernice Nuhfer-Halten, *Professor and Language Coordinator*
Thomas E. Rotnem, *Professor, International Studies Coordinator, and Political Science Coordinator*
William Skutans, *Lecturer*
Roger Soiset, *Lecturer*
Carl Snook, *Assistant Professor*
Mark D. Vickrey, *Senior Lecturer*

The Political Science program is part of the Department of Social and International Studies, in the School of Arts and Sciences at Southern Polytechnic State University. By offering a Political Science degree, SPSU seeks to produce graduates who have a higher degree of technical and statistical expertise than those found in customary political science programs elsewhere and also have hands-on experience in applied research.

Political Science degree will prepare graduates for employment in:

Government
Graduate study
Intelligence
International
business Pre-law
Public policy
The non-profit sector

Students pursuing this degree must complete:

The Core Curriculum	60
Required Upper Division Core in Political Science	33
Directed International Electives	12
Free Electives	15

Any courses taken to satisfy degree program requirements in Political Science Required Upper Division Core and the

student's Directed International Electives must be passed with a grade of "C" or better.

Psychology

Offering:

Bachelor of Science in Psychology

The Faculty:

Richard Bennett, *Associate Professor and Director of International Studies*
Albert Churella, *Associate Professor*
J. LaJuana Cochrane, *Associate Professor and Psychology Coordinator*
Jamye Hickman, *Assistant Professor*
Marianne Holdzkom, *Assistant Professor*
Julie Newell, *Professor and Chair of Department*
Thomas J. Nisley, *Assistant Professor*
Bernice Nuhfer-Halten, *Professor and Language Coordinator*
Thomas E. Rotnem, *Associate Professor and International Studies Coordinator*
William Skutans, *Lecturer*
Roger Soiset, *Lecturer*
Carl Snook, *Assistant Professor*
Mark D. Vickrey, *Lecturer*

By offering a Psychology degree with concentrations in engineering psychology, industrial/organizational psychology, and general psychology, SPSU seeks to produce graduates who have a balanced, career-based education in psychology with a wide range of skills and practical knowledge.

The Psychology degree will prepare graduates for employment in:

Government
Graduate study
Work in the corporate sector
Work in the non-profit sector

Students pursuing this degree must complete:

The Core Curriculum   60

Required Upper Division Core in Psychology   32

A particular track   28

Any courses taken to satisfy degree program requirements in Psychology Required Upper Division Core and the student's Concentration must be passed with a grade of "C" or better.

Areas of Study

General Studies, A.S.

The Associate of Science General Studies Transfer Program is designed for students who wish to complete the core at

SPSU and then transfer to another institution.

All students must take:

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Area A: Essential Skills (9 credits)

Grade of C or better required in the courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
  (or other math as specified in the University core)

Area B: Institutional Options (4 credits)

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

Choose ONE Literature Course:

| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

Choose ONE Arts or Language Course:

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| FREN 2001 - Intermediate French I **3 Credits**
| FREN 2002 - Intermediate French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| GRMN 2001 - Intermediate German I **3 Credits**
| GRMN 2002 - Intermediate German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

Area D: Science and Math (11-12 credits)

8 hours science (two courses with labs):

You must take two semesters of lab science *and lab* (lecture=3 credits; lab=1 credit; K-courses=4 credits, lab is included)

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Math:

| MATH 1113 - Pre-calculus **4 Credits**
(or other math as specified in the University core)

Area E: Social Sciences (12 credits)

Group 1 Amerian Perspectives- (3 credits):

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia Constitution and History. Students who fulfill this requirement with transfer credit from outside the USG will need to take HIST 2911 U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation.

Choose ONE of the following:
| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

Group 2 Historical Perspectives (3 credits):

Choose ONE of the following:
| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

Group 3 Behavioral Science Perspectives (3 credits):

Choose ONE of the following:
| ECON 1101 - Introduction to Economics **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

Group 4 Global Perspectives (3 credits):

Satisfies the Global Perspectives overlay.

Choose ONE of the following:
| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Elective Courses:

- At least one additional course in humanities (Area C) **3 Credits**
- At least one additional course in social sciences (Area E) **3 Credits**
- Any humanities, social science, math, lab science or any area F course from any program. **11-12 Credits**

Total Program Hours: 60

History Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

World History (3 credits):

Choose ONE course not used to satisfy core Area E-2:

- HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
- HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

US History (6 credits):

- HIST 2111 - United States History to 1877 **3 Credits**
- HIST 2112 - United States History since 1877 **3 Credits**
  If HIST 2111 or HIST 2112 has been used to satisfy Core Area E-1, any 3-hour HIST course may be substituted.

Upper-Division History courses (9 credits):

Any **9 credits** of 3000- or 4000-level HIST courses.

Total Program Hours: 18

International Studies Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor *except free electives*. No courses used to satisfy Core Areas A-E may be used in a minor.

Regional Studies (3 credits):

Choose ONE of the following:

| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**

Language Requirement:

Student must complete FREN 1002, GRMN 1002, or SPAN 1002 OR demonstrate proficiency in a non-English langage at an equivalent level.

Electives (12 credits):

Choose FOUR courses from the following list NOT used to satisfy core requirements in Areas A-E. No more than TWO may be numbered below 3000.

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits**
| ECON 2106 - Principles of Microeconomics **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| GEOG 3101 - World Regional Geography **3 Credits**
| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**
| HIST 3200 - History of Science Survey **3 Credits**
| HIST 3301 - Diplomatic and Military History since 1815 **3 Credits**
| HIST 3401 - Modern Social and Cultural History Twentieth Century **3 Credits**
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| HIST 3601 - History of the Pacific Rim **3 Credits**
| HIST 3801 - Contemporary World History since 1945 **3 Credits**
| IS 3600 - Comparative Culture **3 Credits**
  Any regional studies course NOT used to satisfy the Regional Studies requirement above.
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**
| IS 4600 - International Studies Internship **3 Credits**
| IS 4800 - International Studies Capstone **3 Credits**
| MGNT 4145 - International Management **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| POLS 3001 - Comparative Politics **3 Credits**
| POLS 3009 - Foundations of Public Policy **3 Credits**

| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3601 - Contemporary World Politics **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**
| POLS 4063 - Political Issues in Electronic Government **3 Credits**
| POLS 4101 - Political Economy of Post-Communist Transformation **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| POLS 4301 - International Political Economy **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**
| RELG 1200 - World Religion **3 Credits**
| SPAN 3001 - Advanced Conversation **3 Credits**
| SPAN 3002 - Grammar and Composition **3 Credits**
| SPAN 3003 - Hispanic Cultures and Civilizations **3 Credits**
| SPAN 4001 - Professional Spanish **3 Credits**
| SPAN 4002 - Techniques in Translation for Professional Spanish **3 Credits**
| SPAN 4003 - Service Learning Project **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**
| STS 4400 - Topical Studies in Science and Technology **3 Credits**
Special topics courses in HIST, POLS, PSYC may be used as electives with topic-specific departmental approval.

Total Program Hours: 15

International Studies, BS

By offering an International Studies degree with a required minor, SPSU seeks to produce graduates who not only understand the political and economic processes of globalization, but also possess field-specific skills and knowledge that will allow them to deal with the new demands of the global economy. Companies that will employ our graduates will be global ones, so it is necessary for their employees to understand the political, economic, cultural, as well as technical contexts in which their companies function. The International Studies degree will prepare graduates for graduate study in a number of possible fields and for employment in:

| Government
| Intelligence
| International business
| Pre-law
| Public policy
| The military
| The non-profit sector
| The transportation industry
| The travel industry

Requirements

Core Areas A through E

Area A: Essential Skills (9 credits)

Grade of C or better requied in the courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
  (or other math as specified in the SPSU core)

Area B: Institutional Options (4 credits)

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

C-1: Literature (3 credits)

Choose ONE of the following:
| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

C-2: Humanities (3 credits)

Choose ONE of the following (language course recommended):
| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**

| FREN 1002 - Elementary French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**

Area D: Science and Math (11-12 credits)

D-1: Lab Science (8 credits)

You must take two semesters of lab science *and lab* (lecture = 3 credits; lab = 1 credit; K-course=4 credits, including lab).

Choose TWO science courses with lab:
| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

D-2: Math (minimum of 3 credits)

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E: Social Sciences (12 credits)

E-1: American Perspectives (3 credits)

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia History and Constitution. Students who fulfill this requirement with transfer credit from outside the USG will need to take HIST 2911 U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation.

Choose ONE of the following:

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

E-2: Historical Perspectives (3 credits)

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

E-3: Behavioral Science Perspectives (3 credits)

Choose ONE of the following (ECON 1101 Introduction to Economics is required in Area F and may not be used here):

| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

E-4: Global Perspectives (3 credits)

Satisfies the Global Perspectives overlay. Choose ONE of the following (POLS 2401 is required in Area F and may not be used here):

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Core Area F (18 credits):

Take ALL of the following:

| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**
Or 6 credit hours of any non-English language at an equivalent level.
| COMM 2030 - Research for the Humanities & Social Sciences **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits**
| POLS 2100 - Introduction to Research Methods **3 Credits**
| POLS 2401 - Global Issues **3 Credits**

Required Courses in Major (29 credits):

Grade of C or better required. Take ALL of the following:

| IS 1000 - International Studies Orientation **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| HIST 3801 - Contemporary World History since 1945 **3 Credits**
| POLS 3001 - Comparative Politics **3 Credits**
| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**
| POLS 4301 - International Political Economy **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**
Choose ONE Regional Studies Course:
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**
To be taken in one of the last two terms before graduation (taught Spring only):
| IS 4800 - International Studies Capstone **3 Credits**

Directed International Electives (9 credits):

Grade of C or better required. Choose THREE of the following:

Take THREE of the following:

| ECON 2106 - Principles of Microeconomics **3 Credits**
| GEOG 3101 - World Regional Geography **3 Credits**
| HIST 3200 - History of Science Survey **3 Credits**
| HIST 3301 - Diplomatic and Military History since 1815 **3 Credits**
| HIST 3401 - Modern Social and Cultural History Twentieth Century **3 Credits**
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| HIST 3601 - History of the Pacific Rim **3 Credits**
| IS 3600 - Comparative Culture **3 Credits**
| IS 4600 - International Studies Internship **3 Credits**
| IS 4000 - Regional Studies - General **3 Credits**
or any Regional Studies (IS 400X) not used to satisfy Required Courses in the Major
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3601 - Contemporary World Politics **3 Credits**
| POLS 4063 - Political Issues in Electronic Government **3 Credits**
| POLS 4101 - Political Economy of Post-Communist Transformation **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**
| RELG 1200 - World Religion **3 Credits**

| SPAN 3001 - Advanced Conversation **3 Credits**
or any 3000- or 4000- level SPAN
| STS 4400 - Topical Studies in Science and Technology **3 Credits**
OR any IS special topics course. Special topics courses in HIST, POLS, PSYC may be used with topic-specific departmental approval.

Minor 15-18 Hours

International Studies majors must complete at leat one of the minors offered at SPSU (in any department or program). Department policy requires that at least 9 hours in a minor not be used to meet any other reqirement *except free electives*. University policy requires that no hours used in Core Areas A-E may used toward any other requirement.

Free Electives

Additional credit hours to bring the minimum total credits to bring the total hours up to the 120 required for graduation. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Degree Program Total: 120

Latin American Studies Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses:

| ES 1100 - Ethnic Studies **3 Credits**
Latino / Hispanic Ethnic Studies ONLY; may not also be used to satisfy E-4 core
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| SPAN 3003 - Hispanic Cultures and Civilizations **3 Credits**

Total Program Hours: 15

Political Science Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses:

| POLS 1101 - American Government **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| POLS 3001 - Comparative Politics **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
Choose ONE of the following:
| POLS 3601 - Contemporary World Politics **3 Credits**
OR
| POLS 4301 - International Political Economy **3 Credits**
Choose ONE of the following:
| POLS 3701 - Seminar in American Politics **3 Credits**
OR
| POLS 3801 - Political Behavior **3 Credits**

Total Program Hours: 18

Political Science, BS

There is a growing need for graduates in political science. The acquisition of methodological skills, coupled with an understanding of the political process at local, state, national and international levels, allows for employment in a variety of public and private venues where research techniques are highly prized. As well, the communication, analysis, and critical reasoning skills that our graduates obtain place them well in a competitive job market, where continual learning is essential and interpersonal and cross-cultural competencies are greatly needed.

While there are other political science programs offered in Georgia, SPSU's program will be unique in several respects:

| The SPSU program is highly quantitative in focus, offering students three additional quantitative courses in political science research methods and analysis beyond the norm required in other political science programs.
| The SPSU program offers students various inter-disciplinary course options through its Directed International Electives module.
| The SPSU program further establishes a strong international focus by encouraging students to become proficient in a second language.

Students who complete the program have the knowledge, skills, and real-world context to be productive and flexible in a rapidly changing workplace. Graduates with a bachelor's degree in political science find positions as committee staffers, budget analysts, communications consultants, research/policy analysts, corporate public affairs advisors, foreign service officers, writers/authors/political commentators, journalists, foundation staffers, lobbyists, marketing analysts, or public opinion analysts. Additionally, SPSU's program's training in the development of research, critical thinking, and communication skills will open opportunities in for-profit/non-profit business settings, international and U.S.-based non-governmental organizations and foundations. Graduates of SPSU's BS in Political Science will be more than qualified to take advantage of the local, regional, national, and international employment opportunities offered by metro Atlanta and the State of Georgia, as well as to pursue post-baccalaureate educational opportunities in either political science or the field of law.

Requirements

All students must take:

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Core Areas A-E

Area A: Essential Skills (9 credits)

Grade of C or better required in courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
(or other math as specified in the SPSU core)

Area B: Institutional Options (4 credits)

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

C-1: Literature (3 credits)

 Choose ONE of the following:

| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

C-2: Humanities (3 credits)

Choose ONE of the following (language recommended):

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**

| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**

Area D: Science and Math (12 credits)

D-1: Lab Science (8 credits)

You must take two semesters of lab science *and lab* (lecture=3 credits; lab=1 credit; K-courses=4 credits, lab is included)

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

D-2: Math (Minimum of 3 credits)

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E: Social Sciences (12 credits)

E-1: American Perspectives (3 credits)

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia Constitution and History. Students who fulfill this requirement with transfer credit from outside the USG *may* need to take HIST 2911: U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation. Please check with your advisor.

Choose ONE of the following (POLS 1101 American Government is required in Area F and may not be used here):

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**

E-2: Historical Perspectives (3 credits)

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

E-3: Behavioral Science Perspectives (3 credits)

Choose ONE of the following (ECON 1101 Introduction to Economics is required in Area F and may not be used here):

| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

E-4: Global Perspectives (3 credits)

Satisfies Global Perspectives overlay. Choose ONE of the following (POLS 2401 is required in Area F and may not be used here):

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Core Area F (18 credits)

| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**
  or 6 credits of any non-English language at an equivalent level
| ECON 1101 - Introduction to Economics **3 Credits**
| POLS 1101 - American Government **3 Credits**
| POLS 2100 - Introduction to Research Methods **3 Credits**
| POLS 2401 - Global Issues **3 Credits**

Required Courses in Major (36 credits):

Grade of C or better required.

| POLS 3001 - Comparative Politics **3 Credits**
| POLS 2800 - Research Design **3 Credits**
| POLS 3209 - U.S. Constitutional Law **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3601 - Contemporary World Politics **3 Credits**
| POLS 3701 - Seminar in American Politics **3 Credits**
| POLS 3801 - Political Behavior **3 Credits**
| POLS 4100 - Applied Methodology **3 Credits**
| POLS 4301 - International Political Economy **3 Credits**
Choose ONE of the following:
| GEOG 4101 - Geographic Information Systems **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
Choose ONE Regional Studies Course:
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**
In one of final two semesters:
| POLS 4801 - Capstone: Political Science Practicum **3 Credits**

Directed International Electives: (12 credits)

Grade of C or better required. Take any FOUR of the following courses:

| GEOG 3101 - World Regional Geography **3 Credits**
| HIST 3200 - History of Science Survey **3 Credits**
| HIST 3301 - Diplomatic and Military History since 1815 **3 Credits**
| HIST 3401 - Modern Social and Cultural History Twentieth Century **3 Credits**
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| HIST 3601 - History of the Pacific Rim **3 Credits**
| HIST 3801 - Contemporary World History since 1945 **3 Credits**
| IS 3600 - Comparative Culture **3 Credits**
| IS 4800 - International Studies Capstone **3 Credits**
| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| POLS 3501 - Intellectual Property Issues **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**
| POLS 4063 - Political Issues in Electronic Government **3 Credits**
| POLS 4101 - Political Economy of Post-Communist Transformation **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**

| PSYC 4600 - Conflict Resolution **3 Credits**
| SPAN 3001 - Advanced Conversation **3 Credits**
| SPAN 3002 - Grammar and Composition **3 Credits**
| SPAN 3003 - Hispanic Cultures and Civilizations **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**
| STS 4400 - Topical Studies in Science and Technology **3 Credits**
  Up to 6 additional credits in Regional Studies:
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**

Free Electives (12 credits):

Any college-level credit not used above may be applied here. *Free electives may be used toward a minor and are exempt from the 9 hour rule.*

Degree Program Total: 121

Pre-Law Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses (6 credits):

Take TWO of the following courses NOT used to satisfy Core Area E-1:

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

Elective Courses (12 credits):

Pick any FOUR of the following:

| MGNT 3145 - Legal Environment of Business **3 Credits**
| POLS 3209 - U.S. Constitutional Law **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| POLS 3501 - Intellectual Property Issues **3 Credits**
| POLS 3701 - Seminar in American Politics **3 Credits**

Total Program Hours: 18

Psychology Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor *except free electives*. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses:

| PSYC 1101 - Introduction to General Psychology **3 Credits**
(If PSYC 1101 has been used for Core Area E-3, any 2000-Level PSYC course may be substituted in the minor)

| IET 2227 - Introduction to Statistics **3 Credits**

| PSYC 2100 - Basic Quantitative Research Methods for Psychology **3 Credits**

| PSYC 3101 - International Social Psychology **3 Credits**
AND **6 Credits** in any PSYC 3000- or 4000- level courses

18 Credits

Psychology, BS

Southern Polytechnic State University's Bachelor of Science degree in Psychology provides students a program of study in modern psychology. Specifically, the program embraces a strong international component with a multi-disciplinary curriculum that provides a balanced, career-based education in psychology with a wide range of skills and practical knowledge. The concentrations offered cover the subject matter from seventeen major subfields coupling science and practice. This broad spectrum provides a rich context so that students who complete the program have the knowledge, skills, and real-world context to be productive and flexible in a rapidly changing workplace.

Career opportunities for graduates with a B.S. in Psychology include: employment counselors, corporate counselor trainees, interviewers, personnel analysts, systems analysts, rehabilitation assistants, mental health assistants, probation officers and writers. Additionally, training in the development of research and writing skills will open opportunities in profit/non-profit business settings, public affairs, public health, sales and administrative support.

The concentrations offered are:

| Engineering Psychology (involves the science of applying an understanding of human behavior interacting with the design of systems and products that improve human performance)

| Industrial/Organizational Psychology (involves the science of applying an understanding of human behavior with improving productivity and the workplace quality)

| Clinical and Counseling Psychology (involves the science of applying an understanding of human behavior with an emphasis on mental disorders and their treatment)

Requirements

Core Areas A-E

Area A: Essential Skills (9 credits)

Grade of C or better required in the courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

- | ENGL 1101 - English Composition I **3 Credits**
- | ENGL 1102 - English Composition II **3 Credits**
- | MATH 1111 - College Algebra **3 Credits**
  (or other math as specified in the SPSU core)

Area B: Institutional Options (4 credits)

- | COMM 2400 - Public Speaking **2 Credits**
- | STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

C-1: Literature (3 credits)

Choose ONE of the following:

- | ENGL 2111 - Early World Literature **3 Credits**
- | ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
- | ENGL 2120 - British Literature Early to Present **3 Credits**
- | ENGL 2121 - Early British Literature **3 Credits**
- | ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
- | ENGL 2130 - American Literature Early to Present **3 Credits**
- | ENGL 2131 - Early American Literature **3 Credits**
- | ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
- | ENGL 2141 - Early Western Literature **3 Credits**
- | ENGL 2142 - Western Literature 1600s to Present **3 Credits**
- | ENGL 2300 - African-American Literature and Culture **3 Credits**

C-2: Humanities (3 credits)

Choose ONE of the following:

- | ARTS 2001 - Art Appreciation **3 Credits**
- | ARTS 2002 - Drama Appreciation **3 Credits**
- | ARTS 2003 - Music Appreciation **3 Credits**

| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| FREN 2001 - Intermediate French I **3 Credits**
| FREN 2002 - Intermediate French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| GRMN 2001 - Intermediate German I **3 Credits**
| GRMN 2002 - Intermediate German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

Area D: Science and Math (11-12 credits)

D-1: Lab Science (8 credits)

 You must take two semesters of lab science *and lab* (lecture=3 credits; lab=1 credit; K courses=4 credits, including lab). Biology recommended.

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

D-2: Math (Minimum of 3 credits)

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E: Social Sciences (12 credits)

E-1: American Perspectives (3 credits)

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia History and Constitution. Students who fulfill this requirement with transfer credit from outside the USG will need to take U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation.

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

E-2: Historical Perspectives (3 credits)

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

E-3: Behavioral Science Perspectives (3 credits)

Choose ONE course (sociology recommended):

| ECON 1101 - Introduction to Economics **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

E-4: Global Perspectives (3 credits)

Satisfies the Global Perspectives overlay. Choose ONE of the following:

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Core Area F (18 credits)

| COMM 2030 - Research for the Humanities & Social Sciences **3 Credits**
| PSYC 2273 - Foresic Psychology **3 Credits**

| PSYC 1101 - Introduction to General Psychology **3 Credits**
(or 3 hours of PSYC 1XXX or 2XXX elective credit if PSYC 1101 has been used in Area E-3)
| PSYC 2011 - Cognitive Psychology **3 Credits**
| PSYC 2270 - Engineering Psychology **3 Credits**
| PSYC 2271 - Clinical and Counseling Psychology **3 Credits**

Required Courses in Major (32 credits):

Grade of C or better required; take all of the following:

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| PSYC 1000 - Orientation to Psychology **2 Credits**
| PSYC 2100 - Basic Quantitative Research Methods for Psychology **3 Credits**
| PSYC 2401 - Psychology of Diversity **3 Credits**
| PSYC 3000 - Junior Seminar **3 Credits**
| PSYC 3020 - Physiological Psychology **3 Credits**
| PSYC 3031 - Experimental Psychology **4 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| PSYC 4050 - History and Systems of Psychology **3 Credits**
| PSYC 4800 - Psychology Capstone Seminar **3 Credits**

Concentrations

Choose and complete one of the concentrations below:

Engineering Psychology (28 credits)

Required Courses (22 credits):

Grade of C or better required; take all of the following:

| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
The following must be taken in the order listed:
| CSE 1301J - Programming & Problem Solving I **4 Credits**
(be sure it's 1301**J**)
| IT 1324 - Advanced Programming Principles **4 Credits**
| SWE 4324 - User-Centered Design **4 Credits**
| SWE 4783 - User Interaction Engineering **3 Credits**

Free Electives (6 credits)

Credit from any college-level course may be applied here. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Industrial / Organizational Psychology (28 credits)

Required Courses (12 credits):

Grade of C or better required; take all of the following:

| MGNT 4115 - Human Resource Management **3 Credits**
| PSYC 3301 - Psychological Testing **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**

Concentration Electives (9 credits):

Grade of C or better required; choose THREE of the following:

| PSYC 3010 - Educational Psychology **3 Credits**
| PSYC 3015 - Theories of Personality **3 Credits**
| PSYC 3040 - Motivation and Emotion **Credits**
| PSYC 4130 - Psychology of Aging **3 Credits**
| PSYC 4220 - Psychoactive Drugs, Behavior, and Society **3 Credits**

Free Electives (7 credits)

Credit from any college-level course may be applied here. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Clinical and Counseling Psychology (28 credits)

Required Courses:

Grade of C or better required; take all of the following:

| PSYC 3015 - Theories of Personality **3 Credits**
| PSYC 3230 - Abnormal Psychology **3 Credits**
| PSYC 3301 - Psychological Testing **3 Credits**

Concentration Electives (9 credits):

Grade of C or better required; choose THREE from the following:

| PSYC 2273 - Foresic Psychology **3 Credits**
| PSYC 3010 - Educational Psychology **3 Credits**
| PSYC 3040 - Motivation and Emotion **Credits**
| PSYC 3305 - Developmental Psychology **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4130 - Psychology of Aging **3 Credits**
| PSYC 4220 - Psychoactive Drugs, Behavior, and Society **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**

Free Electives (10 credits)

Credit from any college-level course may be applied here. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Degree Program Total: 120

Public Policy Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses (6 credits):

| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**

Electives (9 credits):

Choose THREE of the following:

| POLS 3401 - Environmental Law and Policy **3 Credits**
| POLS 3701 - Seminar in American Politics **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**

Special Topics

Special Topics in POLS, STS, or IS may also be used as electives with topic-specific approval of the department.

Total Program Hours: 15

Spanish Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

2000-Level (6 credits):

May not also be used to satisfy Core Area C-2:

| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

3000-Level (9 credits):

Any 9 credits in 3000-level SPAN courses.

Total Program Hours: 15

Consider the Certificate in Professional Spanish as well:

Requirements for Professional Certificate

Spanish Professional Certificate (Undergraduate)

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

All Courses Required for the Spanish Minor

Requirements for Spanish Minor

4000-Level Electives (6 credits):

Chose SIX credits from the following:

| SPAN 4001 - Professional Spanish **3 Credits**
| SPAN 4002 - Techniques in Translation for Professional Spanish **3 Credits**
| SPAN 4003 - Service Learning Project **3 Credits**

Learning Project (3 credits):

| SPAN 4003 - Service Learning Project **3 Credits**

Oral Proficiency Interview (OPI):

After all coursework is completed, student must take the American Council on the Teaching of Foreign Language OPI.

Total Program Hours: 9 credits beyond the minor

School of Computing and Software Engineering

Computer Science and Software Engineering

Computer Science
Offering:

The Bachelor of Science in Computer Science (ABET Accredited)
The Bachelor of Arts in Computer Science

Why study Computer Science at SPSU?

What field of study has seen more technological developments that have become part of our daily lives in just a matter of the past few decades than any other? Developments such as the Internet and email, search engines, wi-fi, etc., virtually unknown a few decades ago, make computer science one of the strong contenders for this distinction!

Combining fundamental theory with hands-on lab work in current programming languages, the Computer Science degree gives students a breadth of knowledge -- of operating systems, architecture, networks, and databases -- in a high-tech environment. Our numerous labs are equipped with the latest technology, including a real-time lab with the most current commercial-grade software tools and an IT lab with its own server for management and IT courses. And in our classrooms, professors teach using networked computers and smart boards, and technologies that allow for interactive demonstrations of programs at work, and other innovative pedagogical techniques.

About the Program

As preparation for diverse employment opportunities, the Computer Science program offers a wide range of Mathematics and Computer Science courses, such as Programming Language Concepts, Data Structures, and Algorithm Analysis. Students may elect to earn a Bachelor of Science degree in Computer Science, which offers a mix of rigor and exposure to current technologies, or the Bachelor of Arts in Computer Science, which offers flexibility, e.g., with a minor in one additional area of study. For student convenience, many classes are offered in the evenings, especially as students make progress toward graduation.

The Faculty

Each faculty member in Computer Science has his or her own specialty, from research to business applications. Our faculty members have completed research fellowships with the U.S. Air Force and other government labs, programmed business applications for Blue Cross Blue Shield, and developed and managed systems and software for IBM Corporation. They pass their expertise in the professional field along to their students, who go on to succeed professionally as well.

Patrick O. Bobbie, *Professor*
Bob Harbort, *Professor*
Chih-Cheng Hung, *Professor*
Edward Jung, *Assistant Professor*
Chia-Tien (Dan) Lo, *Associate Professor*
Briana B. Morrison, *Assistant Professor*
Patricia R. Pierce, *Senior Lecturer*
Kai Qian, *Professor*

Are there learning opportunities outside the classroom?

Computer science students at SPSU can participate in the Aerial Robotics Club on campus, which placed second in the 2001 international competition sponsored by the Association for Unmanned Vehicle Systems for an automatic pilot guiding program that was written for SPSU's aerial robotics machines. Students also compete in annual programming contests sponsored by the Association of Computer Machinery, a national professional organization with student chapters worldwide. Students have internship and co-op opportunities, as well.

What can I do with a Computer Science degree?

With a Computer Science degree, you are equipped to enter a variety of positions, from software development at a Fortune 500 company to game development, to just about anywhere your skills can take you – including winning an Oscar for animation technologies, as our alumni did in 2005! Graduates are often involved in software development, innovative applications and uses of computers, and new and improved solution techniques to hard problems. They gain many useful skills that are immediately applicable, but are well-founded in the fundamental concepts and are well on their way to lifelong learning in the rapidly changing technological workplace.

Will I find employment?

According to a recent report from the Bureau of Labor Statistics, the top ten fastest jobs are either in health care or related to computing. Our close proximity to Atlanta opens up a world of internship, co-op, and full-time work opportunities to our students, as Atlanta is home to many major corporations that welcome SPSU students.

The Programs:

The baccalaureate programs in Computer Science emphasize the entire scope of computer science, ranging from basic hardware principles through the system and application software levels to the use and management of such systems.

The ABET-accredited (www.abet.org) Bachelor of Science degree is designed for students wanting a maximum technical preparation for their career.

The Bachelor of Arts degree is designed for students wanting to apply their knowledge of computer science to another area of study.

Both degrees have Core requirements, Major requirements, and Directed Electives. The Core provides basic coursework to ensure that the graduate is well-rounded as an educated individual.

The Major contains those CS and SWE courses considered fundamental to the field, regardless of any specialization. The Directed Electives provide depth beyond the Core to support the student's professional preparation.

| Both degrees require a grade of "C" or better in all CS, CSE, SWE, and IT courses applied to degree requirements.

Students in the BS degree program are required to have at least three science-related courses subject to the following rules:

| Two lab science courses used to satisfy Area D of the core
| The remainder may be taken as lab sciences or as other approved courses that provide breadth and/or depth in the natural sciences or otherwise explore the scientific method

There is also a five-year BSCS-MSSWE option for qualifying students.

This program is likely to be of great interest to those who pursue the BSCS program and are interested in entering the job market with a high degree of preparedness. On top of a strong CS foundation, graduates from this combined program will be trained in software project management, an in-depth understanding of requirements, design, testing, support, metrics, etc. and the processes of software development and management (if they choose MSSWE), or with

advanced course work in the dynamic field of computer science (if they choose MSCS). Students can start taking MS core graduate classes right away, even before graduating with the BSCS. Specifically, while still working on the BSCS, students can take two graduate courses applicable to the target MS program as electives in their BSCS degree, and the courses also count towards the MS program. Students will be able to complete the MS program by taking only 10 more graduate courses in an additional year.

Computer Game Design and Development

Offering:

The Bachelor of Science in Computer Game Design and Development
The Minor in Computer Game Design and Development

Why study Computer Game Design and Development at SPSU?

The Bachelors of Science in Computer Game Design and Development equips students and graduates with the skills and knowledge to apply computing and software engineering techniques to the design and production of digital media for entertainment, research, and education. As a specialization within the field of computing, game design and development builds on and applies expertise in computing hardware and software to create engaging and immersive multimedia systems.

About the Program

The program exposes students to the breadth of the field in the areas of digital media, human-computer interaction, the history and theory of gaming, game design, 2D and 3D graphics, simulation, modeling, software engineering, artificial intelligence, data structures, and algorithms. Current and emerging domains including online games (and massively multiplayer games or MMOG), casual games, mobile games, and serious/educational games are explored. Students are also required to select an upper-level concentration within the program to ensure depth in their program of study. While these concentrations will change as the field evolves, current offerings include media-production, distributed-mobile, education-serious, planning-management, and simulation-informatics.

One of the more innovative aspects of the program is the inclusion of a significant studio experience for students in their senior year. This two-course sequence provides an opportunity for students to be mentored by faculty and their peers in the first semester and in turn mentor fellow students in the second semester. The year-long capstone project developed in these courses is a vital component in graduates' portfolios and will be showcased on the program's Web site. Moreover, giving the recruitment and hiring practices in the digital entertainment and computer gaming industry, portfolios are crucial in helping graduates secure employment in the industry.

The program places significant importance on developing students' communication, team, critical thinking, and problem solving skills, skills that were identified as vital by industrial partners and employers. Courses integrate written and oral presentations as well as team-based design and development projects to ensure students build these skills.

The Faculty

Each faculty member in Computer Game Design and Development has his or her own specialty, from mobile games to graphics. Our faculty members have worked on research projects and grants with the National Science Foundation (NSF) and other agencies, developed augmented reality applications, built mobile games, and worked on various serious and games-for-learning projects. They pass their experiences and expertise in the field of computing and game development to their students to help them succeed professionally as well.

Jeffrey W. Chastine, *Associate Professor*
D. Michael Franklin, *Assistant Professor*
Richard A. Gesick, *Lecturer*
Chao Peng, *Associate Professor*
Jon Preston, *Professor*

BS CGDD Program Educational Objectives

The Bachelor of Science in Computer Game Design and Development prepares our graduates to reach the following goals 3 to 5 years beyond graduation:

| Computer Game Design and Development graduates will be successful professionals in the field with solid fundamental knowledge of gaming and computing, making valuable technical contributions to the design, development, and production of computer game systems and related applications.
| Graduates utilize and exhibit strong communication and interpersonal skills, as well as professional and ethical principles when functioning as members and leaders of multi-disciplinary teams.
| Graduates are sufficiently prepared for their first and subsequent positions, as they are independent learners, including learning new, rapidly-changing technologies and applying them in their game systems development.

BS CGDD Student Outcomes

Each graduate of the program should be able to:

1. Decompose and solve complex problems through artifacts of computing such as hardware, software specifications, code and other written documents
2. Demonstrate an understanding of computing principles in the areas of programming, data structures, architecture, systems, graphics, and artificial intelligence and how they relate to computer game design and development
3. Utilize mathematics and science in game design and development
4. Apply principles of game design and development to generate a portfolio showcasing their successful industrial experience, research, and/or creative works
5. Demonstrate a breadth of knowledge in historic and emerging domains and genres of computer gaming and interaction
6. Demonstrate an understanding of social, professional, global, and ethical issues related to computing
7. Work effectively in teams on system development projects
8. Demonstrate effective oral and written communication skills

Other Program Goals

Expand the visibility of SPSU and the University System of Georgia (USG) in the field of game design and development

| Scholarship and research in regional, national, and international venues
| Service and partnerships with professional societies and non-profit organizations in the field
| Create a strong community of students and alumni
| Offer an annual computer game design competition sponsored by SPSU and industrial partners
| Develop an online digital portfolio that showcases the work of students, alumni, and faculty
| Host and sponsor events in which students, alumni, and industrial partners connect and build relationships
Serve the community and industry

Software Engineering

Offering:

Bachelor of Science in Software Engineering

Why study Software Engineering at SPSU?

Software engineering represents the fastest growing segment of software professionals -- men and women who solve problems and issues in the development and engineering of mission-critical software systems to meet the requirements of business and industry in a *reliable, secure, timely, and cost-effective* manner. At Southern Polytechnic, our Software Engineering students learn real-time strategies and procedures that will give them a competitive edge in the market. Coursework includes software design techniques, software quality, software project management, and electives such as component-based software, embedded systems design, game design, etc. This is the only Software Engineering program at the undergraduate level in Georgia and one of the few in the nation.

The Faculty:

Each faculty member in Software Engineering has his or her own specialty, e.g., object-oriented design, large scale systems, user-centered design, etc. Some of our faculty members have extensive industry experience managing systems and software development. They pass their expertise in the professional field along to their students, who go on to succeed professionally as well.

Sheryl L. Duggins, *Professor*
Jonathan Lartigue, *Assistant Professor*
Patricia Roth Pierce, *Senior Lecturer*
Hassan Pournaghshband, *Professor*
Frank Tsui, *Associate Professor*

Are there learning opportunities outside the classroom?

Our students can participate in the Aerial Robotics Club on campus, which placed second in the 2001 international competition sponsored by the Association for Unmanned Vehicle Systems for an automatic pilot guiding program that was written for SPSU's aerial robotics machines. Students have internship and co-op opportunities, as well.

What can I do with a Software Engineering degree?

With a Software Engineering degree, you are equipped to enter a variety of positions, from real-world, large-scale software development and testing to software project management. You gain a foundation in computer science and learn many useful skills and tools that are immediately applicable, and are well on your way to lifelong learning in the rapidly changing technological workplace.

Will I find employment?
According to a recent report from the Bureau of Labor Statistics, the top two of ten jobs with the fastest growth and highest median salaries are related to systems and applications software engineering. Our close proximity to Atlanta opens up a world of internship, co-op, and full-time work opportunities to our students, as Atlanta is home to many major corporations that welcome SPSU students.

The Program:

SWE Program Educational Objectives:

The Bachelor of Science in Software Engineering prepares our graduates to reach the following goals 3 to 5 years beyond graduation:

- | Software Engineering graduates will be successful professionals in the field with solid fundamental knowledge of software engineering, who can effectively analyze, design, and develop high-quality software systems.
- | Graduates utilize and exhibit strong communication and interpersonal skills, as well as professional and ethical principles when functioning as members and leaders of multi-disciplinary teams.
- | Graduates will apply their foundations in software engineering to adapt to rapidly changing environments using the appropriate theory, principles, and processes.
- | Graduates are sufficiently prepared for their first and subsequent positions, as they are independent learners, including being accepted into or completing advanced degree programs.

Student Outcomes:

At the time of graduation, all Software Engineering students will have demonstrated:

a. An ability to apply knowledge of mathematics, science, and engineering
b. An ability to design and conduct experiments, as well as to analyze and interpret data
c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d. An ability to function on multidisciplinary teams
e. An ability to identify, formulate, and solve engineering problems
f. An understanding of professional and ethical responsibility
g. An ability to communicate effectively
h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i. A recognition of the need for, and an ability to engage in life-long learning
j. A knowledge of contemporary issues
k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
l. An ability to appropriately analyze, design, verify, validate, implement, apply, and maintain software systems
m. An ability to appropriate apply discrete mathematics, probability and statistics, and relevant topics in computer science and support disciplines to complex software systems
n. An ability to work in one or more significant application domains
o. An ability to manage the development of software systems

The degree program includes Core requirements, Computer Science Foundations, the Software Engineering Core, Software Engineering Advanced Topics, Application Domains, Directed Electives and Other Required Courses. There is also a specialty track that allows students to choose a specialty area for more concentrated study. The Directed Electives provide depth beyond the Core to support the student's professional preparation.

Areas of Study

Computer Game Design and Development Minor

To be eligible for a minor in Computer Game Design and Development, the student must complete the following courses with a grade of "C" or better. Any upper level (3000+) courses that are required in the major may not be used as credit for the minor. Other upper level CGDD courses may be used as substituted. Students must have at least 9 upper level CGDD hours not required for their major (CGDD courses taken as electives for your major bachelor degree can be used to complete the minor).

Minor in Game Design and Development Program Objectives:

- | Provide students with game design and development knowledge that can be applied in their major area of study
- | Provide students with fundamental game design and development skills

Minor in Game Design and Development Learning Outcomes

- | Demonstrate skills fundamental to game design and development
- | Demonstrate knowledge in at least two subfields of game design and development

Required Courses

- | CSE 1301 -Any 1301 courses (C, J or E) Programming and Problem Solving 1 **4 Credits**
- | CGDD 2002 - Fundamentals of Game Design **2 Credits**
- | CGDD 4003 - Digital Media and Interaction **3 Credits**
- | Three additional upper-level CGDD courses **9+ Credits**

Minor Program Total: 18+ Credits

Computer Game Design and Development, BS

Students must earn a C or better in all the major courses (CSE, CS, SWE, and CGDD).

AREA A

- | ENGL 1101 - English Composition I **3 Credits**
- | ENGL 1102 - English Composition II **3 Credits**
- | MATH 2253 - Calculus I **4 Credits**

AREA B

- | COMM 2400 - Public Speaking **2 Credits**
- | STS 2400 - Science, Technology, and Society **2 Credits**

Area C

- | Group 1 - Literature of the World **3 Credits**
- | Group 2 - Art and Culture of the World **3 Credits**

AREA D

- | MATH 2254 - Calculus II
- | Take any 2 of the courses below (with labs):

- | ASTR 1000K - Introduction to the Universe **4 credits**
- | ASTR 1010K - Introduction to the Universe II **4 credits**
- | BIOL 2107 - Principles of Biology I **3 Credits**
- | BIOL 2107K - Principles of Biology I Laboratory **1 Credits**
- | BIOL 2108 - Principles of Biology II **3 Credits**
- | BIOL 2108K - Principles of Biology II Laboratory **1 Credits**

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211K - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II **3 Credits**
| CHEM 1212K - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112K - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 credits**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

AREA F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
  OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
  OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits**
| CGDD 2002 - Fundamentals of Game Design **2 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
One credit from MATH 2253 & MATH 2254 will be added to Area F to complete the 18 hour requirement.

Requirements

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| CS 3424 - Data Structures **4 Credits**
| CS 4413 - Algorithm Analysis **3 Credits**
| CS 4363 - Computer Graphics and Multimedia **3 Credits**
| CS 4523 - Artificial Intelligence **3 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| SWE 3643 - Software Testing and Quality Assurance **3 Credits**
| SWE 4324 - User-Centered Design **4 Credits**
  Advanced Topics:
| CGDD 3103 - Application Extension and Scripting **3 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**
| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| CGDD 4303 - Educational and Serious Game Design **3 Credits**
| CGDD 4803 - Studio **3 Credits**
| CGDD 4814 - Capstone **4 Credits**
| Free Electives **6 Credits**

| Concentration (listed below): **9-10 Credits**

Note:

Students are strongly recommended to take at least one Physics course for their Area D because some later courses in this program (in particular the CGDD 4113 and CGDD 4603) may rely upon Physics. Students who are interested in the Simulation-Informatics concentration (see below) may find Biology or Chemistry beneficial instead of Physics.

Students taking the Educational-Serious or Planning Management concentration should consult with their advisor to ensure they have the required prerequisite courses needed (using free elective) since some of these concentration courses require specific electives that must be taken prior to the concentration courses.

BS CGDD Upper-level Concentration

While the required courses in the degree ensure students are exposed to the breadth of the field of computer game design and development, it is also imperative that students are given flexibility to customize their experience and apply the knowledge gained in their required courses. To this end, the degree requires students select a concentration in which they may gain a depth of knowledge within their chosen area.

The following are suggested concentrations, but students may select a customized plan of study and set of courses under with their advisor's approval.

Media-Production

| MATH 3312 - Linear Algebra **4 Credits**
| CGDD 4113 - 3D Modeling and Animation **3 Credits**
| CGDD 4603 - Production Pipeline and Asset Management **3 Credits**

Distributed-Mobile

| SWE 3683 - Embedded Systems Analysis & Design **3 Credits**
| CS 4253 - Distributed Computing **3 Credits**
| CS 4263 - Computer Networks **3 Credits**

Educational-Serious

| 6 hours of approved TCOM courses
| CGDD 4313 - Designing Online Learning Content and Environments **3 Credits**

Planning-Management (pick 3 of 4)

| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 4185 - Technology Management **3 Credits**

| SWE 3623 - Software Systems Requirements **3 Credits**
| SWE 4663 - Software Project Management **3 Credits**

Simulation-Informatics

| CSE 3153 - Database Systems **3 Credits**
| CS 4253 - Distributed Computing **3 Credits**
| CGDD 4703 - Data Modeling and Simulation **3 Credits**

BS CGDD Program Objectives

Meet the educational needs of students and prepare them for careers within the discipline

Expand the visibility of SPSU and the University System of Georgia (USG) in the field of game design and development

Create a strong community of students and alumni

Serve the community and industry

BS CGDD Learning Outcomes

Upon graduation, students will be able to:

| Decompose and solve complex problems through artifacts of computing such as hardware, software specifications, code and other written documents
| Demonstrate an understanding of computing principles in the areas of programming, data structures, architecture, systems, graphics, and artificial intelligence and how they relate to computer game design and development
| Utilize mathematics and science in game design and development
| Apply principles of game design and development to generate a portfolio showcasing their successful industrial experience, research, and/or creative works
| Demonstrate a breadth of knowledge in historic and emerging domains and genres of computer gaming and interaction
| Demonstrate an understanding of social, professional global, and ethical issues related to computing
| Work effectively in teams on system development projects
| Demonstrate effective oral and written communication skills

Degree Program Total: 121

Computer Science Minor

To be eligible for a minor in Computer Science, the student must complete the following courses with a grade of "C" or better. Students must have at least 9 upper level CS hours out of the 18 required credit hours.

Requirements:

| CSE 1301 - Any CSE 1301 (C, J or E) Programming & Problem Solving I **4 credits**
| CSE 1302 - Any CSE 1302 (C, J or E) Programming & Problem Solving II **4 Credits**
| CS 3424 - Data Structures **4 Credits**
| Two additional upper-level CS courses 6+
NOTE: CS 3424 requires MATH 2345 - Discrete Mathematics as a pre-requisite.

Total Hours: 18 Credits

Computer Science, BA

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits**
| Take any 2 of the courses below (with labs):

| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
  OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
  OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| Free Elective **(1 credit hour)**
| 1 hour each from Areas A & D **(2 credit hours)**

Required Courses

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| CS 3123 - Programming Language Concepts **3 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CS 3224 - Computer Organization & Architecture **4 Credits**
| CS 3243 - Operating Systems **3 Credits**
| CS 3424 - Data Structures **4 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| SWE 3613 - Software System Engineering **3 Credits**
| Upper-Level CS Elective (or Approved UL CGGD/SWE/IT Elective) **4 Credits**
| Upper-Level Free Electives (UL CS must be at least 4 hours, and the total of CS UL and UL free electives is 10 hours) **6 Credits**
| Approved Minor **15 Credits**
| Free Electives **5 Credits**

Degree Program Total: 123

Computer Science, BS

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| STS 2400 - Science, Technology, and Society **2 Credits**
| COMM 2400 - Public Speaking **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2253 - Calculus I **4 Credits**
    Take any two courses (plus labs) from the following for a total of 8 hours:
| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

AREA F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
    OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
    OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| 1 hour each from Areas A & D **(2 credit hours)**
| Free Elective **(1 credit hour)**

Required Courses

- CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
- TCOM 2010 - Technical Writing **3 Credits**
- MATH 2260 - Introduction to Probability and Statistics **3 Credits**
  OR
- MATH 1401 - Intro to Statistics **3 Credits**
- CSE 3153 - Database Systems **3 Credits**
- CS 3123 - Programming Language Concepts **3 Credits**
- CS 3224 - Computer Organization & Architecture **4 Credits**
- CS 3243 - Operating Systems **3 Credits**
- CS 3424 - Data Structures **4 Credits**
- CSE 3642 - Professional Practices and Ethics **2 Credits**
- CS 4253 - Distributed Computing **3 Credits**
- CS 4413 - Algorithm Analysis **3 Credits**
- CS 4893 - Computer Science Capstone **3 Credits**
- SWE 2313 - Introduction to Software Engineering **3 Credits**
- SWE 3613 - Software System Engineering **3 Credits**
- Approved Math Elective (MATH 2255, 2306, 2335, 3000 level or 4000 level) **3 Credits**
- Upper Level CS Electives (See approved list below) **9 Credits**
- Free Electives (Except MATH 1111) **5 Credits**

Approved Courses for CS Upper Level Electives

- IT 4153 - Advanced Database **3 Credits**
- IT 4203 - Advanced Web Development **3 Credits**
- IT 4823 - Information Security Administration & Privacy **3 Credits**
- IT 4833 - Wireless Security **3 Credits**
- IT 4843 - Ethical Hacking for Effective Defense **3 Credits**
- IT 4853 - Computer Forensics **3 Credits**
- SWE 3623 - Software Systems Requirements **3 Credits**
- SWE 3633 - Software Architecture & Design **3 Credits**
- SWE 3643 - Software Testing and Quality Assurance **3 Credits**
- SWE 3683 - Embedded Systems Analysis & Design **3 Credits**
- SWE 3843 - Embedded Systems Construction and Testing **3 Credits**
- SWE 4324 - User-Centered Design **4 Credits**
- SWE 4633 - Component-Based Software Development **3 Credits**
- SWE 4743 - Object-Oriented Development **3 Credits**
- SWE 4783 - User Interaction Engineering **3 Credits**
- CGDD 3103 - Application Extension and Scripting **3 Credits**
- CGDD 4003 - Digital Media and Interaction **3 Credits**
- CGDD 4203 - Mobile and Casual Game Development **3 Credits**
- CGDD 4313 - Designing Online Learning Content and Environments **3 Credits**
- CGDD 4703 - Data Modeling and Simulation **3 Credits**

Degree Program Total: 122

Software Engineering Minor

To be eligible for a minor in Software Engineering, the student must complete the following courses with a grade of "C" or better. Students must have at least 9 upper level SWE hours.

Program Objectives

Students earning a minor in Software Engineering will:

| Possess broad foundations in software engineering concepts and methodologies so they may contribute to the effective design and implementation of large scale software.

Learning Outcomes

Students earning a Software Engineering minor will have demonstrated the ability to:

| Apply SWE practices and process to software design and development.
| Demonstrate the ability to gather, analyze, develop, verify and/or validate artifacts of software engineering systems.
| Use software tools effectively in some phases of software development.

Minor Requirements

| CSE 1302 - Programming & Problem Solving II **4 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| Three additional upper-level SWE courses **9 Credits**

Note:

SWE 1302 has a pre-requisite of SWE 1301 .

Total Hours: 16 hours

Software Engineering, BS

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2254 - Calculus I **4 Credits**
| Take any 2 of the courses below (with labs):

| ASTR 1000K - Introduction to the Universe **4 credits**
| ASTR 1010K - Introduction to the Universe II **4 credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107K - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108K - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211K - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II **3 Credits**
| CHEM 1212K - Principles of Chemistry II Lab **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 credits**
| PHYS 2211 - Principles of Physics I **3 credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 credit**
| PHYS 2212K - Principles of Physics II **3 credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 credit**
NO CREDIT FOR PHYS 1111K or PHYS 1112K.

In lieu of PHYS 2211, 2211L, an additional lab science course may be taken to form a sequence with one of the science courses in area D.

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| ECON 2107 - Introduction to Economic Analysis **3 credits** (Note: If area E is transferred, student must take ECON 2107 in lieu of free electives.)
| Group 4 - Cultures and Societies **3 Credits**

AREA F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits**

| CSE 3642 - Professional Practices and Ethics **2 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Required Courses

| TCOM 2010 - Technical Writing **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits** (see note below)
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Sciences **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| CSE 1301C or CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C or CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CS 3224 - Computer Organization & Architecture **4 Credits**
| CS 3424 - Data Structures **4 Credits**
| CS 3243 - Operating Systems **3 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| SWE 3623 - Software Systems Requirements **3 Credits**
| SWE 3633 - Software Architecture & Design **3 Credits**
| SWE 3643 - Software Testing and Quality Assurance **3 Credits**
| SWE 4324 - User-Centered Design **4 Credits**
| SWE 4663 - Software Project Management **3 Credits**
| SWE 4713 - SWE Application Domain **3 Credits**
| SWE 4724 - Software Engineering Project **4 Credits**
| SWE Upper Level Electives - Choose 2 courses from the approved list, at least one must be an SWE course **6 Credits**
| Free Electives - (Excludes MATH 1111, PHYS 1111, 1111L and PHYS 1112, 1112L) **5 Credits**

Free Electives

Excludes Math 1111, PHYS 111K and PHYS 1112K.

Note:

A grade of "C" or better must be earned in all CSE, CS, SWE, CGDD, and IT courses applied to degree requirement.

Upper Level Electives

Choose any 2 courses - at least one must be an SWE course.

| SWE 3683 - Embedded Systems Analysis & Design **3 Credits**
| SWE 3843 - Embedded Systems Construction and Testing **3 Credits**
| SWE 4633 - Component-Based Software Development **3 Credits**
| SWE 4743 - Object-Oriented Development **3 Credits**
| SWE 4783 - User Interaction Engineering **3 Credits**
| CS 4243 - Systems Programming **3 Credits**

| CS 4253 - Distributed Computing **3 Credits**
| CS 4263 - Computer Networks **3 Credits**
| CS 4283 - Real-Time Systems **3 Credits**
| CS 4363 - Computer Graphics and Multimedia **3 Credits**
| CS 4523 - Artificial Intelligence **3 Credits**
| CS 4533 - Digital Image Processing **3 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**
| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| IT 4123 - Electronic Commerce **3 Credits**
| IT 4823 - Information Security Administration & Privacy **3 Credits**
| IT 4833 - Wireless Security **3 Credits**
| IT 4843 - Ethical Hacking for Effective Defense **3 Credits**

Degree Program Total: 127

Information Technology

Offering:

Bachelor of Science in Information Technology
Bachelor of Applied Science in Information Technology (BASIT)

Bachelor of Applied Science in Health Information Technology (BAS-HIT)
Online Bachelor of Science in Information Technology (WebBSIT)

Information Assurance and Security Certificate
Health Information Certificate
Information Assurance and Security Certificate

The Bachelor of Science in Information Technology (BSIT) degree has the primary objective of meeting the high demand for professional degrees in the strategy, development, and administration of integrated computing, management, and information technology systems. This offering is targeted at the metro Atlanta region, and will serve those students interested in combining computer science, management, and information technology curricula. The WebBSIT program is designed for people seeking a Bachelor's degree in Information Technology, but whose lifestyles make it difficult to attend traditional classes on campus. This program is in collaboration with other University System institutions. The Bachelor of Applied Science in Information Technology (BASIT) degree is designed to serve students who hold an associate of applied science (AAS) or associate of applied technology (AAT) degree in a computing discipline from a community college or a Technical College System of Georgia (TCSG) institution. Students will transfer in approximately 2-years from their AAS or AAT degree and will complete additional general education and upper-level IT courses to complete their bachelor of applied science degree.

Information Technology (IT) is the term used to describe the convergence of Computer Science, Management, and Information Systems. IT emphasizes the integration and performance of information technology planning, development, implementation, and operation, and development of the infrastructure to support the processes necessary to achieve organizational objectives.

The Faculty:

Bob Brown, *Senior Lecturer*
Richard Halstead-Nussloch, *Professor*

Lei Li, *Associate Professor*
Svetlana Peltsverger, *Associate Professor*
Han Reichgelt, *Professor and Dean*
Rebecca Rutherfoord, *Professor*
Dawn Tatum, *Lecturer*
Susan Vande-Ven, *Senior Lecturer*
Ming Yang, *Assistant Professor*
Chi Zhang, *Assistant Professor*
Guangzhi (Jack) Zheng, *Assistant Professor*

The Program:

The courses in the major include courses from:

| Information technology
| Management
| Computer Science
| Software Engineering

The degree has Core requirements, major requirements, a required elective track and general electives. The Major contains those courses considered fundamental to the information technology field and the tracks give the student some flexibility in choice. **A grade of "C" or better must be earned in all IT, CS, CSE, MGNT, and SWE courses applied to degree requirements.**

Areas of Study

Information Technology Minor

To be eligible for a minor in Information Technology, the student must complete the following courses with a grade of "C" or better:

Information Technology Minor Requirements

| IT 1324 - Advanced Programming Principles **4 Credits** or
CSE 1302J - Programming & Problem Solving II **4 credits**

| IT 3123 - Hardware/Software Concepts **3 Credits** or
| CS 3224 - Computer Organization & Architecture **4 Credits**

| IT 3203 - Introduction to Web Development **3 Credits** or
| CSE 3153 - Database Systems **3 Credits**

And one of the Following:

| IT 4123 - Electronic Commerce **3 Credits**
| IT 4323 - Data Communications & Networks **3 Credits**
| IT 4823 - Information Security Administration & Privacy **3 Credits**

Total Hours: 14-15 Credits

Information Technology, BAS

This program is designed for students who have completed an AAS or AAT degree from a two year technical college in a computing discipline.

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

AREA C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 1113 - Pre-calculus **(3 credits - 1 hour to Area F)**
Take any 2 of the courses below (with labs) for a total of 8 hours:

| ASTR 1000K - Introduction to the Universe **4 credits**
| BIOL 2107K - Principles of Biology I **4 Credits**
| BIOL 2108K - Principles of Biology II **4 Credits**
| CHEM 1211K - Principles of Chemistry I **4 Credits**
| CHEM 1212K - Principles of Chemistry II **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credit**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credit**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory **1 credit**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credit**

AREA E

| Group 1 - American Context **3 Credits**

| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

Students who do not have enough hours from their technical block and general education hours to equal 60 semester hours, may receive "elective" credit hours to make up the deficient number of hours.

Technical Block Course **(3 credit hours)**
Technical Block Course **(4 credit hours)**
| CSE 2300 - Discrete Structures for Computing **3 Credits**
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| IT 1324 - Advanced Programming Principles **4 Credits**
| Area D Carryover credit **1 credit**

Required Courses

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| IT 3203 - Introduction to Web Development **3 Credits**
| IT 3123 - Hardware/Software Concepts **3 Credits**
| IT 3223 - Software Acquisition and Project Management **3 Credits**
| IT 3423 - Operating Systems Concepts & Administration **3 Credits**
| IT 3883 - Advanced Applications Development **3 Credits**
| IT 4323 - Data Communications & Networks **3 Credits**
| IT 4823 - Information Security Administration & Privacy **3 Credits**
| Technical Block Remainder Courses from AAS **(30 credit hours)**
| Directed Electives - Choose 2 from the course list below. **6 credits**

Directed Electives

| IT 3503 - Foundations of Health Information Technology **3 Credits**
| IT 4123 - Electronic Commerce **3 Credits**
| IT 4153 - Advanced Database **3 Credits**
| IT 4203 - Advanced Web Development **3 Credits**
| IT 4333 - Network Configuration & Administration **3 Credits**
| IT 4683 - Management of Information Technology and Human Computer Interaction **3 Credits**
| IT 4723 - IT Policy and Law **3 Credits**
| IT 4833 - Wireless Security **3 Credits**
| IT 4843 - Ethical Hacking for Effective Defense **3 Credits**
| IT 4853 - Computer Forensics **3 Credits**

Degree Program Total: 122

All IT, CS, CSE and SWE designator courses must have a grade of 'C' or better.

Information Technology, BS

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

AREA B
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

AREA C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2240 - Survey of Calculus or MATH 2253 - Calculus I **3 Credits**
| Take any 2 of the courses below (with labs):

| ASTR 1000K - Introduction to the Universe **4 credits**
| ASTR 1010K - Introduction to the Universe II **4 credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107K - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108K - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211K - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II **3 Credits**
| CHEM 1212K - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112K - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 credits**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

- TCOM 2010 - Technical Writing **3 Credits**
- MATH 2260 - Introduction to Probability and Statistics **3 Credits** OR
- IET 2227 - Introduction to Statistics **3 Credits**
- CSE 1301J - Programming & Problem Solving I **4 Credits**
- IT 1324 - Advanced Programming Principles **4 Credits**
- CSE 2300 - Discrete Structures for Computing **3 Credits** OR
- MATH 2345 - Discrete Mathematics **3 Credits**
- Carryover credit from Area A Math **1 Credit**

Requirements

- CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
- CSE 3642 - Professional Practices and Ethics **2 Credits**
- CSE 3153 - Database Systems **3 Credits**
- IT 3123 - Hardware/Software Concepts **3 Credits**
- IT 3203 - Introduction to Web Development **3 Credits**
- IT 3223 - Software Acquisition and Project Management **3 Credits**
- IT 3423 - Operating Systems Concepts & Administration **3 Credits**
- IT 3883 - Advanced Applications Development **3 Credits**
- IT 4123 - Electronic Commerce **3 Credits**
- IT 4323 - Data Communications & Networks **3 Credits**
- IT 4423 - Unix/Linux **3 Credits**
- IT 4683 - Management of Information Technology and Human Computer Interaction **3 Credits**
- IT 4723 - IT Policy and Law **3 Credits**
- IT 4823 - Information Security Administration & Privacy **3 Credits**
- IT 4983 - IT Capstone **3 Credits**
- Free Electives **7 Credits**
- Concentration or Technical Electives (see listing below) **12 Credits**

Degree Program Total: 122

Tracks

Choose one of the tracks below and complete 3 of their courses. The 4th elective can be from the same or different track.

Enterprise Systems Track

- IT 4203 - Advanced Web Development **3 Credits**
- IT 4153 - Advanced Database **3 Credits**
- IT 4333 - Network Configuration & Administration **3 Credits**
- IT 4673 - Virtual IT Systems **3 Credits**
- IT 4713 - Business Intelligence Systems **3 Credits**
- IT 4903 - Special Topics in Information Technology **3 Credits**

Information Assurance & Security Track

| IT 4833 - Wireless Security **3 Credits**
| IT 4843 - Ethical Hacking for Effective Defense **3 Credits**
| IT 4853 - Computer Forensics **3 Credits**
| IT 4903 - Special Topics in Information Technology **3 Credits**

Health Information Technology Track

| IT 3503 - Foundations of Health Information Technology **3 Credits**
| IT 4513 - Electronic Health Record Systems **3 Credits**
| IT 4523 - Clinical Processes and Workflows: Analysis and Redesign **3 Credits**
| IT 4533 - Health Information Security and Privacy **3 Credits**
| IT 4903 - Special Topics in Information Technology **3 Credits**

Mobile and Web Track

| CSE 3203 - Overview of Mobile Systems **3 Credits**
| IT 4203 - Advanced Web Development **3 Credits**
| IT 4213 - Mobile Web Development **3 Credits**
| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| IT 4903 - Special Topics in Information Technology **3 Credits**

Information Technology, BS (Online) WebBSIT

WebBSIT Curriculum

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take one course from the Literature Group **3 Credits**
| Area C Group 2 - Take one course from the Art and Culture Group **3 Credits**
| Area D - Any two lab-based science courses **8 Credits**
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Science **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**

Area F (18 Credits)

| WBIT 1100 - Introduction to Information Technology **3 Credits**
| WBIT 1310 - Programming and Problem Solving **3 Credits**
| MATH 1401 - Intro to Statistics **3 Credits** (Available from WebBSIT participating institutions or through eCore®)
| WBIT 2000 - The Enterprise and IT **3 Credits**
| WBIT 2300 - Discrete Mathematics for IT **3 Credits**
| WBIT 2311 - Programming and Problem Solving II **3 Credits**

Required Core Courses (42 Credits)

| WBIT 3010 - Technical Communication **3 Credits**
| WBIT 3110 - Systems Analysis and Design **3 Credits**
| WBIT 3111 - Information Technology Project Management **3 Credits**
| WBIT 3200 - Database Design, Development and Deployment **3 Credits**
| WBIT 3400 - Introduction to Multimedia **3 Credits**
| WBIT 3410 - Web Applications Development **3 Credits**
| WBIT 3500 - Architecture and Operating Systems **3 Credits**
| WBIT 3510 - Data Communications and Networking **3 Credits**
| WBIT 3600 - Introduction to E-Commerce **3 Credits**
| WBIT 4020 - Professional Practices and Ethics **3 Credits**
| WBIT 4030 - Senior Project **3 Credits**
| WBIT 4112 - Systems Acquisition, Integration and Implementation **3 Credits**
| WBIT 4120 - Human-Computer Interaction **3 Credits**
| WBIT 4520 - Information Security **3 Credits**

Concentration/Electives (18 Credits)

| WBIT 4601 - Customer Relationship Management **3 Credits**
| WBIT 4602 - IT Strategy Seminar **3 Credits**
| WBIT 4610 - IT Policy and Law **3 Credits**
| Free Electives (not within the WebBSIT) - **9 Credits**

Total Required Hours: 120 Credits

School of Engineering

Offering

Bachelor of Science Degrees
Master of Science Degrees

Southern Polytechnic State University offers a variety of engineering programs, including Civil Engineering, Construction Engineering, Electrical Engineering, Mechanical Engineering, Mechatronics Engineering, Software Engineering, and Systems Engineering at the undergraduate level, and Software Engineering and Systems Engineering at the Masters level. Individuals interested in these programs should see the appropriate sections of this catalog.

Courses listed in this section of the catalog that carry the ENGR prefix, are general in nature, and are taken by more than one engineering or engineering technology major. Courses specific to individual majors may be found in the listing for the specific program.

Civil and Construction Engineering

Civil Engineering

Offering:

Bachelor of Science degree in Civil Engineering

Civil engineering is the oldest of the engineering disciplines and involves the planning, design, and construction of facilities essential to modern life.

Graduates can look forward to employment by construction companies; city and county engineering departments; state and federal transportation organizations (such as the Georgia Department of Transportation); and civil engineering consulting and design firms. Graduates have the qualifications to enter careers in areas such as, but not limited to, transportation engineering, structural engineering, environmental engineering, geotechnical engineering, water resource engineering, and construction engineering. Typical job titles for graduates include civil engineer, construction engineer, project engineer, planner, project supervisor, consulting engineer, and design engineer.

Civil Engineering requires rigorous training in basic engineering principles along with the development of skills in the areas of planning and management of construction projects and the associated systems and resources. Graduates in the area of Civil Engineering will be required to master technical elements and to demonstrate particular competence in the areas of communication, fiscal management, and project control. The broad-based background is tailored to develop professionals who will be able to move between the technical and managerial aspects of civil engineering projects and to serve in key leadership positions within the engineering profession.

Faculty:

Samuel Beadles, *P.E., Professor and Department Chair*
Sung-Hee Kim, *Ph.D., P.E., Associate Professor*
Wasim Barham, *Ph.D., P.E., Assistant Professor*
M.A. Karim, *Ph.D., P.E., Assistant Professor*
Metin Oguzmert, Ph.D., P.E., Assistant Professor
Jidong Yang, Ph.D., *P.E., Assistant Professor*
Tien M. Yee, Ph.D., *Assistant Professor*

Construction Engineering (ABET Accredited)

Offering:

Bachelor of Science degree in Construction Engineering

The Construction Engineering program is part of the School of Engineering at Southern Polytechnic State University. In this major the traditional areas of civil engineering and construction are combined to produce graduates who are able to work effectively in all aspects of the construction industry.

Accreditation

The Bachelor of Science in Construction Engineering program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Construction Engineering requires rigorous training in basic engineering principles along with the development of skills in the areas of planning and management of construction projects and the associated systems and resources. Graduates in the area of Construction Engineering will be required to master technical elements and to demonstrate particular competence in the areas of communication, fiscal management, and project control. The broad-based background is tailored to develop professionals who will be able to move between the technical and managerial aspects of construction projects and to serve in key leadership positions within the construction industry.

Graduates can look forward to employment by construction companies; city and county construction departments; state and federal transportation organizations (such as the Georgia Department of Transportation); and civil engineering consulting and design firms. Graduates have the qualifications to enter careers in construction related fields as well, including construction engineering design, construction operations and management, construction planning and cost estimating. Typical job titles for graduates include construction engineer, project engineer, project supervisor, construction manager, and design engineer.

The Construction Engineering curriculum offers a balance of course work in engineering analysis, engineering design, construction practice, and construction management. Graduates of the program are expected to be able to:

- Create, design, analyze and improve construction processes, devices or systems.
- Apply modern construction practices and materials to construction designs.
- Apply and interpret appropriate software in developing construction engineering problems.
- Be capable of professional registration nationwide.
- Be capable of pursuing varied graduate education in engineering.
- Recognize careers in the construction engineering field and be prepared for advancement in the industry.

Faculty:

Samuel Beadles, P.E., *Professor and Department Chair*
Sung-Hee Kim, *Ph.D., P.E., Associate Professor*
Wasim Barham, *Ph.D., P.E., Assistant Professor*
M.A. Karim, *Ph.D., P.E., Assistant Professor*
Metin Oguzmert, Ph.D., P.E., Assistant Professor
Jidong Yang, Ph.D., *P.E., Assistant Professor*
Tien M. Yee, Ph.D., *Assistant Professor*

Areas of Study

Civil Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**

Area D

| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| MATH 2254 - Calculus II **4 Credits**

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| SURV 2221 - Surveying I **4 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**

Requirements

| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ENVS 2202 - Environmental Science (ECORE) **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3324 - Project Cost Analysis **4 Credits**
| ENGR 3305 - Data Collection and Analysis in Engineering **3 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| CE 3201 - Structural Analysis **3 Credits**
| CE 3202 - Design of Concrete Structures **3 Credits**
| CE 3501 - Materials for Civil & Construction Engineering **3 Credits**
| CE 3502 - Materials for Civil & Construction Engineering Lab **1 Credits**
| CE 3701 - Geotechnical Engineering **3 Credits**
| CE 3708 - Geotechnical Engineering Lab **1 Credits**
| CE 3702 - Environmental Engineering **3 Credits**
| CE 3703 - Environmental Engineering II **3 Credits**
| CE 3704 - Environmental Engineering Lab I **1 Credits**
| CE 4103 - Design of Steel Structures **3 Credits**
| CE 4105 - Foundation Design **3 Credits**
| CE 4177 - Transportation Engineering **3 Credits**
| CE 4179 - Transportation Engineering Lab **1 Credits**
| CE 4178 - Highway Design and Construction **3 Credits**
| CE 4703 - Engineering Hydrology **3 Credits**
| CE 4800 - Senior Project **3 Credits**
| SURV 4470 - Land Development Design **4 Credits**
| CE XXXX Technical Electives **6 Credits**

Degree Program Total: 130

The Civil Engineering degree requires a grade of "C" or better in all CE, SURV, and ENGR courses applied to degree requirements.

CE Technical Electives: (6 hrs)

| CE 4704 - Engineering Hydraulic Analysis and Design **3 Credits**
| CE 4705 - Advanced Soil Mechanics **3 Credits**
| CE 4706 - Pavement Engineering **3 Credits**
| CE 4707 - Design of Wood Structures **3 Credits**
| CE 4708 - Hazardous Waste Engineering **3 Credits**
| CE 4709 - Advanced Structural Analysis **3 Credits**

Construction Engineering, BS

Requirements

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2335 - Numerical Methods I **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**
| Area E1 - Course in History: American Perspective **3 Credits**
| Area E2 - World History **3 Credits**
| Area E3 - Course in Behavioral Science **3 Credits**
| Area E4 - Cultures and Societies **3 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3305 - Data Collection and Analysis in Engineering **3 Credits**
| ENGR 3324 - Project Cost Analysis **4 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CE 3201 - Structural Analysis **3 Credits**
| CE 3501 - Materials for Civil & Construction Engineering **3 Credits**
| CE 3502 - Materials for Civil & Construction Engineering Lab **1 Credits**
| CE 3701 - Geotechnical Engineering **3 Credits**
| CE 3702 - Environmental Engineering **3 Credits**
| CE 4177 - Transportation Engineering **3 Credits**
| CE 4178 - Highway Design and Construction **3 Credits**
| CE 4703 - Engineering Hydrology **3 Credits**
| CE 4800 - Senior Project **3 Credits**
| CM 3160 - Construction Equipment **3 Credits**
| CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
| CM 4510 - Construction Scheduling **3 Credits**
| CM 4560 - Construction Project Management **3 Credits**
| SURV 2221 - Surveying I **4 Credits**
| CE 4202 - Steel and Concrete Design **4 Credits**
| CM 4710 - Construction Safety **4 Credits**
| CM 4760 - Construction and Real Estate Property Law **3 Credits**

Degree Program Total: 130

The Construction Engineering degree requires a grade of "C" or better in all CE, SURV, ENGR and CM courses applied to degree requirements.

Electrical and Mechatronics Engineering

Electrical Engineering

Offering:

Bachelor of Science degree in Electrical Engineering

The Electrical Engineering program is part of the School of Engineering at Southern Polytechnic State University. Electrical Engineering is arguably the largest discipline of engineering. It focuses on the application of the principles of electricity and its use with electrical devices and systems. In this energy conscious world, a thorough understanding of energy and its uses is essential to the success of an electrical engineer.

Nearly every industry utilizes electrical engineers. Graduates have the qualifications to enter careers in areas such as, but not limited to, telecommunications, computer engineering, manufacturing, the aerospace industry, power generation and distribution, alternative energy, robotics, and automation. Typical job titles for graduates may include electrical engineer, electronics engineer, telecommunications engineer, project engineer, planner, project supervisor, consulting engineer, and design engineer.

Electrical Engineering requires rigorous training in basic engineering principles along with the development of skills in the areas of planning and management of design projects and the associated systems and resources. Graduates in the area of Electrical Engineering will be required to master technical elements and to demonstrate particular competence in the areas of communication, fiscal management, and project control. The broad-based background is tailored to develop professionals who will be able to move between the technical and managerial aspects of electrical engineering projects and to serve in key leadership positions within the engineering profession.

The Bachelor of Science in Electrical Engineering was approved by the Board of Regents in August 2009.

Faculty:

Lance Crimm, *P.E., Professor and Department Chair*

Sumit Chakravarty, *Ph.D., Assistant Professor*

Yusun Chang, *Ph.D., Assistant Professor*

Sandip Das, *Ph.D., Assistant Professor*

Bill M. Diong, *Ph.D., Associate Professor*

Hoseon Lee, *Ph.D, Assistant Professor*

Kuo-Sheng Ma, *Ph.D. Assistant Professor*

Mechatronics Engineering

Offering:

Bachelor of Science degree in Mechatronics Engineering

Mechatronics Engineering is the integration of mechanical and electrical engineering disciplines with an infusion of computer science and software engineering. Mechatronics engineers use this integrated approach to bring higher performance to engineering systems, and to make them more reliable and more cost-effective. Professionals with skills in this area have been identified as a critical need by industry and by the Society of Manufacturing Engineers. Studies conducted by the National Research Council discuss the value of interdisciplinary solutions that integrate multiple technologies across technical disciplines.

Mechatronic systems can be a complete product or a sub-component of a product. Examples of mechatronic systems include aircraft flight control and navigation systems; automotive electronic fuel injection and anti-lock brake systems; automated manufacturing systems including robots, numerical control machining centers, packaging systems and plastic injection-molding systems; artificial organs; health monitoring of engineered and surgical systems; copy machines; and many more. A common element of all these systems is the integration of analog and digital circuits, microprocessors and computers, mechanical devices, sensors, actuators, and controls.

Mechatronics Engineering graduates can select from a wide spectrum of industries for career choices and can also contribute in a variety of roles including design engineer, software engineer, project planner, product designer, and project manager. Opportunities are also available to graduates in smaller companies that need generalists who can perform both mechanical and electrical engineering functions.

The SPSU Bachelor of Science degree in Mechatronics Engineering was approved by the Board of Regents in October 2006.

Faculty:

Matthew Marshall, *Ph.D., Assistant Professor*
Chan Ham, *Ph.D., Assistant Professor and Program Director*
Ying Wang, *Ph.D., Assistant Professor*
Kevin McFall, *Ph.D., Assistant Professor*

Areas of Study

Electrical Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**

Area D

| MATH 2254 - Calculus II **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| One hour from Area A Math
| One hour from Area D Math

Requirements

| EE 1000 - Foundations of Electrical Engineering **2 Credits**
| CSE 1301E - C++ Programming for Engineers **4 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| EE 2302 - Circuit Analysis II **3 Credits**
| EE 2401 - Semiconductor Devices **3 Credits**
| EE 2501 - Digital Logic Design **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| EE 3501 - Embedded Systems **4 Credits**
| EE 3605 - Electromagnetics **3 Credits**
| EE 3701 - Signals and Systems **3 Credits**
| ENGR 4402 - Engineering Ethics **1 Credits**

| EE 3401 - Engineering Electronics **4 Credits**
| EE 3702 - Communication Systems **3 Credits**
| EE 3601 - Electric Machines **4 Credits**
| EE 4201 - Control Systems **4 Credits**
| EE 4701 - Professional Practice **3 Credits**
| EE 3/4XXX - Technical Electives **9 Credits**
| EE 3/4XXX - Engineering Science Elective **3 Credits**
| EE 4800 - Senior Project **4 Credits**
| Math Elective - Math above 2335 **3 Credits**

Degree Program Total: 129

The Electrical Engineering degree requires a grade of "C" or better in all EE and ENGR courses applied to degree requirements.

Mechatronics Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**

Area D

| MATH 2254 - Calculus II **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Area E Group 1 American Context **3 Credits**

| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

One hour from Area A Math

One hour from Area D Math

| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**

Requirements

| MTRE 1000 - Introduction to Mechatronics Engineering **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CSE 1301E - C++ Programming for Engineers **4 Credits**
| Math Elective **3 Credits**
| EDG 1211 - Engineering Graphics I **3 Credits**
| MTRE 2610 - Engineering Algorithms and Visualization **3 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| EE 3401 - Engineering Electronics **4 Credits**
| EE 2501 - Digital Logic Design **4 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| MTRE 3710 - Mechatronics Engineering Fundamentals **4 Credits**
| ECON 2107 - Introduction to Economic Analysis **3 Credits** (Recommended Area E-3)
| EE 4201 - Control Systems **4 Credits**
| MTRE 4000 - Advanced Controls **3 Credits**
| MTRE 4200 - Robotics Analysis and Synthesis **4 Credits**
| MTRE 4400 - Mechatronics System Design **4 Credits**

Degree Program Total Hours: 131

The Mechatronics Engineering degree requires a grade of "C" or better in all MTRE, EE, ME and ENGR courses applied to degree requirements.

Systems and Mechanical Engineering
Mechanical Engineering

Offering:

Bachelor of Science degree in Mechanical Engineering

Mechanical engineering is one of the largest disciplines of engineering because it is one of the broadest. It focuses on the application of the principles of mechanics and materials to design machines and devices. Mechanical engineers design devices that help society, everything from artificial knee joints to wind-turbines.

Graduates have the qualifications to enter graduate school, become a licensed professional engineer in any state after sufficient work experience, or directly enter careers in areas such as, but not limited to, manufacturing, aerospace industry, power generation and distribution, automotive design, machine design, alternative energy, robotics, and automation. Typical job titles for graduates may include design engineer, project engineer, process engineer, test engineer, development engineer, program manager, consulting engineer, and field engineer.

Mechanical Engineering requires rigorous training in basic science and engineering principles along with the development of skills in the areas of computer-aided design, instrumentation, and planning and management of design projects. Graduates in the area of Mechanical Engineering will be required to master technical elements and to demonstrate particular competence in the areas of communication, fiscal management, and project control. The broad-based background is tailored to develop professionals who will be able to move between the technical and managerial aspects of mechanical engineering projects and to serve in key leadership positions within the engineering profession. As with all engineering degrees, a mechanical engineer becomes very good at solving difficult problems which makes it a good degree for non-engineering careers as well. The Bachelor of Science in Mechanical Engineering was approved by the Board of Regents in August 2009.

The Faculty:

Mir Atiqulla, Ph.D., *Professor*
Erhan Ilksoy, P.E., *Senior Lecturer*
Margaret Loraine Lowder, Ph.D., *Assistant Professor*
Mohammed S. Mayeed, Ph.D., *Assistant Professor*
Richard Ruhala, Ph.D., *Associate Professor*
Laura A. Ruhala, Ph.D., *Associate Professor*
Muhammad Salman, Ph.D., *Lecturer*
Valmiki Sooklal, Ph.D., *Assistant Professor*
David R. Veazie, Ph.D., P.E., *Professor*

Systems Engineering

Offering:

Bachelor of Science degree in Systems Engineering
Minor in Aerospace Engineering
Minor in Nuclear Engineering

Systems Engineering is an interdisciplinary and structured approach to designing and deploying successful systems. The Systems Engineering degree blends engineering, systems thinking, and management topics. Systems Engineering

addresses the business and technical needs of all stakeholders throughout the entire design process, from concept to production to operation to disposal. In this major, engineering techniques and a systems approach are combined to produce graduates who are highly valued for their problem solving and managerial skills.

Graduates of this program will understand the multidisciplinary fundamentals of engineering and possess strong team skills to solve complex problems that cross disciplinary boundaries. They will understand current technology, but also be creative thinkers and have the flexibility to change with technology. They will be able to create sustainable systems, to adapt to the new global context and be empowered for lifelong learning. Graduates can look forward to employment in the defense, aerospace, transportation, energy and telecommunications industries, as well as many other fields that look for the knowledge and skills necessary to engineer large and complex systems.

The Systems Engineering program offers two minors for all engineering students: Aerospace Engineering and Nuclear Engineering.

| The Aerospace Engineering minor provides a comprehensive education to prepare graduates for productive careers with special emphasis on the needs of aviation, aerospace engineering, and related fields.

| Students who study Nuclear Engineering will become true multi-disciplinary specialists. Graduates will enter an expanding job market in industry, national laboratories, government and academia, where one can work on problems that will have large impact on our future environment, security, health, and safety.

The Faculty:

Renee J. Butler, Ph.D., P.E., *Associate Professor and Department Chair*
Adeel Khalid, Ph.D., *Assistant Professor*
Mahmoud Ghavi, Ph.D., *Professor*
Kamran Moghaddam, Ph.D., P.E., *Assistant Professor*
Woodrow W. Winchester, III, Ph.D., *Associate Professor*

Areas of Study

Aerospace Engineering Minor

Requirements

| SYE 3801 - Aerodynamics (Aeronautic Elective) **3 Credits**
| SYE 4803 - Aeronautics Project **3 Credits**

Choose 3 courses from the following:

| SYE 3802 - Aircraft Design and Performance (Aeronautic Elective) **3 Credits**
| SYE 3803 - Fundamentals of Avionics **3 Credits**
| SYE 4801 - Aircraft Propulsion **3 Credits**
| SYE 4802 - Helicopter Theory **3 Credits**

Minor Program Total: 15

Mechanical Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World - 3 credits
| Group 2 - Art and Culture of the World - 3 credits

Area D

| MATH 2254 - Calculus II **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits   *ECON 2107 is recommended**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| EDG 1211 - Engineering Graphics I **3 Credits**
One credit from MATH 1113 & MATH 2253 will be added to Area F to complete the 18 hour requirement.

Major Courses

| ME 1001 - Introduction to Mechanical Engineering **2 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ME 1311 - MATLAB for Engineers with Applications **3 Credits**
| Math or Science Electives **3-4 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| ME 3101 - Materials Science and Engineering **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**

| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| ME 4250 - Computer Aided Engineering **3 Credits**
| ENGR 4402 - Engineering Ethics **1 Credits**
| ME 4403 - Heat Transfer and Thermodynamics Lab **1 Credits**
| ME 3410 - Thermodynamics **3 Credits**
| ME 3201 - Product Realization **2 Credits**
| ME 3440 - Heat Transfer **3 Credits**
| ME 3501 - Dynamic Systems & Control Theory **3 Credits**
| ENGR 3125 - Machine Dynamics & Vibrations **3 Credits**
| ME 4141 - Machine Design I **3 Credits**
| ME 4201 - Senior Design I **1 Credits**
| ME 4202 - Senior Design II **3 Credits**
| ME 4501 - Vibrations & Controls Lab **1 Credits**
| MATH 2255 - Calculus III **4 Credits**
| Approved Technical Electives **9 Credits**

Degree Program Total: 130

The Mechanical Engineering degree requires a grade of "C" or better in all ME and ENGR courses applied to degree requirements.

Technical Electives

Technical Electives can be any non-required 3000 and/or 4000 level courses from ME, including Special Topics (ME 3903 or ME 4903) and Undergraduate Research (ME 4801, ME 4802, and ME 4803).   Additionally MTRE 3710 and SYE 3320 are allowed. Students may focus their technical electives in Aerospace Engineering (SYE 3801, SYE 3802, SYE 3803, SYE 4801, SYE 4802, SYE 4803) or Nuclear Engineering (SYE 3501, SYE 3502, SYE 4501, SYE 4502, or SYE 4503).

Some ENGR, EE, MTRE, or SYE may be approved for technical electives by the program coordinator or the department chair.

**If student does not take ECON 2107 for Core E-3, the student must take SYE 3320 - Engineering Economics and Decision Analysis as a Technical Elective.

Nuclear Engineering Minor

Requirements

| SYE 3501 - Fundamentals of Nuclear Engineering **3 Credits**
| SYE 3502 - Radiation Detection and Measurement **3 Credits**
| SYE 4501 - Nuclear Power Generation **3 Credits**

| SYE 4502 - Radiation Protection and Health Physics **3 Credits**
| SYE 4503 - Nuclear Fuel Cycle **3 Credits**

Minor Program Total: 15

Systems Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World - **3 credits**
| Group 2 - Art and Culture of the World - **3 credits**

Area D

| MATH 2254 - Calculus II **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CSE 1301E - C++ Programming for Engineers **4 Credits**

| CSE 1302E - Object Oriented C++ Programming for Engineers **4 Credits**
| MATH 2255 - Calculus III **4 Credits**

Systems Engineering Major

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
    or
| ME 3410 - Thermodynamics **3 Credits**
| SYE 2100 - Systems Analysis and Design **3 Credits**
| SYE 3320 - Engineering Economics and Decision Analysis **3 Credits**
| SYE 2600 - Applications of Probability **3 Credits**
| SYE 3100 - Systems Reliability and Maintainability **3 Credits**
| SYE 3120 - Contemporary Technological Systems: Design, Analysis, and Architecture **3 Credits**
| SYE 3200 - Human Machine Systems **3 Credits**
| SYE 3300 - Program Management **3 Credits**
| SYE 3400 - Engineering Optimization I: Deterministic Decision Models **3 Credits**
| SYE 3600 - Statistics with Applications **3 Credits**
| SYE 3700 - Manufacturing and Production Systems **3 Credits**
    or
| SYE 3710 - Logistics and Supply Chain Systems **3 Credits**
| SYE 4400 - Engineering Optimization II: Stochastic Decision Models **3 Credits**
| SYE 4500 - System Modeling and Simulation **3 Credits**
| SYE 4900 - System Design Project **3 Credits**
    or
| SYE 4803 - Aeronautics Project **3 Credits**
    Approved Technical Electives: **12 Credits**

Technical Electives

Technical Electives can be 3000 and/or 4000 level courses from SYE, SWE, MTRE, ME, CE, EE or MATH. Other courses may be approved by the department chair. Students may focus their technical electives in Aerospace Engineering or Nuclear Engineering.

Degree Program Total: 129

The Systems Engineering degree requires a grade of 'C' or better for any course with an ENGR or SYE prefix and ENGL 1101. A 'D' or better is required for any other course.

School of Engineering Technology & Management

Offering

Bachelor of Science Degrees
Master of Science Degrees

Southern Polytechnic State University offers a variety of engineering programs, including Civil Engineering, Construction Engineering, Electrical Engineering, Mechanical Engineering, Mechatronics Engineering, Software Engineering, and Systems Engineering at the undergraduate level, and Software Engineering and Systems Engineering at the Masters level. Individuals interested in these programs should see the appropriate sections of this catalog.

Courses listed in this section of the catalog that carry the ENGR prefix, are general in nature, and are taken by more than one engineering or engineering technology major. Courses specific to individual majors may be found in the listing for the specific program.

Engineering Technology

Engineering Technology (ET) is the profession in which knowledge of applied mathematics and natural sciences gained by higher education, experience, and practice is devoted to the application of engineering principles and the implementation and extension of technological advances for the benefit of society. Engineering Technology education focuses primarily on analyzing, applying, designing, implementing, and improving existing and emerging technologies. The intent of Engineering Technology programs is to prepare graduates for the practice of engineering closest to the product improvement, manufacturing, and engineering operational functions.

The backbone of ET degree programs is experiential learning. The mathematical and science requirements are enhanced by the number of laboratory courses offered with the lectures. Further, lecture courses emphasize the application of mathematics, science, and engineering and we offer labs that are hands-on and project-based in nature.

SPSU offers Engineering Technology degrees in civil, computer, electrical, environmental, industrial, mechanical, and telecommunications. These programs are accredited by the Engineering Technology Accreditation Commission (ETAC) of ABET, http://www.abet.org

Engineering Technology students are encouraged to pursue registration as a Professional Engineer. The first step in the registration process is the successful completion of the Fundamentals of Engineering (FE) Exam. Students may take this exam during your senior year. Additional requirements for professional licensure following graduation if the accumulation of a minimum of seven years of progressive experience and successful completion of the Professional Engineer (PE) exam.

Business Administration

The baccalaureate programs in Business Administration prepare student for successful careers in management, marketing and accounting. Graduates of the program advance into supervisory and management positions in service and industrial enterprises. In the Business Administration Department at SPSU instruction in technical and business subjects is effectively combined to produce a curriculum that is uniquely matched to the demands of the modern business world.

The SPSU Business and Accounting degrees are accredited by the Association of Collegiate Business Schools and Programs (ACBSP), a leading international body specializing in accreditation for business education that emphasize teaching excellence. The Business Administration department is a member of The Association of Advance Collegiate Schools of Business (AACSB).

For more information regarding the Business Administration and Accounting programs please visit http://www.spsu.edu/business/index.htm

Note: Students enrolled in Business Administration and Accounting majors are required to earn a "C" average (2.0 GPA) in their ACCT, ECON, and MGNT courses, two grades of "D" may be used for graduation purposes in the major courses. A grade of "C" or better is required in the capstone course.

The Faculty:

Donald Ariail, *Associate Professor, Accounting*

Mark Hiatt, *Assistant Professor, Management*

Zeynep Kelani, *Lecturer, Economics*
Amine Khayati, *Assistant Professor, Finance*
Mikhail Melnik, *Associate Professor, Economics*
Max M. North, *Professor, Management Information System*
Muhammad A. Obeidat, *Professor, Operations & Technology Management*
Gregory Quinet, *Assistant Professor, Management*
Ronny Richardson, *Professor and Department Chair, Operations Management*
Shannon Shumate, *Lecturer, Accounting*
Mona Sinha, *Assistant Professor, Marketing*

Sondra Smith, *Temporary Full-time Instructor, Accounting*

Sandria Stephenson, *Assistant Professor, Accounting*

Sonia Toson, *Assistant Professor, Law*

Bor-Yi Tsay, *Professor, Accounting*
Sandra Vasa-Sideris, *Professor, Management*

Civil Engineering Technology

Civil Engineering Technology

Offering:

The Bachelor of Science in Civil Engineering Technology
The Bachelor of Science in Surveying and Mapping
The Bachelor of Science in Environmental Engineering Technology
Certificate in Geographical Information Systems (GIS)
Certificate in Land Surveying
Minor in Georgraphical Information Systems (GIS)

All of these programs and certificates provide the knowledge and skills for graduates to play an effective role in the rehabilitation of the nation's infrastructure. In addition, our programs emphasize sustainability and environmental control which are essential in today's practice. Our graduates are immediately employable and productive. This ability of our graduates to **"hit the ground running"** is highly valued by industry employers.

Accreditation

The Bachelor of Science in Civil Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET, www.abet.org.

The Bachelor of Science in Surveying and Mapping is accredited by the Applied Science Accreditation Commission of ABET, www.abet.org.

The Faculty:

Daniel L. Branham, *Lecturer*
Mark G. Lee, *Instructor*
Mehrdad Mesbahi, *Associate Professor*
Fatih Oncul, *Associate Professor*
Allen D. Roberts, *Assistant Professor*
Nancy J.Turner, *Senior Lecturer*
Matthew M. Wilson, *Professor*
Roneisha Worthy, *Assistant Professor*
Timothy W. Zeigler, *Professor, Department Chair*

The Faculty Emeritus:

Carlos Ortiz, *Professor, Emeritus*
Al Troemel, *Professor, Emeritus*

B.S. Civil Engineering Technology

Civil Engineering Technology is a broad field producing engineering technologists with versatile backgrounds.

Graduates of the **B.S**. **Civil Engineering Technology Program** have the qualifications to enter careers in:

Construction
Surveying
Geotechnical
Site development
Structural Design
Transportation
Urban Planning
Environmental Technologies

Civil Engineering Technology (CET) Program prepares graduates for analysis and design of civil engineering systems and facilities. In addition to fundamental civil engineering courses students take management and civil software application courses. The CET program offers courses in several civil engineering technology fields, such as:

> **Environmental Engineering Technology:** Analysis and design of systems and facilities to correct or control the pollution of air, land, or water. For example, design of water treatment and wastewater plants, and solid waste disposal facilities. Many career opportunities exist with municipalities, industry, consulting firms and governmental agencies.

> **Structural Engineering Technology:** Planning, preparation, construction, and inspection of modern buildings and bridges and other structures. In their coursework, students analyze and design structural members of steel, reinforced concrete and other engineering materials.

> **Geotechnical Engineering Technology:** Subsurface investigations, and field and laboratory tests; and design and analysis for civil engineering works such as foundations, dams, and retaining walls.

> **Transportation Engineering Technology:** Planning and maintenance of all types of transportation facilities including streets, highways, mass transit systems, railroads, airfields, ports, harbors and pipelines.

> **Surveying and Mapping:** Utilization of the state-of-the-art surveying equipment (including theodolites, total stations, GPS units, and field-to-plot systems) in developing maps, designing and laying out construction projects and in planning land development for residential and commercial enterprises.

Professional Engineer: In Georgia and approximately thirty-five other states in the U.S., the BS-CET degree along with the appropriate number of years of experience, and the passage of two 8-hour examinations (FE and PE), qualifies a graduate to become a licensed Professional Engineer (PE). The FE exam can be taken while a senior enrolled in the CET curriculum.

Licensed Land Surveyor: CET majors whose curriculum contains at least six elective hours of surveying coursework meet the educational requirements to become a licensed as a Professional Land Surveyor (PLS) in Georgia. In addition, they must obtain four-years of acceptable experience and pass the FLS and PLS examinations.

B. S. Environmental Engineering Technology

Graduates of the **Environmental Engineering Technology Program** are prepared for analysis, design and management and operation of environmental facilities. A graduate shall understand the concepts of professional practice and the role and responsibilities of public institutions, as well as private organizations in preserving and maintaining the quality of the environment. Electives in the program are available in environmental chemistry, ecology, and management.

Professional Engineer: In Georgia and approximately thirty-five other states in the U.S., the B.S. Environmental Engineering Technology degree along with the appropriate number of years of experience, and the passage of two 8-hour examinations (FE and PE) qualifies a graduate to become a licensed Professional Engineer (PE). The FE exam can be taken while a senior enrolled in the CET curriculum.

B.S. Surveying and Mapping

Graduates of B.S. Surveying and Mapping are capable of operating modern surveying equipment including theodolites, electronic total stations, robotic instrumentation, Global Positioning Systems (GPS) satellite receivers, and optical alignment devices. Mapping photogrammetry and remote sensing.

In laboratories, students develop maps from field measurements, design and layout construction projects, plan subdivision developments and establish horizontal and vertical control using satellite geodesy. Computer analysis is used extensively in reducing data, planning field layouts, plotting boundaries, drawing (CAD) plats and map production.

Students also study topics from the Civil Engineering Technology program including elementary structures, fluid mechanics, hydrology and the design and construction of highways. Courses in mathematics, business principles and core requirements provide the students added depth.

With focused laboratory based classes, students develop the critical thinking needed to work in this field. Using a variety of tools - GPS receivers, electronic distance meters, laser total stations, and data collection equipment to name a few - students become adept at creating maps from field measurements, designing and laying out construction projects, and planning subdivision developments. Field exercises, which take place right on campus, help prepare you to work in the private sector, government and utilities, or engineering practices.

Professional Registration:

Registered Land Surveyor: Graduates exceed the educational requirements to become licensed as a Registered Land Surveyor (RLS) in Georgia. In addition, they must obtain four-years of acceptable experience and pass the FLS and PLS examinations.

Civil Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

***Note**: 1 hour from Area A MATH 1113 will be used to satisfy Area F 18 hour requirement.

| CET 2110 - Problem Solving Methods in CET **3 Credits**
| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| ENGT 2124 - Statics with Applications **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| SURV 2221 - Surveying I **4 Credits**

Requirements

| CET 1001 - Orientation to the Civil ET, Environmental ET, and Geospatial Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CET 3410 - Soil Properties and Site Exploration **3 Credits**
| CET 3410L - Soil Properties Lab **1 Credits**
| CET 3110 - Construction Materials and Sustainability **3 Credits**
| CET 3110L - Construction Materials Lab **1 Credits**
| CET 3120 - Cost Estimating and Scheduling in CET **3 Credits**
| CET 3120L - Plan Reading and Take Offs Lab **1 Credits**
| CET 3210 - Structural Mechanics **3 Credits**

| CET 3510 - Traffic Analysis and Road Design **2 Credits**
| CET 3510L - Traffic Analysis and Road Design Lab **1 Credits**
| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CET 3130L - Fluids and Hydraulics Lab **1 Credits**
| CET 3310 - Water Treatment and Distribution **2 Credits**
| CET 3310L - Water Treatment and Distribution Lab **1 Credits**
| CET 3320 - Wastewater Collection and Treatment **2 Credits**
| CET 3320L - Wastewater Collection and Treatment Lab **1 Credits**
| CET 3220 - Applied Structural Steel Design **3 Credits**
| CET 3230 - Concrete Infrastructure Design **3 Credits**
| CET 3430L - Site Exploration and Field Testing Lab **1 Credits**
| CET 4110 - Ethics of Engineering **1 Credits**
| CET 4120 - Senior Design and Engineering Documentation **3 Credits**
| CET 4130 - Special Inspections **2 Credits**
| CET 4240L - Structural Detailing Lab **1 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4310L - Erosion Control Lab **1 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| ENGT 3124 - Strength of Materials with Applications **3 Credits**
| ENGT 3124L - Strength of Materials Lab **1 Credits**
| CET Electives **9 Credits**
| MATH 2253 (Area D Carryover) **1 Credit**

Degree Program Total: 124

CET students are required to earn a grade of "C" or better in all courses required in the major and all courses used as electives.

Environmental Engineering Technology, BS

Requirements

Area A:

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B:

| COMM 2400 - Public Speaking **2 Credits**

| STS 2400 - Science, Technology, and Society **2 Credits**

Area C:

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E:

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F:

Core related to major.

| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| CET 2110 - Problem Solving Methods in CET **3 Credits**
| SURV 2110 - Introduction to Mapping **4 Credits**

Additional Requirements

| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CET 2200 - Introduction to Structures **4 Credits**
| CET 3110 - Construction Materials and Sustainability **3 Credits**
| CET 3110L - Construction Materials Lab **1 Credits**
| CET 3120 - Cost Estimating and Scheduling in CET **3 Credits**
| CET 3120L - Plan Reading and Take Offs Lab **1 Credits**
| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CET 3130L - Fluids and Hydraulics Lab **1 Credits**
| CET 3310 - Water Treatment and Distribution **2 Credits**

| CET 3310L - Water Treatment and Distribution Lab **1 Credits**
| CET 3320 - Wastewater Collection and Treatment **2 Credits**
| CET 3320L - Wastewater Collection and Treatment Lab **1 Credits**
| CET 3410 - Soil Properties and Site Exploration **3 Credits**
| CET 3410L - Soil Properties Lab **1 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4310L - Erosion Control Lab **1 Credits**
| CET 4320 - Unit Operations in Environmental Engineering **4 Credits**
| CET 4330 - Solid Waste Management **3 Credits**
| CET 4110 - Ethics of Engineering **1 Credits**
| CET 4120 - Senior Design and Engineering Documentation **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| MATH MAJOR COURSES: Excess from AREA A AND D **2 Credits**
| CM 4710 - Construction Safety **4 Credits**
| ENVS 3100K - Soil & Water Science **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**

Major Electives:

Take minimum of 6 hours from major electives listed below:

| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MET 3400 - Thermodynamics and Heat Transfer **3 Credits**
| SET 3240 - Hydraulic Structures **3 Credits**
| BIOL 3300K - Ecology **4 Credits**
| CHEM 3150K - Environmental Chemistry **4 Credits**
| CET 4340 - Air Pollution Control **3 Credits**

Degree Program Total: 123

EvET students are required to earn a grade of "C" or better in all courses required in the major and all courses used as electives.

Geographical Information Systems Certificate

The Geographical Information Systems (GIS) Certificate program is designed to prepare students with a practical set of GIS marketable skills who have a background in GIS applications such as surveying, real estate, marketing, geography or business background. There are five courses required in the certificate program.

Required Courses (19 Credits)

| SURV 2110 - Introduction to Mapping **4 Credits**
  OR
| SURV 2221 - Surveying I **4 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| SURV 4420 - Remote Sensing **4 Credits**
| SURV 4422 - Geographic Information Systems II **4 Credits**
| SURV 4110 - Geographical Information Systems (GIS) Practice **3 Credits**

Certificate Program Total: 19

Geographical Information Systems Minor

Minor in Geographical Information Systems

Required Courses

| SURV 2110 - Introduction to Mapping **4 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| SURV 4420 - Remote Sensing **4 Credits**
| SURV 4422 - Geographic Information Systems II **4 Credits**

Total Hours: 16 Credits

Land Surveying Certificate

The Land Surveying Certificate program is designed to prepare surveyors with the basic education necessary to take the Fundamentals of Land Surveying Exam and exceeds the State of Georgia academic registration requirements to become a Registered Land Surveyor. There are six courses required in the certificate program.

Required Courses (21 Credits)

| SURV 2221 - Surveying I **4 Credits**
| SURV 3222 - Surveying II **4 Credits**
| SURV 4465 - Legal Aspects of Land Surveying **4 Credits**
| SURV 4475 - Land Surveying Practice **2 Credits**
| SURV 4470 - Land Development Design **4 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4310L - Erosion Control Lab **1 Credits**

Certificate Program Total: 21

Surveying and Mapping, BS

Requirements:

| ENGL 1101 - English Composition I **3 Credits**

| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to area F)
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take One Course From the Literature Group **3 Credits**
| Area C Group 2 - Take One Course From the Art and Culture Group **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to area F)
| MATH 2254 - Calculus II **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| Math Elective - **3 Credits**
| Area D - Any Two Lab Sciences **8 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Science **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| IT 1113 - Programming Principles **3 Credits** or

| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| CET 2200 - Introduction to Structures **4 Credits**
| CET 3510 - Traffic Analysis and Road Design **2 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 3120 - Cost Estimating and Scheduling in CET **3 Credits**
| SURV 2221 - Surveying I **4 Credits**
| SURV 3222 - Surveying II **4 Credits**
| SURV 4410 - Surveying Computations and Adjustments **4 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| SURV 4465 - Legal Aspects of Land Surveying **4 Credits**
| SURV 4470 - Land Development Design **4 Credits**
| SURV 4415 - Geodetic Surveying Methods **4 Credits**
| SURV 4475 - Land Surveying Practice **2 Credits**
| SURV Electives **4 Credits**
| Free Elective **3 Credits**

Degree Program Total: 129 hours

Note:

Surveying students are required to earn a grade of "C" or better in all courses required in the major and all courses

used as electives.

PHYS 1111 and PHYS 1112 are required.

If you use PHYS 1111/PHYS 1112 in Area D then you may use 4 hours of either CET or SURV 1-2000 level courses or any Lab Science to fulfill the Area F requirement.

If you use PHYS 1111/PHYS 1112 in Area D then you may use 4 hours of either CET or SURV 3-4000 level courses or any Lab Science to fulfill the major requirement.

Electrical and Computer Engineering Technology

Electrical and Computer Engineering Technology

Offering:

The Bachelor of Science in Computer Engineering Technology
The Bachelor of Science in Electrical Engineering Technology
The Bachelor of Science in Telecommunications Engineering Technology

Accreditation

The Bachelor of Science degree programs in Electrical Engineering Technology, Computer Engineering Technology, and Telecommunications Engineering Technology are accredited by the Engineering Technology Accreditation Commission of ABET, www.ABET.org.

Electrical and Computer Engineering Technology

Your challenge: Create a computer-aided testing system. Your solution: Write software, design circuits, and demonstrate how the two work together. Your result: Technological expertise that translates into high-powered careers.

Highly ranked and nationally respected, our three engineering technology programs provide plenty of hands-on learning. Flexible schedules give you the option of attending day or night, and our faculty bring their consulting experience into every lab. In small classes and on team projects, you learn the practical skills needed in many careers, from design and test engineering to research and development, sales, management, and telecommunications network administration. The majority of Engineering Technology graduates obtain jobs as engineers and fill many engineering positions in the US. Industry and educational leaders consider our graduates among the nation's best.

For the first two and a half years, all students take a common curriculum of fundamentals, circuits, electronics, and data communication, as well as calculus and physics. Courses in speech, technical writing, and composition help develop your communication skills, which are key to advancement. Our Industry Advisory Board, which includes representatives from BellSouth, Georgia Power, Home Depot, and Lockheed, among others, helps keep our programs in line with industrial innovation. And student professional and honors organizations offer design competitions and networking opportunities that are both fun and practical.

Engineering Technology is a branch of engineering education that emphasizes the practical aspects of engineering rather than abstract concepts or theories. It is a blend of the application of science, engineering knowledge, and technical skills used in support of engineering activities. The Electrical and Computer Engineering Technology Department at Southern Polytechnic State University offers many diverse areas of study including communications, power, audio, digital design, controls, and computer design. Programs of study can lead to any one of the following degrees:

- Bachelor of Science in Computer Engineering Technology (BS-CpET)
- Bachelor of Science in Electrical Engineering Technology (BS-EET)
- Bachelor of Science in Telecommunications Engineering Technology (BS-TCET)

The Faculty:

Austin B. Asgill, *Professor and Department Chair*
Charles L. Bachman, *Professor Emeritus*
Craig A. Chin, *Assistant Professor*
Kim Davis, *Associate Professor*
Thomas J. Fallon, *Professor*
Pamela S. Frinzi, *Professor*
Hai T. Ho, *Associate Professor*
L. Brent Jenkins, *Associate Professor*
Scott Larisch, *Assistant Professor*
Florian Misoc, *Associate Professor*
Adimathara P. Preethy, *Assistant Professor*
Walter E. Thain Jr., *Associate Professor*
Scott J. Tippens, *Professor*
Jeff H. Wagner, *Assistant Professor*
Daren R. Wilcox, *Assistant Professor*
Omar Zia, *Professor Emeritus*

The ECET department has adopted the following Program Educational Objectives:

- Demonstrate appropriate knowledge of fundamentals of their discipline, mathematics, science and computer engineering technology.
- Possess an appropriate knowledge of the fundamentals of the discipline, mathematics, science and technologies in order to adapt to rapidly changing technologies.
- Function and communicate effectively, both individually and within team environments, demonstrating ethical, respectful and professional behavior in all associations.
- Apply creativity in the design, testing and maintenance of the discipline-specific systems, and think critically to identify, evaluate and solve complex technical and non-technical problems.
- Recognize the need for a commitment to pursue continuous self-improvement and lifelong learning.
- Be cognizant of contemporary professional, societal and global issues and be aware of and respect diverse cultures.
- Obtain and maintain a meaningful employment in their respective disciplines and attain increasing levels of responsibility and leadership in their chosen career field.

Bachelor of Science in Computer Engineering Technology

The development of the microcomputer has created a need for engineering technology graduates with a specialized knowledge of computers and control systems. The bachelor of science degree in computer engineering technology was created to meet this need. The degree program in Computer Engineering Technology (CpET) utilizes a core of mathematics, physics, and electronics courses. These courses provide the scientific and technical background for an in-depth study of the hardware and software aspects of computers and related systems. The emphasis of the program is on microcomputers and their application to the solution of industrial problems relating to robotics, control, instrumentation, monitoring, data communications, networks, and automated testing.

The ECET department has adopted the following Computer Engineering Technology Program Outcomes:

- Demonstrate appropriate knowledge of fundamentals of their discipline, mathematics, science and computer engineering technology.
- Demonstrate an appropriate mastery of knowledge, techniques, skills and modern tools of the technical components of the curriculum appropriate to their discipline.
- Use appropriate tools and laboratory equipment to acquire data, conduct experimental measurements, analyze and interpret the results.
- Demonstrate the ability to think critically and generate creative and realistic solutions to defined problems and projects appropriate to their discipline.
- Produce written documents; deliver oral presentations, prepare and interpret visual information.
- Function effectively on teams.
- Recognize the value of diversity, and identify ethical and social issues in business and technical tasks.
- Demonstrate a commitment to quality timeliness and continuous improvement.

The degree program in computer engineering technology utilizes a core of mathematics, physics, and electronics courses. These courses provide the scientific and technical background for an in-depth study of the hardware and software aspects of computers and related systems.

The emphasis of the program is on microcomputers and their application to the solution of industrial problems relating to robotics, control, instrumentation, monitoring, data communications, networks, and automated testing.

Graduates of these programs are qualified for employment as engineering technologists with companies that utilize computers in computation and control activities as well as companies that design, manufacture, market, install, and service computers and computer networks.

CpET students are required to take one project-based capstone course as part of their 11 hours of CpET electives. Contact the ECET Department to obtain a list of acceptable CpET project-based capstone courses. Any non-required upper division (3XXX/4XXX) ECET course, with the exception of ECET 3000 - Electrical Principles, ECET 3010 & ECET 4830, may be used for the remainder of their CpET electives. Students may also choose one course from outside the major to count as a CpET elective. Contact the ECET Department to obtain a list of acceptable courses from outside the major that count as a CpET elective.

Bachelor of Science in Electrical Engineering Technology

Electronics has given birth to an industrial giant. Computers, medical electronics, automation, communications, instrumentation, radar, and robotics are but a few of the fields based on electronics. This demand has created a need for electrical engineering technology graduates in all phases of development, design, production, maintenance, and troubleshooting. Graduates of the bachelor of science degree program in electrical engineering technology are meeting this need. The Electrical Engineering Technology (EET) program prepares graduates to enter the technical workforce in a variety of fields. Communications, instrumentation, automation, control systems, power, robotics, computers, and medical electronics are but a few of these fields. Within these fields, Electrical Engineering Technology graduates are typically involved in areas such as: development, design, quality assurance, technical documentation, production, maintenance, test, field service, or technical sales.

The ECET department has adopted the following Electrical Engineering Technology Program Outcomes:

- Demonstrate appropriate knowledge of fundamentals of their discipline, mathematics, science and electrical engineering technology.
- Demonstrate an appropriate mastery of knowledge, techniques, skills and modern tools of the technical components of the curriculum appropriate to their discipline.
- Use appropriate tools and laboratory equipment to acquire data, conduct experimental measurements, analyze and interpret the results.
- Demonstrate the ability to think critically and generate creative and realistic solutions to defined problems and projects appropriate to their discipline.
- Produce written documents; deliver oral presentations, prepare and interpret visual information.

- | Function effectively on teams.
- | Recognize the value of diversity, and identify ethical and social issues in business and technical tasks.
- | Demonstrate a commitment to quality timeliness and continuous improvement.

EET students are required to take one project-based capstone course as part of their 13 hours of EET electives. Contact the ECET Department to obtain a list of acceptable EET project-based capstone courses. Any non-required upper division (3XXX/4XXX) ECET course, with the exception of ECET 3000, ECET 3010 & ECET 4830, may be used for the remainder of their EET electives. Students may also choose one course from outside the major to count as an EET elective. Contact the ECET Department to obtain a list of acceptable courses from outside the major that count as an EET elective.

Students may wish to focus their EET electives in a particular area of Electrical Engineering Technology. Suggested choices in the areas of biomedical, communications, digital, power, and telecommunications are listed below: EET Electives

Biomedical electronics, instrumentation, and devices represent one of the fastest growing segments of the health care industry. Recognizing the demand, and the importance of producing graduates for this growth area, the ECET department offers a Biomedical Engineering Technology Option under the Electrical Engineeering Technology (EET) degree. Students wishing to take this option must declare so in Banner. Upon completion of the EET-BMET Degree Option, students will receive the BS-EET degree with the Option inscribed on their transcripts.

Bachelor of Science in Telecommunications Engineering Technology

The ever-increasing popularity of the Internet combined with significant advances in communications software and hardware has spawned an immense demand for individuals possessing the knowledge and skills required to design, implement, and maintain computer networking systems of all types. The bachelor of science degree program in telecommunications engineering technology (TCET) is designed to provide individuals with the theory and hands-on knowledge necessary to meet the demand.

The ECET department has adopted the following Telecommunications Engineering Technology Program Outcomes:

- | Demonstrate appropriate knowledge of fundamentals of their discipline, mathematics, science and telecommunications engineering technology.
- | Demonstrate an appropriate mastery of knowledge, techniques, skills and modern tools of the technical components of the curriculum appropriate to their discipline.
- | Use appropriate tools and laboratory equipment to acquire data, conduct experimental measurements, analyze and interpret the results.
- | Demonstrate the ability to think critically and generate creative and realistic solutions to defined problems and projects appropriate to their discipline.
- | Produce written documents; deliver oral presentations, prepare and interpret visual information.
- | Function effectively on teams.
- | Recognize the value of diversity, and identify ethical and social issues in business and technical tasks.
- | Demonstrate a commitment to quality timeliness and continuous improvement.

The degree program is based upon a core of mathematics, physics, and electronics courses. These courses provide the scientific and technical background required for an in-depth understanding of the hardware and software aspects of computers and related systems. Building upon this core, students immerse themselves into several telecommunications-related courses that provide them with a holistic perspective of this behemoth industry.

Although entitled a telecommunications degree, this program covers virtually all aspects of modern computer networking. The student's experience is greatly augmented by numerous hands-on exercises undertaken in the university's state-of-the-art telecommunications laboratory. Providing the graduate of this program with the opportunity to ascend into management, the degree is also comprised of several management-related courses.

Areas of Study

Computer Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C Group 1 - Literature of the World **3 Credits**
| Area C Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits** *
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits** *
| PHYS 2212 - Principles of Physics II **3 Credits** *
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits** *

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| ECET 1101 - Circuits I **4 Credits**
| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2335 - Numerical Methods I **3 Credits**
Note that the carryover credits from Area A Math and Area D Math will be added to Area F to total 18 hours.

Major Courses

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits** **
| ECET 1001 - Orientation **1 Credits**
| ECET 1012 - Design Fundamentals **2 Credits**
| ECET 1200 - Digital I **4 Credits**
| ECET 2111 - Circuits II **4 Credits**
| ECET 2210 - Digital II **4 Credits**
| ECET 2300 - Electronics I **4 Credits**
| ECET 2310 - Electronics II **4 Credits**
| ECET 3220 - Digital III **4 Credits**
| ECET 3400 - Data Communications **4 Credits**
| ECET 3410 - High Frequency Systems **4 Credits**
| ECET 3600 - Test Engineering **4 Credits**
| ECET 3701 - Embedded PCs **4 Credits**
| ECET 3710 - Hardware Programming and Interfacing **4 Credits**
| ECET 3810 - Applications of C++, JAVA and HTML **3 Credits**
| ECET 4610 - Control Systems **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| CpET Electives **11**

Degree Program Total: 129

Note:

* PHYS 1111/PHYS 1111L and PHYS 1112 /PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L .

** SPSU 1001 does not count towards the 128 total credit hours required for the degree program.

CpET majors are required to earn a "C" or better in their ECET courses, except one "D" in a 3000 or 4000 level non-prerequisite course may be used for graduation purposes. A grade of "C" or better is required in the project-based capstone course.

CpET Electives

Embedded Systems (take 2 of the following courses)

Graduate will specialize in the design and implementation of smart devices used in products ranging from audio to medical to security systems. Both hardware design and programming at the system level will be stressed. The specialist will gain resume skills such as DSP and VHDL design, embedded micro-controller and embedded PC interfacing and programming.

| ECET 3640 - Introduction to Systems Engineering and Robotics **4 Credits**
| ECET 4630 - Digital Signal Processing **4 Credits**
| ECET 4720 - Distributed Microcontrollers and PCs **4 Credits**
| ECET 4730 - VHDL and Field Programmable Gate Arrays **4 Credits**

Networks (take 2 of the following courses)

Graduate will specialize in the development and implementation of networks of computers and micro-controllers. Applications include Telemedicine, factory automation systems, point-of-sales systems, and robotics. There will be heavy emphasis of high-level programming using C, Visual C++, JAVA, Visual BASIC, HTML, Windows, LINUX, TCP/IP, etc. Hardware will emphasize PCs and embedded PCs, smart devices, LAN technologies, and remote sensing and control.

- | ECET 4710 - Network Programming and Interfacing **4 Credits**
- | ECET 4720 - Distributed Microcontrollers and PCs **4 Credits**
- | ECET 48XX - BS Telecom 3000-4000 course
- | ECET 48XX - BS Telecom 3000-4000 course
  Note: *ECET 4830 cannot be used as an elective.*

Electrical Engineering Technology, BS

Area A

- | ENGL 1101 - English Composition I **3 Credits**
- | ENGL 1102 - English Composition II **3 Credits**
- | MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

- | COMM 2400 - Public Speaking **2 Credits**
- | STS 2400 - Science, Technology, and Society **2 Credits**

Area C

- | Area C Group 1 - Literature of the World **3 Credits**
- | Area C Group 2 - Art and Culture of the World **3 Credits**

Area D
- | MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
- | PHYS 2211 - Principles of Physics I **3 Credits** *
- | PHYS 2211L - Principles of Physics Laboratory I **1 Credits** *
- | PHYS 2212 - Principles of Physics II **3 Credits** *
- | PHYS 2212L - Principles of Physics Laboratory II **1 Credits** *

Area E

- | Area E Group 1 American Context **3 Credits**
- | Area E Group 2 World History **3 Credits**

| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
  or
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits** and
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
  or
| BIOL 2107 - Principles of Biology I **3 Credits** and
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**

Major Courses

| ECET 1001 - Orientation **1 Credits**
| ECET 1012 - Design Fundamentals **2 Credits**
| ECET 1101 - Circuits I **4 Credits**
| ECET 1200 - Digital I **4 Credits**
| ECET 2111 - Circuits II **4 Credits**
| ECET 2210 - Digital II **4 Credits**
| ECET 2300 - Electronics I **4 Credits**
| ECET 2310 - Electronics II **4 Credits**
| ECET 3220 - Digital III **4 Credits**
| ECET 3400 - Data Communications **4 Credits**
| ECET 3410 - High Frequency Systems **4 Credits**
| ECET 3500 - Survey of Electric Machines **4 Credits**
| ECET 3600 - Test Engineering **4 Credits**
| ECET 3620 - Signals and Systems Analysis **4 Credits**
| ECET 4610 - Control Systems **4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits** **
| EET Electives **13 Credits**

Degree Program Total: 128

Note:

* PHYS 1111, PHYS 1111L and PHYS 1112/PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L

** SPSU 1001 does not count towards the 128 total credit hours required for the degree program.

EET majors are required to earn a "C" or better in their ECET courses, except one "D" in a 3000 or 4000 level non-

prerequisite course may be used for graduation purposes. A grade of "C" or better is required in the project-based capstone course.

EET Electives

Students may wish to focus their EET electives in a particular area of Electrical Engineering Technology. Suggested choices in the areas of biomedical, communications, digital, power, and telecommunications are listed below:

Biomedical

| ECET 3020 - Biomedical Instrumentation **4 Credits**
| ECET 3030 - Biomechanics **4 Credits**
| ECET 4010 - Virtual Biomedical Instrumentation **4 Credits**
| ECET 4020 - Biomedical Imaging **4 Credits**
| ECET 4030 - Bioinformatics and Telemedicine **4 Credits**
| ECET 4040 - Biometrics **4 Credits**
| ECET 4050 - BMET Capstone **4 Credits**

Communications

| ECET 4320 - Active Filters **4 Credits**
| ECET 4330 - Audio Technology **4 Credits**
| ECET 4420 - Communications Circuit Applications **4 Credits**
| ECET 4431 - Wireless Communications Systems **4 Credits**
| ECET 4432 - Fiber-optic Communications Systems **4 Credits**
| ECET 4450 - RF Electronics **4 Credits**
| ECET 4820 - Communications Networks and the Internet **4 Credits**

Digital

| ECET 3640 - Introduction to Systems Engineering and Robotics **4 Credits**
| ECET 3701 - Embedded PCs **4 Credits**
| ECET 4630 - Digital Signal Processing **4 Credits**
| ECET 4710 - Network Programming and Interfacing **4 Credits**
| ECET 4720 - Distributed Microcontrollers and PCs **4 Credits**
| ECET 4730 - VHDL and Field Programmable Gate Arrays **4 Credits**
| ECET 4820 - Communications Networks and the Internet **4 Credits**

Power

| ECET 4510 - Power System Analysis **4 Credits**
| ECET 4520 - Industrial Distribution Systems, Illumination, and the NEC **4 Credits**
| ECET 4530 - Industrial Motor Control **4 Credits**
| ECET 4540 - Introduction to Power Electronics **4 Credits**
| ECET 4560 - Electric Drives **4 Credits**

Telecommunications

| ECET 3810 - Applications of C++, JAVA and HTML **3 Credits**
| ECET 4820 - Communications Networks and the Internet **4 Credits**
| ECET 4840 - Advanced Telecommunications **4 Credits**
| ECET 4850 - Telecommunications Project **4 Credits**
| ECET 4860 - Network Security **4 Credits**

Renewable Energy Engineering Technology Minor

Renewable Energy Engineering Technology Minor

Required Course

| REET 3550 - Introduction to Alternate Energy **4 Credits**

Plus four additional courses from the following:

| REET 2020 - Engery Conversion **4 Credits**
| REET 3030 - Energy Storage Systems **3 Credits**
| REET 4100 - Solar Photovoltaics **3 Credits**
| REET 4110 - Solar Thermal Systems **3 Credits**
| REET 4200 - Wind Power Generation **3 Credits**
| REET 4210 - Oceanic and Hydropower Generation **3 Credits**
| REET 4500 - Environmental Aspects of Power Generation **3 Credits**
| REET 4510 - Sustainable Transportation Systems **3 Credits**

Minor Program Total: 16-17

Note:

An overall GPA of 2.0 is required in the courses for the Renewable Energy Engineering Technology (REET) Minor.

Telecommunications Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C Group 1 - Literature of the World **3 Credits**
| Area C Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits** *
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits** *
| PHYS 2212 - Principles of Physics II **3 Credits** *
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits** *

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| ECET 1101 - Circuits I **4 Credits**
| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Major Courses

| ECET 1001 - Orientation **1 Credits**
| ECET 1012 - Design Fundamentals **2 Credits**
| ECET 1200 - Digital I **4 Credits**
| ECET 2111 - Circuits II **4 Credits**
| ECET 2300 - Electronics I **4 Credits**
| ECET 2210 - Digital II **4 Credits**

| ECET 2310 - Electronics II **4 Credits**
| ECET 3400 - Data Communications **4 Credits**
| ECET 3410 - High Frequency Systems **4 Credits**
| ECET 3810 - Applications of C++, JAVA and HTML **3 Credits**
| ECET 4820 - Communications Networks and the Internet **4 Credits**
| ECET 4830 - Telecommunications Management **3 Credits**
| ECET 4840 - Advanced Telecommunications **4 Credits**
| ECET 4850 - Telecommunications Project **4 Credits**
| ECET 4860 - Network Security **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits** **
| TCET Electives **6 Credits**

Degree Program Total: 128

Note:

* PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L .

** SPSU 1001 does not count towards the 128 total credit hours required for the degree program.

TCET majors are required to earn a "C" or better in their ECET courses, except one "D" in a 3000 or 4000 level non-prerequisite course may be used for graduation purposes. A grade of "C" or better is required in the project-based capstone course.

TCET Electives

Students may take any *non-required* 3000 or 4000 level ECET or MGNT course to satisfy the TCET elective requirement of 6 credit hours.

Industrial Engineering Technology

Industrial Engineering Technology

Offering:

Bachelor of Science in Industrial Engineering Technology

Who manages the flow of people at theme parks or airports? Decides what kind of training employees need before they work with new equipment? Explains to accountants why the cost of a facility upgrade has changed? Determines where to add people or machinery for maximum impact? If you like to be at the center of the action, designing creative solutions that make business and industry work safer, faster, and leaner, the career for you is industrial engineering technology.

The Industrial Engineering Technology program prepares students to help organizations to be more efficient, productive, and cost-effective through project-based learning experiences in the classroom.

Who makes a good industrial engineering technology student? Those who are organized, analytical, and detail oriented, yet who can think of creative solutions to resolve problems. Since you work with people from many different areas, you need to enjoy interacting with diverse specialists. Excellent communication skills are crucial, too, as you translate engineering requirements to non-engineers and explain technical information to managers.

IET graduates manage quality, resources, and systems in a wide range of workplaces, using skills they learned in quality assurance, facility design, time studies, simulation software, and project management. Employers such as Nissan, Shaw Industries, Milliken, General Electric, AT&T, UPS and Lockheed Martin appreciate our students' professionalism and application of their learned skills.

Traditionally IET graduates have pursued careers in manufacturing environments, but increasingly they hold positions in logistics, banking, healthcare, and transportation. Our student organization—Institute of Industrial Engineers (IIE)—puts you in contact with professional networks before graduation.

Career opportunities involve problem solving in the fields of:

| Process Engineer
| Process Improvement
| Quality Engineer
| Logistics and Supply Chain Management
| Systems Simulation
| Workplace Design
| Project Management
| Economic Analysis/Cost Control

Program Educational Objectives:

Graduates of the Industrial Engineering Technology Program will:

| Meet industry expectations for design, improvement, and installation of integrated systems of people, machines, materials, information, energy and logistics;
| Possess a balance of knowledge that encompasses the specialties in the industrial engineering spectrum;
| Be capable of combining the knowledge and practice of engineering technology with the science of decision making in business, m anufacturing, and service;
| Be capable of using the sciences together with methods of engineering analysis and design to evaluate, specify, and predict the results to be obtained from integrated systems;
| Be capable of career advancement with increasing responsibilities;
| Understand legal, political, social and ethical issues to increase their sense of responsibility, membership, and awareness in society; and
| Possess the necessary interpersonal skills to communicate and work effectively in teams and adapt to change.

Student Outcomes:

Graduates of the Industrial Engineering Technology Program will demonstrate the following:

| An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;
| An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;

- An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
- An ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;
- An ability to function effectively as a member or leader on a technical team;
- An ability to identify, analyze, and solve broadly-defined engineering technology problems;
- An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- An understanding of the need for and an ability to engage in self-directed continuing professional development;
- An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;
- A knowledge of the impact of engineering technology solutions in a societal and global context;
- A commitment to quality, timeliness, and continuous improvement;
- An ability to accomplish the integration of systems using appropriate analytical, computational and application practices and procedures; and
- An ability to apply knowledge of probability, statistics, engineering economic analysis and cost control and other technical sciences and specialities necessary in the field.

The Bachelor of Science in Industrial Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, www.abet.org.

The Faculty:

Robert W. Atkins, *Professor*
Bill Bailey, Assistant Professor
Thomas Ball, *Assistant Professor and Department Chair*
E. Lester Dollar, III, *Associate Professor*
Ruston M. Hunt, *Professor and Dean of Extended University*
Kenneth W. Jackson, *Associate Professor*
Robert Keyser, *Assistant Professor*
Christina R. Scherrer, *Associate Professor*
Gregory Wiles, *Assistant Professor*
Rhonda Freeman, *Part Time Faculty*
Mark Kyle, *Part Time Faculty*
Walter Thomas, *Part Time Faculty, Professor Emeritus*

BAS Manufacturing Operations

Offering:

Bachelor of Applied Science

The Bachelor of Applied Science in Manufacturing Operations has been specifically designed for students who have completed an Associate of Applied Science Degree from a Technical College System of Georgia institution.

The goal of the partnership between SPSU and the TCSG schools is to provide the opportunity for degreed graduates from the technical schools of Georgia to complete a Bachelor's degree in approximately 60 semester credits which in equivalent to about two years as a full time student.

All required major courses to complete the BAS in Manufacturing Operations program are offered totally online by

SPSU faculty. All general education requirements are also offered online through the university system called E-core.

The BAS Manufacturing Operations program prepares students in the areas of manufacturing, logistics and operations through an industry-driven curriculum encompassing manufacturing processes, quality principles, engineering economy, work measurement and facilities layout.

Companies traditionally who hire SPSU graduates include such leaders as Shaw Industries, Delta Airlines, AT&T, Nissan, Georgia Power, Mohawk Industries, Lockheed Martin and UPS.

Further information on the TCSG and SPSU program can also be found at tcsg.spsu.edu.

BAS Supply Chain Logistics

Offering:

Bachelor of Applied Science

The Bachelor of Applied Science in Supply Chain Logistics has been specifically designed for students who have completed an Associate of Applied Science Degree from a Technical College System of Georgia institution.

The goal of the partnership between SPSU and the TCSG schools is to provide the opportunity for degreed graduates from the technical schools of Georgia to complete a Bachelor's degree in approximately 60 semester credits which in equivalent to about two years as a full time student.

All required major courses to complete the BAS in Supply Chain Logistics are offered totally online by SPSU faculty. All general education requirements are also offered online through the university system called E-core.

The BAS Supply Chain Logistics prepares students for careers in managing raw materials, work-in-process and finished goods inventories and how to efficiently control the movement of those inventories.

Graduates in this type program are engaged in challenging and demanding careers in responsible positions such as Logistics Manager, Demand Planning Analyst, Senior Buyer, Purchasing Agent and Supply Chain Manager.

Companies traditionally who hire SPSU graduates include such leaders as Shaw Industries, Delta Airlines, Georgia Power, AT&T, Nissan, Mohawk Industries, Lockheed Martin and UPS.

Further information on the TCSG and SPSU program can also be found at tcsg.spsu.edu.

Industrial Engineering Technology Department Certificate in Logistics

The primary objective of the Certificate in Logistics is to provide training and education to members of the Supply Chain industry that need to improve skills and knowledge in the latest technology available in their field. Students can complete the requirements in 4-6 semesters. The courses may also be applied toward completing a B. S. degree in Industrial Engineering Technology. The program will be offered on campus, through distance learning, and over the Internet.

Admission Requirements:

Applicants must have earned a High School degree or GED and been out of high school for at least five years or have earned 30 college credits from an accredited institution of higher learning with a minimum GPA of 2.0.

Industrial Engineering Technology Department Certificate in Production Design

The primary objective of the Certificate in Production Design is to provide training and education to members of the Industrial Engineering field in the measurement and analysis of work and in the design or improvement of facilities.

Students can complete the requirements in 3-4 semesters. These courses may also be applied toward completing a B.S. degree in Industrial Engineering Technology upon acceptance to SPSU.

Admission Requirements:

Applicants must meet all undergraduate admission requirements.

Industrial Engineering Technology Department Certificate in Quality Principles

The primary objective of the Certificate in Quality Principles is to provide training and education to members of the Industrial Engineering field in quality system principles, methodology, elements and standards. Students can complete the requirements in 3– 4 semesters. These courses may also be applied toward completing a B.S. degree in Industrial Engineering technology upon acceptance to SPSU.

Admission Requirements:

Applicants must meet all undergraduate admission requirements.

Apparel Textile Technology-Fashion Design & Product Development

Offering:

Fashion Design and Product Development
Bachelor of Apparel and Textiles

Fashion is clothing that is in style at a particular time. The focus of the Fashion Design and Product Development program is the "concept to distribution" design and development of fashions for the ready-to-wear clothing market. Men's wear, women's wear, active and leisure apparel, children's wear and many other sewn products are all part of the fashion/apparel industry, one of the largest and most important industries in the United States. Excellent starting salaries, rapid advancement, job diversity, and travel are just some of the benefits to graduates of this program. The industry offers employment in all 50 states, and many opportunities around the world. Graduates work with technologies, computers and software to design and create quality products in a fast-paced, ever changing fashion environment.

The Faculty:

Thomas Ball, *Assistant Professor and Department Chair*
Keely Clay, *Assistant Professor*
Walter Thomas, *Part Time Faculty and Professor Emeritus*

Program Educational Objectives

- To prepare graduates with the fundamental understanding of concept, product development, sourcing, marketing and merchandising of the ready-to-wear apparel industry;
- To provide graduates with an understanding of the political and ethnical aspects pertaining to global product

development;

| To prepare graduates with the basic knowledge for various entry level positions in the fashion/apparel industry; and

| To provide a challenging curriculum consistent with industry needs.

Program Outcomes

Graduates of the program should be able to:

| Demonstrate a conceptual knowledge of the fashion/apparel industry;

| Communicate effectively in written and presentation skills;

| Demonstrate an ability to plan, execute and critique their concepts and ideas;

| Identify, critique and evaluate emerging technologies and concepts applicable to their chosen field;

| Demonstrate sound business principles and practices of the fashion/apparel industry;

| Demonstrate the ability to perform effectively in team environments; and

| Recognize the need for life long learning.

Areas of Study

Apparel and Textiles Minor

To be eligible for a minor in Apparel and Textile Technology, the student must complete 15 credit hours from the following courses with at least 9 hours of upper division course work.

Requirements

| ATT 1200 - Apparel Design Graphics **2 Credits**
| ATT 1300 - International Sourcing **3 Credits**
| ATT 1400 - Principles of Merchandising **3 Credits**
| ATT 2301 - Apparel Computer-Aided Technical Design I **4 Credits**
| ATT 3100 - Fashion Merchandising **3 Credits**
| ATT 3505 - Fabric Formation and Design **3 Credits**
| ATT 3600 - Apparel Analysis and Product Development **3 Credits**
| ATT 3602 - Apparel Computer-Aided Technical Design II **4 Credits**
| ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends **3 Credits**
| ATT 4444 - Quality Assurance for Textiles and Apparel **4 Credits**
| ATT 4670 - Apparel/Textile Business Practices **3 Credits**
| ATT 4750 - Advanced Design and Product Development **3 Credits**

Minor Program Total: 15

Apparel and Textiles, BAT

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| C1 - Literature of the World **3 Credits**
| C2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Two Area D Lab Science Courses **8 Credits**
| Math - One Area D Math Course **4 Credits**

Note: A student cannot receive credit towards the ATT degree for both MATH2260 and IET2227

Area E

| E1 - US History **3 Credits**
| E2 - World History **3 Credits**
| E3 - Behavioral Science **3 Credits**
| E4 - Cultures and Societies **3 Credits**

Area F

| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| ATT 1200 - Apparel Design Graphics **2 Credits**
| ATT 1300 - International Sourcing **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits**
| MGNT 2201 - Business Computer Applications **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
One credit from MATH 1113 will be added to Area F to complete the 18 hour requirement.

Major Courses

| ATT 1000 - Orientation **1 Credits**
| ATT 1400 - Principles of Merchandising **3 Credits**
| ATT 2301 - Apparel Computer-Aided Technical Design I **4 Credits**
| ATT 3100 - Fashion Merchandising **3 Credits**
| ATT 3505 - Fabric Formation and Design **3 Credits**
| ATT 3600 - Apparel Analysis and Product Development **3 Credits**
| ATT 3602 - Apparel Computer-Aided Technical Design II **4 Credits**
| ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends **3 Credits**
| ATT 4444 - Quality Assurance for Textiles and Apparel **4 Credits**
| ATT 4670 - Apparel/Textile Business Practices **3 Credits**
| ATT 4750 - Advanced Design and Product Development **3 Credits**
| ATT 4840 - Textile/Apparel Business Project **3 Credits**
| IET 4810 - Ethics and Safety **1 Credits**
| MGNT 3135 - Principles of Marketing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

ATT Related Electives: Select four courses: * 12

| ARTS 2010 - Introduction to Drawing **3 Credits**
| ATT 4820 - Senior Internship **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 3205 - Management Information Systems **3 Credits**
| MGNT 4145 - International Management **3 Credits**
| Free Electives **6 Credits**
  Note: A student cannot receive credit towards the ATT degree for both MATH2260 and IET2227

Degree Program Total: 120

* At least six hours of Related Elective must be upper level courses

Apparel Product Development Certificate

The Fashion Design and Product Development program offers a Certificate in Apparel Product Development. The objective is to provide training and education to members of the apparel industry, graduates of fashion and design schools and other interested parties seeking to improve their skills. The courses may also be applied toward completing the Bachelor of Apparel and Textiles degree. All requirements for normal admissions are applicable. Certificate students must complete five courses from the following list:

Requirements

Certificate students must complete five classes from the following list:

| ATT 1300 - International Sourcing **3 Credits**
| ATT 1400 - Principles of Merchandising **3 Credits**
| ATT 2301 - Apparel Computer-Aided Technical Design I **4 Credits**
| ATT 3100 - Fashion Merchandising **3 Credits**
| ATT 3505 - Fabric Formation and Design **3 Credits**
| ATT 3600 - Apparel Analysis and Product Development **3 Credits**
| ATT 3602 - Apparel Computer-Aided Technical Design II **4 Credits**
| ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends **3 Credits**
| ATT 4444 - Quality Assurance for Textiles and Apparel **4 Credits**
| ATT 4670 - Apparel/Textile Business Practices **3 Credits**
| ATT 4750 - Advanced Design and Product Development **3 Credits**

Certificate Program Total: 15

Industrial Engineering Technology Minor

To be eligible for a minor in Industrial Engineering Technology,

Students must complete the following three courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**

And choose two courses from the following list:
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**

Minor Program Total: 16-18

Note:

An overall 2.0 GPA is required in the courses for the IET Minor (excluding the international studies minor courses).

Industrial Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Science* Note 1 **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CHEM 1211 - Principles of Chemistry I **3 Credits** * Note 2
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| IT 1113 - Programming Principles **3 Credits**
| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
One credit from MATH 1113 & MATH 2253 will be added to Area F to complete the 18 hour requirement.

Major Courses

| IET 1000 - Orientation **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3433 - Product and Process Costing **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**
| IET 4451 - Systems Simulation **3 Credits**
| IET 4475 - Senior Project **3 Credits**
| IET 4810 - Ethics and Safety **1 Credits**
| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**
| Free Electives **6 Credits**

IET Electives (9 semester hours from the list below)

| IET 3320 - Advanced Logistics **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**
| IET 4111 - Design of Experiments **3 Credits**
| IET 4121 - Advanced Topics in Quality Assurance **3 Credits**
| IET 4478 - Senior Internship **3 Credits**

Degree Program Total: 128

Note 1 - Physics I and Physics II are preferred Area D Sciences, however, any Lab Sciences from the approved list is permissible.

Note 2 – Chemistry I is the preferred Area F Science, however, any Lab Science from the approved list is permissible.

A grade of "C" or better is required in all courses used in the major prescribed for the bachelor degree program.

Concentration in Logistics

The primary objective of the Concentration in Logistics is to provide training and education to students interested in entering the Supply Chain industry.

Required Courses

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**

| IET 3511 - Sustainability Engineering **3 Credits** or
| IET 3620 - Warehousing Systems **3 Credits**

| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Total: 21

Students who successfully complete the Concentration with a grade of "C" or better in each course will be awarded a Green Belt Certificate.

Concentration in Quality Principles

The primary objective of the Concentration in Quality Principles is to provide training and education to students interested in quality system principles, methodology, elements and standards.

Required Courses:

| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Total: 21

Students who successfully complete the Concentration with a grade of "C" or better in each course will be awarded a Green Belt Certificate.

Logistics Certificate

The primary objective of the Certificate in Logistics is to provide training and education to members of the Supply Chain industry that need to improve skills and knowledge in the latest technology available in their field. Students can complete the requirements in 4-6 semesters. The courses may also be applied toward completing a B. S. degree in

Industrial Engineering Technology. The program will be offered on campus, through distance learning, and over the Internet.

Admission Requirements:

Applicants must have earned a High School degree or GED and been out of high school for at least five years or have earned 30 college credits from an accredited institution of higher learning with a minimum GPA of 2.0.

Required Courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Certificate Program Total: 21

Logistics Minor

Students must complete the following courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**

Students choose one from the following:

| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Minor Program Total: 15

Manufacturing Operations, BAS

The Bachelor of Applied Science in Manufacturing Operations has been specifically designed for students who have completed an Associate of Applied Science Degree from a Technical College System of Georgia institution.

The goal of the partnership between SPSU and the TCSG schools is to provide the opportunity for degreed graduates from the technical schools of Georgia to complete a Bachelor's degree in approximately 60 semester credits which in equivalent to about two years as a full time student.

All required major courses to complete the BAS in Manufacturing Operations program are offered totally online by SPSU faculty. All general education requirements are also offered on-line through the university system called E-core.

The BAS Manufacturing Operations program prepares students in the areas of manufacturing, logistics and operations through an industry-driven curriculum encompassing manufacturing processes, quality principles, engineering economy, work measurement and facilities layout.

Companies traditionally who hire SPSU graduates include such leaders as Shaw Industries, Delta Airlines, Georgia Power, Mohawk Industries, Lockheed Martin and UPS.

Since each TCSG program is different, the website iet.spsu.edu/BAS.html outlines the articulation of each program to SPSU.

Further information on the TCSG and SPSU program can also be found at tcsg.spsu.edu.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| Technical Block - Up to 17 Semester Hours **17 Credits**
| Major Technical Block - Up to 21 Semester Hours **21 Credits**

Major Courses

| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MGNT 4151 - Operations Management **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Technical Electives

Choose any two courses

| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| ECET 3000 - Electrical Principles **4 Credits**
| MET 1311 - Manufacturing Processes **3 Credits**
| MET 2322 - Metrology and CNC Machining **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**

Degree Program Total: 120

Production Design Certificate

The primary objective of the Certificate in Production Design is to provide training and education to members of the Industrial Engineering field in the measurement and analysis of work and in the design or improvement of facilities. Students can complete the requirements in 3-4 semesters. These courses may also be applied toward completing a B.S. degree in Industrial Engineering Technology upon acceptance to SPSU.

Admission Requirements:

Applicants must meet all undergraduate admission requirements.

Required Courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Certificate Program Total: 20

Quality Principles Certificate

The primary objective of the Certificate in Quality Principles is to provide training and education to members of the Industrial Engineering field in quality system principles, methodology, elements and standards. Students can complete the requirements in 3–4 semesters. These courses may also be applied toward completing a B.S. degree in Industrial Engineering technology upon acceptance to SPSU.

Admission Requirements:

Applicants must meet all undergraduate admission requirements.

Required Courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Certificate Program Total: 21

Quality Principles Minor

Students must complete the following courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**

Students choose one from the following:

| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Minor Program Total: 15

Supply Chain Logisitics, BAS

The Bachelor of Applied Science in Supply Chain Logistics has been specifically designed for students who have completed an Associate of Applied Science Degree from a Technical College System of Georgia institution.

The goal of the partnership between SPSU and the TCSG schools is to provide the opportunity for degreed graduates from the technical schools of Georgia to complete a Bachelor's degree in approximately 60 semester credits which in equivalent to about two years as a full time student.

All required major courses to complete the BAS in Supply Chain Logistics are offered totally online by SPSU faculty. All general education requirements are also offered on-line through the university system called E-core.

The BAS Supply Chain Logistics prepares students for careers in managing raw materials, work-in-process and finished goods inventories and how to efficiently control the movement of those inventories.

Graduates in this type program are engaged in challenging and demanding careers in responsible positions such as Logistics Manager, Demand Planning Analyst, Senior Buyer, Purchasing Agent and Supply Chain Manager.

Companies traditionally who hire SPSU graduates include such leaders as Shaw Industries, Delta Airlines, Georgia Power, Mohawk Industries, Lockheed Martin and UPS.

Since each TCSG program is different, the website iet.spsu.edu/BASSC.html outlines the articulation of each program to SPSU.

Further information on the TCSG and SPSU program can also be found at tcsg.spsu.edu.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| Technical Block - Up to 17 Semester Hours **17 Credits**
| Major Technical Block - Up to 21 Semester Hours **21 Credits**

Major Courses

| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**

| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 3135 - Principles of Marketing **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Degree Program Total: 120

Mechanical Engineering Technology

Offering:

Offering: Bachelor of Science in Mechanical Engineering Technology

Mission Statement

The Mechanical Engineering Technology Program at Southern Polytechnic State University prepares graduates with the necessary knowledge and skills to perform in professional positions in mechanical engineering. Positions include careers in the design, development, implementation, analysis, manufacturing, testing, evaluation, sales, or maintenance of mechanical systems. Graduates will possess knowledge in math, basic sciences, the traditional engineering sciences, engineering graphics, manufacturing processes, and principals of automation. Students will develop skills in problem solving; written and oral communications; and the use of computer tools. Graduates will apply this knowledge in the design and analysis, development, selection, implementation and control of mechanical systems.

Employers

SPSU's MET graduates work for top companies such as Lockheed Martin, General Electric, Gerdau Ameristeel, Kubota, Caterpillar, Club Car, Newell Rubbermaid, Annheuser Busch, Shaw Industries and many others

SPSU's MET graduates are leaders. They build their own companies and show leadership as professional engineers, chief engineers, and presidents. ATS (Applied Technical Services), Marietta NDT, Automated Logic, and Werner Machine are some of the international and local companies started by MET alumni.

SPSU's MET graduates have industry-ready skills employers are looking for. Many of our students are employment-ready before graduation and receive internships, co-op positions and part time jobs.

Engineering Tools

The tools of the engineer have changed and SPSU's MET graduates are grounded in fundamental engineering principles and prepared to lead in the application of the latest engineering technologies. Students are thoroughly trained in the latest CAD software from geometric modeling to simulations and engineering analysis. They use MATLAB to write code and perform advanced engineering calculations. Students not only create designs but build what they design

using traditional methods including: welding, sheet metal forming, manual machining, and plasma cutting. CAD/CAM, (Computer-Aided Design,and Computer-Aided Manufacturing) programs are written and run on the latest CNC machining and turning centers. In hands-on labs students perform mechanical testing, fluids testing, and wind tunnel testing. Automation skills are developed with PLC (Programmable Logic Controller) programming. Additive manufacturing is applied using Fused Deposition Modeling or Ink jet technology, otherwise known as 3D printing. 3D scanning and instrumentation is used for metrology and reverse engineering applications. MET graduates apply time tested engineering principles using the latest technologically advanced engineering tools to solve real world problems.

Educational Objective

Graduates of the mechanical engineering technology program will:

- Be prepared for applied mechanical engineering positions that require specialized knowledge and skills in a particular area of mechanical engineering, such as mechanical design; manufacturing and automation; plant engineering; or heating, ventilation, air conditioning, and refrigeration (HVAC-R)
- Be aware of the impacts of their decisions on the health and safety of workers and on the environment, and of ethical and societal concerns
- Solve problems that require critical thinking, use of teamwork, research, and communication skills
- Understand the need for lifelong learning and continued professional development, including Professional Engineer registration

Outcomes

Graduates of the Mechanical Engineering Technology program will demonstrate:

- an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities
- an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
- an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
- an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives
- an ability to function effectively as a member or leader on a technical team
- an ability to identify, analyze, and solve broadly-defined engineering technology problems
- an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
- an understanding of the need for and an ability to engage in self-directed continuing professional development
- an understanding of and an commitment to address professional and ethical responsibilities including a respect for diversity
- a knowledge of the impact of engineering technology solutions in a societal and global context
- a commitment to quality, timeliness, and continuous improvement

The Faculty

Jeffrey Ray, *Professor and Dean*

John F. Sweigart, *Associate Professor and Department Chair*

Joseph A. Como, *Lecturer*

Gregory M. Conrey, *Associate Professor*

Puttagounder S Dhanasekaran, *Assistant Professor*

Randall Emert, A*ssistant Professor*

Donald D. Horton, *Associate Professor*

Ali Khazaei, *Associate Professor*

Simin Nasseri, *Associate Professor*

Norman A. Russell, *Associate Professor*

Accreditation

The Bachelor of Science in Mechanical Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET, www.ABET.org.

Areas of Study

Mechanical Engineering Technology, BS

Concentrations

Mechanical Engineering Technology is a broad discipline. However, with the appropriate selection of elective courses, any one concentration can be completed within the hours required for the MET degree. Students at Southern Polytechnic State University may obtain a concentration in one of the following areas:

| Aerospace
| Energy
| Engineering Design Graphics
| General
| Machine Design
| Manufacturing

Aerospace Concentration:

The Aerospace concentration is designed to provide students with sufficient knowledge and skills to allow them to operate as a competent practitioner within the field of aerospace engineering. Students will develop not only technical know-how but also a practical and analytical approach to problem-solving that will allow them to address a range of aerospace engineering challenges.

The Aerospace Concentration requires the following course:
MET 3123 Dynamics of Machines

Select three additional courses which count toward the MET Major Electives from the following:
SYE 3801 Aerodynamics
SYE 3802 Aircraft Design and Performance
SYE 4801 Aircraft Propulsion
SYE 4802 Helicopter Theory
SYE 4803 Senior Design (Aeronautics)

Energy Concentration:

Energy is the fundamental industry that supports all others. Students who choose this concentration may work in the heating, ventilating, and refrigeration area or work with internal combustion engines, steam turbines, boilers, air compressors, pumps, and fans.

Graduates with this concentration are employed as system designers in architectural companies; as process engineers in the petrochemical and pulp and paper industries; as power generation plant engineers; and as sales representatives for manufacturers.

The Energy Concentration requires the following course:
MET 3402 Thermodynamics II

Select three additional courses which count toward the MET Major Electives from the following:
MET 4341 Automation Systems and Controls
MET 4411 Refrigeration
MET 4412 Air Conditioning
MET 4431 Plant and Power Applications
MET 4401 Heat Transfer

Engineering Design Graphics:

Mechanical Engineering Technology graduates with an Engineering Design Graphics concentration may obtain employment as Product Design Engineers, Machine Design Engineers, Project Engineers, CAD/CAE Application Engineers, Biomedical Engineers, and Mechanical Engineers. Students with this concentration specialize in CAD systems performing geometric and solid modeling, CAD animations and simulations, Computer Aided Engineering Analysis, surface modeling, sheet metal and weldment design, and CAD customization and standards.

The Engineering Design Graphics Concentration requires the following course:
MET 4112 Computer Aided Engineering & Analysis

Select three additional courses which count toward the MET Major Electives from the following:
EDG 3112 Advanced Engineering Graphics
EDG 4111 Surface Modeling
EDG 4222 CAD Customization and Standards
EDG 4224 Engineering Graphics for Manufacturing
MET 3332 Rapid Design and Manufacturing

General Concentration:

The MET bachelor degree with a general concentration offers the student the opportunity to explore courses in any of the other four concentration areas listed. In order to obtain this concentration a student will take one of the following courses:

MET 3123 Dynamics of Machines
MET 3331 Tool Design
MET 3402 Thermodynamics II
MET 4112 Computer Aided Engineering & Analysis

Select three additional courses from any of the other concentration areas, which count toward the MET Major Electives (extra courses from the list above can be used as major elective):
See Energy Concentration Courses
See Engineering Design Graphics Concentration Courses
See Machine Design Concentration Courses
See Manufacturing Concentration Courses

Machine Design Concentration:

The Machine Design concentration is concerned with the application of fundamental principles of design to new and existing machines, machine parts and mechanical structures; the fabricating, testing and assembly of components into production of mechanical systems; and the operation of machines and mechanical equipment.

Graduates with a Machine Design concentration may be employed as designers of machinery and/or machine parts for the improvement of production operations and cost; supervisors of fabricating facilities, manufacturing plants, maintenance and repair shops; sales and service representatives of industrial and manufacturing firms.

The Machine Design Concentration requires the following course:
MET 3123 Dynamics of Machines

Select three additional courses which count toward the MET Major Electives from the following:
MET 3332 Rapid Design and Manufacturing
MET 4112 Computer Aided Engineering & Analysis
MET 4124 Vibration and Advanced Dynamics

MET 4133 Advanced Engineering Materials
MET 4142 Mechanical Systems Design
MET 4341 Automation Systems and Controls

Manufacturing Concentration:

The Manufacturing concentration is concerned with both traditional manufacturing processes and advanced additive manufacturing technology. Students may obtain industry ready skills in CNC machining, tool design, 3D printing, 3D scanning, rapid tooling, PLC's, and automation.

Graduates may be employed in manufacturing industries such as: aircraft, automotive, biomedical, racing, heavy equipment, steel production and fabrication, plastics production, injection molding, and aluminum production. Titles for graduates may be: Manufacturing Engineer, Project Engineer, Tool Designer, Tooling Engineer, Process Engineer, Mold Designer, PLC programmer, and Automation Engineer.

The Manufacturing Concentration requires the following course:
MET 3331 Tool Design

Select three additional courses which count toward the MET Major Electives from the following:
MET 3332 Rapid Design and Manufacturing
MET 4133 Advanced Engineering Materials
MET 4341 Automation Systems and Controls
MET 4342 Numerical Control of Machines
MGNT4135 Project Management

Engineering Design Graphics Minor

Students who wish to receive a minor in Engineering Design Graphics must take:

| EDG 1212 - Engineering Graphics II **4 credits**
Select four additional courses from the following:

| EDG 3112 - Advanced Engineering Graphics **3 credits**
| EDG 4111 - Surface Modeling **3 credits**
| EDG 4222 - CAD Customization and Standards **3 credits**
| EDG 4224 - Engineering Design Graphics for Custom Manufacturing **3 credits**
| MET 3332 - Rapid Design and Manufacture **3 credits**
| MET 4112 - Computer Aided Engineering & Analysis **3 credits**
| OR

| ME 4250 - Computer Aided Engineering **3 credits**
Minor Program Total: 16

Not available to MET students with a concentration in Engineering Design Graphics.

Manufacturing Engineering Technology Minor

Students who wish to receive a minor in Manufacturing Engineering Technology must take the following two courses:

| MET 1311 - Manufacturing Processes **3 credits**
| MET 2322 - Metrology and CNC Machining **3 credits**
Select three additional courses from the following:

| EDG 4224 - Engineering Design Graphics for Custom Manufacturing **3 credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 credits**
| MET 3331 - Tool Design **3 credits**
| MET 3332 - Rapid Design and Manufacture **3 credits**
| MET 4342 - Numerical Control of Machines **3 credits**
| MGNT 4135 - Project Management **3 credits**
Minor Program Total: 15

Note: Not available to MET students with a concentration in Manufacturing

Mechanical Engineering Technology, BS

Requirements

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| ECON 2107 - Introduction to Economic Analysis **3 Credits** (Recommended for Area E-3)
| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (the extra hour is applied to area F)
| MATH 2254 - Calculus II **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (the extra hour is applied to Major Req.)
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take One Course From the Literature Group **3 Credits**
| Area C Group 2 - Take One Course From the Art and Culture Group **3 Credits**
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**

| ECET 3000 - Electrical Principles **4 Credits**
| EDG 1211 - Engineering Graphics I **3 Credits**
| EDG 1212 - Engineering Graphics II **4 Credits**
| ENGT 2124 - Statics with Applications **3 Credits**

| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| MET 3126 - Engineering Dynamics with Applications **3 Credits**

| ENGR 3122 - Dynamics **3 Credits**
| ENGT 3124 - Strength of Materials with Applications **3 Credits**

| ENGR 3132 - Strength of Materials Lab **1 Credits**

| ENGR 3131 - Strength of Materials **3 Credits**
| MET 3101 - Fluid Mechanics Principles & Applications **4 Credits**
| MET 1000 - Mechanical Engineering Technology Orientation **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MET 1311 - Manufacturing Processes **3 Credits**
| MET 1321 - Machining and Welding **2 Credits**
| MET 2322 - Metrology and CNC Machining **3 Credits**
| MET 3132 - Engineering Materials **4 Credits**
| MET 3401 - Thermodynamics I **3 Credits**
| MET 4141 - Machine Design I **4 Credits**
| MET 4421 - Instruments and Controls **4 Credits**
| MET 3501 - Engineering Computation Using MATLab **3 Credits**

Select one of the following four courses (3 Credits)

| MET 3123 - Dynamics of Machines **3 Credits**
| MET 3331 - Tool Design **3 Credits**
| MET 3402 - Thermodynamics II **3 Credits**
| MET 4112 - Computer Aided Engineering & Analysis **3 Credits**
| MET XXXX - Major Electives (For Concentration) **12 Credits**
| Free Elective **3 Credits**

Degree Program Total: 129

Note:

Note 1. MET majors are required to earn an overall 2.0 average in all courses designated as MET and ENGR.

Note 2. PHYS 1111, PHYS 1111L and PHYS 1112, PHYS 1112L may be substituted for PHYS 2211, PHYS 2211L and PHYS 2212, PHYS 2212L .

Note 3. The Free Elective may not be MATH 1111 .

Programs of Study

Major

Apparel and Textiles, BAT

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| C1 - Literature of the World **3 Credits**
| C2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Two Area D Lab Science Courses **8 Credits**
| Math - One Area D Math Course **4 Credits**

Note: A student cannot receive credit towards the ATT degree for both MATH2260 and IET2227

Area E

| E1 - US History **3 Credits**
| E2 - World History **3 Credits**
| E3 - Behavioral Science **3 Credits**
| E4 - Cultures and Societies **3 Credits**

Area F

| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| ATT 1200 - Apparel Design Graphics **2 Credits**
| ATT 1300 - International Sourcing **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits**
| MGNT 2201 - Business Computer Applications **3 Credits**

| TCOM 2010 - Technical Writing **3 Credits**
One credit from MATH 1113 will be added to Area F to complete the 18 hour requirement.

Major Courses

| ATT 1000 - Orientation **1 Credits**
| ATT 1400 - Principles of Merchandising **3 Credits**
| ATT 2301 - Apparel Computer-Aided Technical Design I **4 Credits**
| ATT 3100 - Fashion Merchandising **3 Credits**
| ATT 3505 - Fabric Formation and Design **3 Credits**
| ATT 3600 - Apparel Analysis and Product Development **3 Credits**
| ATT 3602 - Apparel Computer-Aided Technical Design II **4 Credits**
| ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends **3 Credits**
| ATT 4444 - Quality Assurance for Textiles and Apparel **4 Credits**
| ATT 4670 - Apparel/Textile Business Practices **3 Credits**
| ATT 4750 - Advanced Design and Product Development **3 Credits**
| ATT 4840 - Textile/Apparel Business Project **3 Credits**
| IET 4810 - Ethics and Safety **1 Credits**
| MGNT 3135 - Principles of Marketing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

ATT Related Electives: Select four courses: * 12

| ARTS 2010 - Introduction to Drawing **3 Credits**
| ATT 4820 - Senior Internship **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 3205 - Management Information Systems **3 Credits**
| MGNT 4145 - International Management **3 Credits**
| Free Electives **6 Credits**
Note: A student cannot receive credit towards the ATT degree for both MATH2260 and IET2227

Degree Program Total: 120

* At least six hours of Related Elective must be upper level courses

Architecture, BARCH

[5 Year Professional Degree]

Area A

| ENGL 1101 - English Composition I **3 Credits**

| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| Sciences - Lab Science - Any Lab Science **4 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 American Context , One Course **3 Credits**
| Group 2 World History , One Course **3 Credits**
| Group 3 Behavioral Science , One Course **3 Credits**
| Group 4 Cultures and Societies , One Course **3 Credits**

Area F

| ARCH 1001 - Design Foundation I **4 Credits**
| ARCH 1002 - Design Foundation II **4 Credits**
| ARCH 1241 - Design Communication I **2 Credits**
| ARCH 2003 - Design Foundation III **4 Credits**
| ARCH 2242 - Design Communication II **2 Credits**
One credit from MATH 1113 and one credit from MATH 2253 will be added to Area F.

Requirements

Architecture

| ARCH 1000 - Orientation to Architecture **2 Credits**
| ARCH 2111 - Architecture Culture I: Early Civilizations & Medieval **3 Credits**

| ARCH 2004 - Design Foundation IV **4 Credits**
| ARCH 2112 - Architecture Culture II - The Renaissance through 1850 **3 Credits**
| ARCH 2211 - Architecture Structures I - Introduction to Structures **3 Credits**
| ARCH 2311 - Environmental Tech I - Systems Selection and Materials **3 Credits**
| ARCH 3011 - Architecture Studio V **4 Credits**
| ARCH 3012 - Architecture Studio VI **4 Credits**
| ARCH 3113 - Architecture Culture III - 1850 through 1945 **3 Credits**
| ARCH 3116 - Urban Planning and Design Theory **3 Credits**
| ARCH 3211 - Architecture Structures II: Steel and Wood **4 Credits**
| ARCH 3212 - Architecture Structures III: Concrete and Lateral Loads **3 Credits**
| ARCH 3313 - Environmental Technology II: Human Comfort, Sustainability and HVAC Systems: **3 Credits**
| ARCH 3314 - Environmental Technology III: Natural & Artificial Lighting, Electrical Systems & Vertical Circulation: **3 Credits**
| ARCH 4013 - Architecture Studio VII **4 Credits**
| ARCH 4014 - Architecture Studio VIII **4 Credits**
| ARCH 4114 - Architecture Cultures IV: 1945-Current **3 Credits**
| ARCH 4224 - Professional Practice I - Codes and Technical Documents **3 Credits**
| ARCH 5412 - Professional Practice II - Cost Control **2 Credits**
| ARCH 5413 - Professional Practice III - Practice and Ethics **3 Credits**
| ARCH 5593 - Thesis Prep **2 Credits**
| ARCH 5998F - Focus Studio **4 Credits**
| ARCH 5999R - Thesis Research S/U **1 Credits**
| ARCH 5999T - Thesis Studio **4 Credits**
| Electives **17 Credits**
| ARCH 39X1 - Special Topics **1 to 4 Credits**
| ARCH 49X1 - Directed Study **1 to 4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Degree Program Total: 153

Biology, B.S.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
Take any 2 of the courses below (with labs) for a total of 8 hours:
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**

Note:

PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L may be taken instead of PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

Take any 4 courses (with labs) from the list below for a total of 18 hours*. (*Includes 2 carry-over credits from Area A and Area D.) Courses used as Area D requirements may not be selected.

| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**

| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**

Note:

PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L may be taken instead of PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L

Common Biology Major Requirements

A grade of "C" or better must be earned in all courses (excluding core areas A-E and free electives).

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| BIOL 3000K - Genetics **4 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| A Biology major must complete one program track (see below).

General Biology Track Requirements

| BIOL 3300K - Ecology **4 Credits**
| BIOL 4480 - Evolution **3 Credits**
| At least 5 additional BIOL or BIOC courses above 2199 (excluding track requirements), with **at least one course** from each of the **Cellular Form and Function group** and the **Organismal Form and Function group 17-21 Credits**
| Free Electives **9-13 Credits**

Cellular Form and Function group

| BIOL 3100K - Microbiology **4 Credits**
| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4410 - Immunology **3 Credits**
| BIOL 4470 - Plant Physiology **3 Credits**

Organismal Form and Function group

| BIOL 3700K - Ichthyology **4 Credits**
| BIOL 4100K - Entomology **4 Credits**
| BIOL 4110 - Parasitology **3 Credits**

| BIOL 4200K - Zoology **4 Credits**
| BIOL 4400K - Human Physiology **4 Credits**
| BIOL 4440K - Botany **4 Credits**
| BIOL 4460K - Human Anatomy **4 Credits**

Biochemistry & Molecular Biology Track Requirements

| BIOL 3200K - Applied Molecular Biology Laboratory **4 Credits**
| BIOL 3310K - Molecular Biology **4 Credits**
| BIOC 3112K - Biochemistry II **4 Credits**
| At Least 4 additional BIOL or BIOC courses above 2199 (excluding track requirements) **12-16 Credits**
| Free Electives 9 – **13 Credits**

Bioinformatics Track Requirements

| BIOL 2500K - Bioinformatics I - Tools & Databases **4 Credits**
| BIOL 3310K - Molecular Biology **4 Credits**
| BIOL 4510K - Bioinformatics II **4 Credits**
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 3153 - Database Systems **3 Credits**
| At least 3 additional BIOL or BIOC courses above 2199 (excluding track requirements) **9 – 12 Credits**
| Free Electives **2 – 5 Credits**

Biotechnology Track Requirements

| BIOL 3100K - Microbiology **4 Credits**
| BIOL 3310K - Molecular Biology **4 Credits**
| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4350K - Cell and Tissue Culture **4 Credits**
| BIOL 4600K - Biotechnology **4 Credits**
| At Least 3 additional BIOL or BIOC courses above 2199 (excluding track requirements) **9-11 Credits**
| Free electives **6-8 Credits**

Pre-Health Professional Track Requirements

| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4400K - Human Physiology **4 Credits**
| BIOL 4460K - Human Anatomy **4 Credits**
| At Least 4 additional BIOL or BIOC Courses Above 2199 (excluding track requirements) **12-16 Credits**
| Free Electives **9-13 Credits**

Degree Program Total: 120

Biology, Education Track, BS

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of

students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**

| Group 4 - Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**
| BIOL 3000K - Genetics **4 Credits**
| BIOL 3300K - Ecology **4 Credits**
| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4200K - Zoology **4 Credits**
| BIOL 4440K - Botany **4 Credits**
| BIOL 4480 - Evolution **3 Credits**
Elective Credits **8 Credits** (Choose 2 from following)
| BIOL 3310K - Molecular Biology
| BIOL 4400K - Human Physiology
| BIOL 4460K - Human Anatomy
| BIOL 4600K - Biotechnology

Education Courses

| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 126

Chemistry, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits**
Take any 2 of the courses below (with labs):
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**

| Group 4 - Cultures and Societies **3 Credits**

Area F

Take any 4 courses (with labs) from the list below. Courses used as Area D requirements may not be selected.

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| NOTE: 1 credit each from Area A and Area D Math will be used to add to the 18 hours required in Area F.

Chemistry Major Requirements

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| CHEM 2601 - Chemical Literature **2 Credits**
| CHEM 3100K - Analytical Chemistry **5 Credits**
| CHEM 3300K - Instrumental Analysis **4 Credits**
| CHEM 4411 - Inorganic Chemistry **3 Credits**
| CHEM 4111K - Physical Chemistry I **4 Credits**
| CHEM 4112 - Physical Chemistry II **3 Credits**
| CHEM 4112L - Physical Chemistry II Lab **1 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| A Chemistry major must complete one program track (see below).
| 1 Hour from Area A Math and Area D Math will be added to the total hours in the major.

General Chemistry Track

| Four additional BIOC, CHEM, MATH, or Science electives at the 3000 level or higher. **12-16 Credits**
| Free electives **11-15 Credits**

Materials Science Track

| MSCI 3101K - Introduction to Material Science **4 Credits**
| CHEM 4412 - Main Group Inorganic Chemistry **3 Credits**
| CHEM 4415 - Solid State Chemistry **3 Credits**
| Upper-level CHEM elective **3-4 Credits**
| Free electives **13-14 Credits**

Total Hours: 120 Hours

Chemistry, Education Track, BS

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits***
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

- | CHEM 1211 - Principles of Chemistry I **3 Credits**
- | CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
- | CHEM 1212 - Principles of Chemistry II **3 Credits**
- | CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
- | MATH 2254 - Calculus II **4 Credits**
- | CHEM 2511K - Organic Chemistry I **4 Credits**

Major Program of Study

- | SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
- | CHEM 2512K - Organic Chemistry II **4 Credits**
- | CHEM 3100K - Analytical Chemistry **5 Credits**
- | CHEM 3300K - Instrumental Analysis **4 Credits**
- | CHEM 4111K - Physical Chemistry I **4 Credits**
- | CHEM 4112 - Physical Chemistry II **3 Credits**
- | CHEM 4112L - Physical Chemistry II Lab **1 Credits**
- | CHEM 4411 - Inorganic Chemistry **3 Credits**
- | BIOC 3111K - Biochemistry I **4 Credits**

Education Courses

- | EDUC 1101 - UTeach Step 1 **1 Credits**
- | EDUC 1102 - UTeach Step 2 **1 Credits**
- | EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
- | EDUC 2010 - Knowing and Learning **3 Credits**
- | EDUC 2020 - Classroom Interactions **3 Credits**
- | EDUC 4030 - Project Based Instruction **3 Credits**
- | RSCH 3610 - Research Methods **3 Credits**
- | STS 3347 - Perspectives on Science and Math **3 Credits**
- | EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
- | EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 120
*NOTE

The following Physics sequences are recommentend to satisfy AREA D

PHYS 1111 /PHYS 1111L & PHYS 1112 /PHYS 1112L OR

PHYS 1211/PHYS 2211L & PHYS 2212 /PHYS 2212L

Civil Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

Note: 1 hour from Area A MATH 1113 will be used to satisfy Area F 18 hour requirement.

| CET 2110 - Problem Solving Methods in CET **3 Credits**
| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| ENGT 2124 - Statics with Applications **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| SURV 2221 - Surveying I **4 Credits**

Requirements

| CET 1001 - Orientation to the Civil ET, Environmental ET, and Geospatial Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CET 3410 - Soil Properties and Site Exploration **3 Credits**
| CET 3410L - Soil Properties Lab **1 Credits**

| CET 3110 - Construction Materials and Sustainability **3 Credits**
| CET 3110L - Construction Materials Lab **1 Credits**
| CET 3120 - Cost Estimating and Scheduling in CET **3 Credits**
| CET 3120L - Plan Reading and Take Offs Lab **1 Credits**
| CET 3210 - Structural Mechanics **3 Credits**
| CET 3510 - Traffic Analysis and Road Design **2 Credits**
| CET 3510L - Traffic Analysis and Road Design Lab **1 Credits**
| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CET 3130L - Fluids and Hydraulics Lab **1 Credits**
| CET 3310 - Water Treatment and Distribution **2 Credits**
| CET 3310L - Water Treatment and Distribution Lab **1 Credits**
| CET 3320 - Wastewater Collection and Treatment **2 Credits**
| CET 3320L - Wastewater Collection and Treatment Lab **1 Credits**
| CET 3220 - Applied Structural Steel Design **3 Credits**
| CET 3230 - Concrete Infrastructure Design **3 Credits**
| CET 3430L - Site Exploration and Field Testing Lab **1 Credits**
| CET 4110 - Ethics of Engineering **1 Credits**
| CET 4120 - Senior Design and Engineering Documentation **3 Credits**
| CET 4130 - Special Inspections **2 Credits**
| CET 4240L - Structural Detailing Lab **1 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4310L - Erosion Control Lab **1 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| ENGT 3124 - Strength of Materials with Applications **3 Credits**
| ENGT 3124L - Strength of Materials Lab **1 Credits**
| CET Electives **9 Credits**
| MATH 2253 (Area D Carryover) **1 Credit**

Degree Program Total: 124

CET students are required to earn a grade of "C" or better in all courses required in the major and all courses used as electives.

Civil Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**

Area D

| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| MATH 2254 - Calculus II **4 Credits**

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| SURV 2221 - Surveying I **4 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**

Requirements

| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ENVS 2202 - Environmental Science (ECORE) **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3324 - Project Cost Analysis **4 Credits**
| ENGR 3305 - Data Collection and Analysis in Engineering **3 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| CE 3201 - Structural Analysis **3 Credits**
| CE 3202 - Design of Concrete Structures **3 Credits**
| CE 3501 - Materials for Civil & Construction Engineering **3 Credits**
| CE 3502 - Materials for Civil & Construction Engineering Lab **1 Credits**
| CE 3701 - Geotechnical Engineering **3 Credits**

| CE 3708 - Geotechnical Engineering Lab **1 Credits**
| CE 3702 - Environmental Engineering **3 Credits**
| CE 3703 - Environmental Engineering II **3 Credits**
| CE 3704 - Environmental Engineering Lab I **1 Credits**
| CE 4103 - Design of Steel Structures **3 Credits**
| CE 4105 - Foundation Design **3 Credits**
| CE 4177 - Transportation Engineering **3 Credits**
| CE 4179 - Transportation Engineering Lab **1 Credits**
| CE 4178 - Highway Design and Construction **3 Credits**
| CE 4703 - Engineering Hydrology **3 Credits**
| CE 4800 - Senior Project **3 Credits**
| SURV 4470 - Land Development Design **4 Credits**
| CE XXXX Technical Electives **6 Credits**

Degree Program Total: 130

The Civil Engineering degree requires a grade of "C" or better in all CE, SURV, and ENGR courses applied to degree requirements.

CE Technical Electives: (6 hrs)

| CE 4704 - Engineering Hydraulic Analysis and Design **3 Credits**
| CE 4705 - Advanced Soil Mechanics **3 Credits**
| CE 4706 - Pavement Engineering **3 Credits**
| CE 4707 - Design of Wood Structures **3 Credits**
| CE 4708 - Hazardous Waste Engineering **3 Credits**
| CE 4709 - Advanced Structural Analysis **3 Credits**

Computer Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C Group 1 - Literature of the World **3 Credits**
| Area C Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits** *
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits** *
| PHYS 2212 - Principles of Physics II **3 Credits** *
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits** *

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| ECET 1101 - Circuits I **4 Credits**
| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2335 - Numerical Methods I **3 Credits**
Note that the carryover credits from Area A Math and Area D Math will be added to Area F to total 18 hours.

Major Courses

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits** **
| ECET 1001 - Orientation **1 Credits**
| ECET 1012 - Design Fundamentals **2 Credits**
| ECET 1200 - Digital I **4 Credits**
| ECET 2111 - Circuits II **4 Credits**
| ECET 2210 - Digital II **4 Credits**
| ECET 2300 - Electronics I **4 Credits**
| ECET 2310 - Electronics II **4 Credits**
| ECET 3220 - Digital III **4 Credits**
| ECET 3400 - Data Communications **4 Credits**
| ECET 3410 - High Frequency Systems **4 Credits**
| ECET 3600 - Test Engineering **4 Credits**
| ECET 3701 - Embedded PCs **4 Credits**
| ECET 3710 - Hardware Programming and Interfacing **4 Credits**
| ECET 3810 - Applications of C++, JAVA and HTML **3 Credits**
| ECET 4610 - Control Systems **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| CpET Electives **11**

Degree Program Total: 129

Note:

* PHYS 1111/PHYS 1111L and PHYS 1112 /PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L .

** SPSU 1001 does not count towards the 128 total credit hours required for the degree program.

CpET majors are required to earn a "C" or better in their ECET courses, except one "D" in a 3000 or 4000 level non-prerequisite course may be used for graduation purposes. A grade of "C" or better is required in the project-based capstone course.

CpET Electives

Embedded Systems (take 2 of the following courses)

Graduate will specialize in the design and implementation of smart devices used in products ranging from audio to medical to security systems. Both hardware design and programming at the system level will be stressed. The specialist will gain resume skills such as DSP and VHDL design, embedded micro-controller and embedded PC interfacing and programming.

- | ECET 3640 - Introduction to Systems Engineering and Robotics **4 Credits**
- | ECET 4630 - Digital Signal Processing **4 Credits**
- | ECET 4720 - Distributed Microcontrollers and PCs **4 Credits**
- | ECET 4730 - VHDL and Field Programmable Gate Arrays **4 Credits**

Networks (take 2 of the following courses)

Graduate will specialize in the development and implementation of networks of computers and micro-controllers. Applications include Telemedicine, factory automation systems, point-of-sales systems, and robotics. There will be heavy emphasis of high-level programming using C, Visual C++, JAVA, Visual BASIC, HTML, Windows, LINUX, TCP/IP, etc. Hardware will emphasize PCs and embedded PCs, smart devices, LAN technologies, and remote sensing and control.

- | ECET 4710 - Network Programming and Interfacing **4 Credits**
- | ECET 4720 - Distributed Microcontrollers and PCs **4 Credits**
- | ECET 48XX - BS Telecom 3000-4000 course
- | ECET 48XX - BS Telecom 3000-4000 course
  Note: *ECET 4830 cannot be used as an elective.*

Computer Game Design and Development, BS

Students must earn a C or better in all the major courses (CSE, CS, SWE, and CGDD).

AREA A

- | ENGL 1101 - English Composition I **3 Credits**
- | ENGL 1102 - English Composition II **3 Credits**

| MATH 2253 - Calculus I **4 Credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2254 - Calculus II
| Take any 2 of the courses below (with labs):

| ASTR 1000K - Introduction to the Universe **4 credits**
| ASTR 1010K - Introduction to the Universe II **4 credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107K - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108K - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211K - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II **3 Credits**
| CHEM 1212K - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112K - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 credits**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

AREA F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits**

- | CGDD 2002 - Fundamentals of Game Design **2 Credits**
- | MATH 2260 - Introduction to Probability and Statistics **3 Credits**
  One credit from MATH 2253 & MATH 2254 will be added to Area F to complete the 18 hour requirement.

Requirements

- | CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
- | CSE 3642 - Professional Practices and Ethics **2 Credits**
- | CS 3424 - Data Structures **4 Credits**
- | CS 4413 - Algorithm Analysis **3 Credits**
- | CS 4363 - Computer Graphics and Multimedia **3 Credits**
- | CS 4523 - Artificial Intelligence **3 Credits**
- | SWE 2313 - Introduction to Software Engineering **3 Credits**
- | SWE 3643 - Software Testing and Quality Assurance **3 Credits**
- | SWE 4324 - User-Centered Design **4 Credits**
  Advanced Topics:
- | CGDD 3103 - Application Extension and Scripting **3 Credits**
- | CGDD 4003 - Digital Media and Interaction **3 Credits**
- | CGDD 4203 - Mobile and Casual Game Development **3 Credits**
- | CGDD 4303 - Educational and Serious Game Design **3 Credits**
- | CGDD 4803 - Studio **3 Credits**
- | CGDD 4814 - Capstone **4 Credits**
- | Free Electives **6 Credits**
- | Concentration (listed below): **9-10 Credits**

Note:

Students are strongly recommended to take at least one Physics course for their Area D because some later courses in this program (in particular the CGDD 4113 and CGDD 4603) may rely upon Physics. Students who are interested in the Simulation-Informatics concentration (see below) may find Biology or Chemistry beneficial instead of Physics.

Students taking the Educational-Serious or Planning Management concentration should consult with their advisor to ensure they have the required prerequisite courses needed (using free elective) since some of these concentration courses require specific electives that must be taken prior to the concentration courses.

BS CGDD Upper-level Concentration

While the required courses in the degree ensure students are exposed to the breadth of the field of computer game design and development, it is also imperative that students are given flexibility to customize their experience and apply the knowledge gained in their required courses. To this end, the degree requires students select a concentration in which they may gain a depth of knowledge within their chosen area.

The following are suggested concentrations, but students may select a customized plan of study and set of courses under with their advisor's approval.

Media-Production

- | MATH 3312 - Linear Algebra **4 Credits**
- | CGDD 4113 - 3D Modeling and Animation **3 Credits**
- | CGDD 4603 - Production Pipeline and Asset Management **3 Credits**

Distributed-Mobile

| SWE 3683 - Embedded Systems Analysis & Design **3 Credits**
| CS 4253 - Distributed Computing **3 Credits**
| CS 4263 - Computer Networks **3 Credits**

Educational-Serious

| 6 hours of approved TCOM courses
| CGDD 4313 - Designing Online Learning Content and Environments **3 Credits**

Planning-Management (pick 3 of 4)

| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 4185 - Technology Management **3 Credits**
| SWE 3623 - Software Systems Requirements **3 Credits**
| SWE 4663 - Software Project Management **3 Credits**

Simulation-Informatics

| CSE 3153 - Database Systems **3 Credits**
| CS 4253 - Distributed Computing **3 Credits**
| CGDD 4703 - Data Modeling and Simulation **3 Credits**

BS CGDD Program Objectives

Meet the educational needs of students and prepare them for careers within the discipline

Expand the visibility of SPSU and the University System of Georgia (USG) in the field of game design and development

Create a strong community of students and alumni

Serve the community and industry

BS CGDD Learning Outcomes

Upon graduation, students will be able to:

| Decompose and solve complex problems through artifacts of computing such as hardware, software specifications, code and other written documents

- | Demonstrate an understanding of computing principles in the areas of programming, data structures, architecture, systems, graphics, and artificial intelligence and how they relate to computer game design and development
- | Utilize mathematics and science in game design and development
- | Apply principles of game design and development to generate a portfolio showcasing their successful industrial experience, research, and/or creative works
- | Demonstrate a breadth of knowledge in historic and emerging domains and genres of computer gaming and interaction
- | Demonstrate an understanding of social, professional global, and ethical issues related to computing
- | Work effectively in teams on system development projects
- | Demonstrate effective oral and written communication skills

Degree Program Total: 121

Computer Science, BA

Area A

- | ENGL 1101 - English Composition I **3 Credits**
- | ENGL 1102 - English Composition II **3 Credits**
- | MATH 1113 - Pre-calculus **4 Credits**

Area B

- | COMM 2400 - Public Speaking **2 Credits**
- | STS 2400 - Science, Technology, and Society **2 Credits**
- | COMM 2400 - Public Speaking **2 Credits**
- | STS 2400 - Science, Technology, and Society **2 Credits**

Area C

- | Group 1 - Literature of the World **3 Credits**
- | Group 2 - Art and Culture of the World **3 Credits**

Area D

- | MATH 2253 - Calculus I **4 Credits**
- | Take any 2 of the courses below (with labs):

- | BIOL 2107 - Principles of Biology I **3 Credits**
- | BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
- | BIOL 2108 - Principles of Biology II **3 Credits**
- | BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
- | CHEM 1211 - Principles of Chemistry I **3 Credits**
- | CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
- | CHEM 1212 - Principles of Chemistry II **3 Credits**

| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
    OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
    OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| Free Elective **(1 credit hour)**
| 1 hour each from Areas A & D **(2 credit hours)**

Required Courses

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| CS 3123 - Programming Language Concepts **3 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CS 3224 - Computer Organization & Architecture **4 Credits**
| CS 3243 - Operating Systems **3 Credits**
| CS 3424 - Data Structures **4 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| SWE 3613 - Software System Engineering **3 Credits**
| Upper-Level CS Elective (or Approved UL CGGD/SWE/IT Elective) **4 Credits**
| Upper-Level Free Electives (UL CS must be at least 4 hours, and the total of CS UL and UL free electives is 10 hours) **6 Credits**
| Approved Minor **15 Credits**
| Free Electives **5 Credits**

Degree Program Total: 123

Computer Science, BS

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| STS 2400 - Science, Technology, and Society **2 Credits**
| COMM 2400 - Public Speaking **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2253 - Calculus I **4 Credits**
Take any two courses (plus labs) from the following for a total of 8 hours:
| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

AREA F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**

OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| 1 hour each from Areas A & D **(2 credit hours)**
| Free Elective **(1 credit hour)**

Required Courses

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
OR
| MATH 1401 - Intro to Statistics **3 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CS 3123 - Programming Language Concepts **3 Credits**
| CS 3224 - Computer Organization & Architecture **4 Credits**
| CS 3243 - Operating Systems **3 Credits**
| CS 3424 - Data Structures **4 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| CS 4253 - Distributed Computing **3 Credits**
| CS 4413 - Algorithm Analysis **3 Credits**
| CS 4893 - Computer Science Capstone **3 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| SWE 3613 - Software System Engineering **3 Credits**
| Approved Math Elective (MATH 2255, 2306, 2335, 3000 level or 4000 level) **3 Credits**
| Upper Level CS Electives (See approved list below) **9 Credits**
| Free Electives (Except MATH 1111) **5 Credits**

Approved Courses for CS Upper Level Electives

| IT 4153 - Advanced Database **3 Credits**
| IT 4203 - Advanced Web Development **3 Credits**
| IT 4823 - Information Security Administration & Privacy **3 Credits**
| IT 4833 - Wireless Security **3 Credits**
| IT 4843 - Ethical Hacking for Effective Defense **3 Credits**
| IT 4853 - Computer Forensics **3 Credits**
| SWE 3623 - Software Systems Requirements **3 Credits**
| SWE 3633 - Software Architecture & Design **3 Credits**
| SWE 3643 - Software Testing and Quality Assurance **3 Credits**
| SWE 3683 - Embedded Systems Analysis & Design **3 Credits**
| SWE 3843 - Embedded Systems Construction and Testing **3 Credits**
| SWE 4324 - User-Centered Design **4 Credits**
| SWE 4633 - Component-Based Software Development **3 Credits**
| SWE 4743 - Object-Oriented Development **3 Credits**
| SWE 4783 - User Interaction Engineering **3 Credits**
| CGDD 3103 - Application Extension and Scripting **3 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**

| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| CGDD 4313 - Designing Online Learning Content and Environments **3 Credits**
| CGDD 4703 - Data Modeling and Simulation **3 Credits**

Degree Program Total: 122

Construction Engineering, BS

Requirements

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2335 - Numerical Methods I **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**
| Area E1 - Course in History: American Perspective **3 Credits**
| Area E2 - World History **3 Credits**
| Area E3 - Course in Behavioral Science **3 Credits**
| Area E4 - Cultures and Societies **3 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3305 - Data Collection and Analysis in Engineering **3 Credits**
| ENGR 3324 - Project Cost Analysis **4 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CE 3201 - Structural Analysis **3 Credits**
| CE 3501 - Materials for Civil & Construction Engineering **3 Credits**
| CE 3502 - Materials for Civil & Construction Engineering Lab **1 Credits**
| CE 3701 - Geotechnical Engineering **3 Credits**

| CE 3702 - Environmental Engineering **3 Credits**
| CE 4177 - Transportation Engineering **3 Credits**
| CE 4178 - Highway Design and Construction **3 Credits**
| CE 4703 - Engineering Hydrology **3 Credits**
| CE 4800 - Senior Project **3 Credits**
| CM 3160 - Construction Equipment **3 Credits**
| CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
| CM 4510 - Construction Scheduling **3 Credits**
| CM 4560 - Construction Project Management **3 Credits**
| SURV 2221 - Surveying I **4 Credits**
| CE 4202 - Steel and Concrete Design **4 Credits**
| CM 4710 - Construction Safety **4 Credits**
| CM 4760 - Construction and Real Estate Property Law **3 Credits**

Degree Program Total: 130

The Construction Engineering degree requires a grade of "C" or better in all CE, SURV, ENGR and CM courses applied to degree requirements.

Construction Management, BS

Area A:

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B:

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C:

| Group 1 - Take One Course from the Literature Group **3 Credits**
| Group 2 - Take One Course from the Art and Culture Group **3 Credits**

Area D: Laboratory Sciences

| Group 1 - Any Two Lab Sciences (PHYS 1111, PHYS 1111L required and CHEM 1211, CHEM 1211L recommended) *See Note 2 for PHYS 1111, PHYS 1111L **8 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits** recommended for Area D– **See Note 2**

| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| Group 2 - MATH 2240 - Survey of Calculus **3 Credits**

Area E: Social Sciences

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits** recommended for Area E– **See Note 1**
| Group 4 - Cultures and Societies **3 Credits**

Area F:

| MGNT 3145 - Legal Environment of Business **3 Credits**
| CET 2200 - Introduction to Structures **4 Credits**
| SURV 2200 - Construction Measurements **4 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MGNT 3205 - Management Information Systems **3 Credits**

Major-CM Courses

| ECON 1101 - Introduction to Economics **3 Credits** (if needed)
| PHYS 1111 - Introductory Physics I **3 Credits** (If Needed)
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits** (If Needed)
| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| CM 1000 - Orientation to Construction and Development **2 Credits**
| CM 2000 - Construction Graphics **3 Credits**
| CM 3000 - Computer Applications in Construction **3 Credits**
| CM 3040 - Building Information Modeling Applications I **3 Credits**
| CM 3110 - Residential and Light Construction Methods **3 Credits**
| CM 3180 - Mechanical and Electrical Building Systems **4 Credits**
| CM 3410 - Construction Quantity Surveying **3 Credits**
| CM 3500 - Building Codes **2 Credits**
| CM 4510 - Construction Scheduling **3 Credits**
| CM 4710 - Construction Safety **4 Credits**
| CM 4760 - Construction and Real Estate Property Law **3 Credits**
| CM 4900 - Capstone Project **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| Concentration required (see choices below) **21-22 Credits**

General Concentration

- CM 3210 - Applied Structures **4 Credits**
- CM 3260 - Temporary Structures **3 Credits**
- CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
- CM 3620 - Construction Finance and Feasibility **4 Credits**
- CM 4560 - Construction Project Management **3 Credits**
- CM 4800 - Construction Management Technique **3 Credits**

Land Development Concentration

- CM 3310 - Introduction to Development **3 Credits**
- CM 3430 - Construction Estimating for Development **3 Credits**
- CM 3620 - Construction Finance and Feasibility **4 Credits**
- CM 3710 - Site Planning **4 Credits**
- CM 4570 - Development Process I **4 Credits**
- CM 4620 - Development Process II **3 Credits**

Specialty Concentration

- CM 3280 - Building Mechanical and Electrical Codes and Loads **4 Credits**
- CM 3480 - Mechanical and Electrical Systems Estimating **4 Credits**
- CM 4560 - Construction Project Management **3 Credits**
- CM 3190 - Sustainable Construction **3 Credits**
- CM 4480 - Design/Build MEP Systems **4 Credits**

Facilities Management

- CM 3190 - Sustainable Construction **3 Credits**
- CM 3290 - Facilities Management **4 Credits**
- CM 3620 - Construction Finance and Feasibility **4 Credits**
- CM 4190 - Sustainable Operation & Maintenance **4 Credits**
- CM 4560 - Construction Project Management **3 Credits**
- CM 4620 - Development Process II **3 Credits**

Heavy Construction Management Concentration

- CM 3160 - Construction Equipment **3 Credits**
- CM 3170 - Heavy Construction Practices **4 Credits**
- CM 3230 - Heavy Materials & Temporary Structures **4 Credits**
- CM 3440 - Heavy Estimating **4 Credits**
- CM 4230 - Soils & Earthmoving **4 Credits**

| CM 4560 - Construction Project Management **3 Credits**

Degree Program Total: 128

Note:

Note 1: *If ECON 1101 was taken to satisfy Area E, Group 3, a 3-hour Construction Elective can be substituted.*

Note 2: *If PHYS 1111 , PHYS 1111L were taken to satisfy Area D, Lab Science, a 4-hour Construction Elective can be substituted.*

Electrical Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C Group 1 - Literature of the World **3 Credits**
| Area C Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits** *
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits** *
| PHYS 2212 - Principles of Physics II **3 Credits** *
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits** *

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
    or
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits** and
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
    or
| BIOL 2107 - Principles of Biology I **3 Credits** and
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**

Major Courses

| ECET 1001 - Orientation **1 Credits**
| ECET 1012 - Design Fundamentals **2 Credits**
| ECET 1101 - Circuits I **4 Credits**
| ECET 1200 - Digital I **4 Credits**
| ECET 2111 - Circuits II **4 Credits**
| ECET 2210 - Digital II **4 Credits**
| ECET 2300 - Electronics I **4 Credits**
| ECET 2310 - Electronics II **4 Credits**
| ECET 3220 - Digital III **4 Credits**
| ECET 3400 - Data Communications **4 Credits**
| ECET 3410 - High Frequency Systems **4 Credits**
| ECET 3500 - Survey of Electric Machines **4 Credits**
| ECET 3600 - Test Engineering **4 Credits**
| ECET 3620 - Signals and Systems Analysis **4 Credits**
| ECET 4610 - Control Systems **4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits** **
| EET Electives **13 Credits**

Degree Program Total: 128

Note:

* *PHYS 1111, PHYS 1111L and PHYS 1112/PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L*

** *SPSU 1001 does not count towards the 128 total credit hours required for the degree program.*

EET majors are required to earn a "C" or better in their ECET courses, except one "D" in a 3000 or 4000 level non-prerequisite course may be used for graduation purposes. A grade of "C" or better is required in the project-based capstone course.

EET Electives

Students may wish to focus their EET electives in a particular area of Electrical Engineering Technology. Suggested choices in the areas of biomedical, communications, digital, power, and telecommunications are listed below:

Biomedical

- ECET 3020 - Biomedical Instrumentation **4 Credits**
- ECET 3030 - Biomechanics **4 Credits**
- ECET 4010 - Virtual Biomedical Instrumentation **4 Credits**
- ECET 4020 - Biomedical Imaging **4 Credits**
- ECET 4030 - Bioinformatics and Telemedicine **4 Credits**
- ECET 4040 - Biometrics **4 Credits**
- ECET 4050 - BMET Capstone **4 Credits**

Communications

- ECET 4320 - Active Filters **4 Credits**
- ECET 4330 - Audio Technology **4 Credits**
- ECET 4420 - Communications Circuit Applications **4 Credits**
- ECET 4431 - Wireless Communications Systems **4 Credits**
- ECET 4432 - Fiber-optic Communications Systems **4 Credits**
- ECET 4450 - RF Electronics **4 Credits**
- ECET 4820 - Communications Networks and the Internet **4 Credits**

Digital

- ECET 3640 - Introduction to Systems Engineering and Robotics **4 Credits**
- ECET 3701 - Embedded PCs **4 Credits**
- ECET 4630 - Digital Signal Processing **4 Credits**
- ECET 4710 - Network Programming and Interfacing **4 Credits**
- ECET 4720 - Distributed Microcontrollers and PCs **4 Credits**
- ECET 4730 - VHDL and Field Programmable Gate Arrays **4 Credits**
- ECET 4820 - Communications Networks and the Internet **4 Credits**

Power

- ECET 4510 - Power System Analysis **4 Credits**
- ECET 4520 - Industrial Distribution Systems, Illumination, and the NEC **4 Credits**
- ECET 4530 - Industrial Motor Control **4 Credits**
- ECET 4540 - Introduction to Power Electronics **4 Credits**
- ECET 4560 - Electric Drives **4 Credits**

Telecommunications

| ECET 3810 - Applications of C++, JAVA and HTML **3 Credits**
| ECET 4820 - Communications Networks and the Internet **4 Credits**
| ECET 4840 - Advanced Telecommunications **4 Credits**
| ECET 4850 - Telecommunications Project **4 Credits**
| ECET 4860 - Network Security **4 Credits**

Electrical Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**

Area D

| MATH 2254 - Calculus II **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| One hour from Area A Math
| One hour from Area D Math

Requirements

| EE 1000 - Foundations of Electrical Engineering **2 Credits**
| CSE 1301E - C++ Programming for Engineers **4 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| EE 2302 - Circuit Analysis II **3 Credits**
| EE 2401 - Semiconductor Devices **3 Credits**
| EE 2501 - Digital Logic Design **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| EE 3501 - Embedded Systems **4 Credits**
| EE 3605 - Electromagnetics **3 Credits**
| EE 3701 - Signals and Systems **3 Credits**
| ENGR 4402 - Engineering Ethics **1 Credits**
| EE 3401 - Engineering Electronics **4 Credits**
| EE 3702 - Communication Systems **3 Credits**
| EE 3601 - Electric Machines **4 Credits**
| EE 4201 - Control Systems **4 Credits**
| EE 4701 - Professional Practice **3 Credits**
| EE 3/4XXX - Technical Electives **9 Credits**
| EE 3/4XXX - Engineering Science Elective **3 Credits**
| EE 4800 - Senior Project **4 Credits**
| Math Elective - Math above 2335 **3 Credits**

Degree Program Total: 129

The Electrical Engineering degree requires a grade of "C" or better in all EE and ENGR courses applied to degree requirements.

English and Professional Communication, BA

Area A

| ENGL 1101 - English Composition I **3 Credits**

| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature of the World **3 Credits**
| Group 2- Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Science **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
Or
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Course in Behavioral Science **3 Credits**
| Group 4- Course in Cultures and Societies **3 Credits**

Area F

Required Courses, 12 Credits
| COMM 2170 - Introduction to Media Studies **3 Credits**
| ENGL 2030 - Research in Professional and Critical Writing **3 Credits**
| TCOM 2020 - Introduction to the Professions **3 Credits**
| ENGL 2500 - Language and Meaning **3 Credits**
Choose Two Courses, 6 Credits
| COMM 2000 - Business Communication **3 Credits**
| COMM 2065 - Cross-Cultural Communication **3 Credits**
| COMM 2150 - Ethics and Communication **3 Credits**
| Other coursework, as approved by the Department (6 Credits Max)
| Any Foreign Language, 2001 or higher (6 Credits Max)

Upper Level Required Courses (19 Credits)

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| COMM 3160 - Media Theory and Practice **3 Credits**
| ENGL 3045 - New Media Writing **3 Credits**
| ENGL 3100 - Rhetoric: History, Theory, and Practice **3 Credits**

| ENGL 4110 - Writing in Collaborative Environments **3 Credits**
| ENGL 4800 - Project Portfolio **3 Credits**
| TCOM 3400 - Foundations of Design for the Web **3 Credits**

Upper Level Area Distribution (27 Credits)

| A minimum of 6 credit hours must be taken in each of the three tag areas.
| No more than 6 credits may be at the 2000 level.
| Up to 6 credits outside of courses listed below, with departmental approval.

1. **Textual Production Area**

   COMM 2000 - Business Communication
   COMM 3250 Newspaper Practicum
   ENGL 3081 Studies in Genre
   ENGL 3082 Science and Literature
   ENGL 3010 Science Writing
   ENGL 3025 Creative Writing Workshop
   ENGL 3040 Article and Essay Workshop
   ENGL 3045 New Media Writing
   TCOM 3015 Environmental Writing
   TCOM 3020 Grant and Proposal Writing
   TCOM 4000 Professional Editing

2. **Visual Production Area**

   ARTS 2010 Intro to Drawing
   ARTS 3010 Drawing for New Media
   ARTS 3000 Visual Thinking
   ARTS 3170 Digital Photography
   TCOM 3430 Foundations of Graphics
   TCOM 4040 Applied Graphics
   TCOM 4170 Film and Video Production
   TCOM 4400 Advanced Design for the Web

3. **Media & Cultural Studies Area**

   ENGL 3180 Film as Literature
   ENGL 4010 Publishing for New Media
   ENGL 4170 Media and Narrative
   COMM 3060 Media, Culture, and Society
   COMM 3065 International Communication
   TCOM 4045 Foundations of Multimedia
   TCOM 3145 Social Media Integration

Free Electives (15 credits)

Degree Program Total: 121

For additional information about the B.A. program, contact the Digital Writing and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu. You can also visit our website at etcma.spsu.edu.

Environmental Engineering Technology, BS

Requirements

Area A:

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B:

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C:

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E:

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F:

Core related to major.

| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| CET 2110 - Problem Solving Methods in CET **3 Credits**
| SURV 2110 - Introduction to Mapping **4 Credits**

Additional Requirements

| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CET 2200 - Introduction to Structures **4 Credits**
| CET 3110 - Construction Materials and Sustainability **3 Credits**
| CET 3110L - Construction Materials Lab **1 Credits**
| CET 3120 - Cost Estimating and Scheduling in CET **3 Credits**
| CET 3120L - Plan Reading and Take Offs Lab **1 Credits**
| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CET 3130L - Fluids and Hydraulics Lab **1 Credits**
| CET 3310 - Water Treatment and Distribution **2 Credits**
| CET 3310L - Water Treatment and Distribution Lab **1 Credits**
| CET 3320 - Wastewater Collection and Treatment **2 Credits**
| CET 3320L - Wastewater Collection and Treatment Lab **1 Credits**
| CET 3410 - Soil Properties and Site Exploration **3 Credits**
| CET 3410L - Soil Properties Lab **1 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4310L - Erosion Control Lab **1 Credits**
| CET 4320 - Unit Operations in Environmental Engineering **4 Credits**
| CET 4330 - Solid Waste Management **3 Credits**
| CET 4110 - Ethics of Engineering **1 Credits**
| CET 4120 - Senior Design and Engineering Documentation **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| MATH MAJOR COURSES: Excess from AREA A AND D **2 Credits**
| CM 4710 - Construction Safety **4 Credits**
| ENVS 3100K - Soil & Water Science **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**

Major Electives:

Take minimum of 6 hours from major electives listed below:

| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MET 3400 - Thermodynamics and Heat Transfer **3 Credits**
| SET 3240 - Hydraulic Structures **3 Credits**

| BIOL 3300K - Ecology **4 Credits**
| CHEM 3150K - Environmental Chemistry **4 Credits**
| CET 4340 - Air Pollution Control **3 Credits**

Degree Program Total: 123

EvET students are required to earn a grade of "C" or better in all courses required in the major and all courses used as electives.

Environmental Science, B.S.

Core Requirements

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| STS 2400 - Science, Technology, and Society **2 Credits**
| COMM 2400 - Public Speaking **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

Environmental Science majors MUST take the courses listed below to satisfy prerequisites for the major courses.

| MATH 2253 - Calculus I **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
One credit from MATH 1113 & MATH 2253 will be added to Area F to complete the 18 hour requirement.

Environmental Science Major Requirements

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| BIOL 3000K - Genetics **4 Credits**
| BIOL 3300K - Ecology **4 Credits**
| BIOL 4200K - Zoology OR BIOL 4440K - Botany **4 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| CHEM 3150K - Environmental Chemistry **4 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| ENVS 4300 - Environmental Ethics **3 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| ENVS 3100K - Soil & Water Science **4 Credits**
| ENVS 4500 - Environmental Science Internship **3 Credits**
| Environmental Science Electives (see approved courses below) **12 Credits**

Environmental Science Electives (12 semester hours from the list below)

| BIOL 3100K - Microbiology **4 Credits**
| BIOL 3250K - Ecosystem Ecology **4 Credits**
| BIOL 3500 - Biostatistics **3 Credits**
| BIOL 3600 - Freshwater Biology **3 Credits**
| BIOL 3700K - Ichthyology **4 Credits**
| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CET 3310 - Water Treatment and Distribution **2 Credits**

| CET 3320 - Wastewater Collection and Treatment **2 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4330 - Solid Waste Management **3 Credits**
| CHEM 3100K - Analytical Chemistry **5 Credits**
| CHEM 3200K - Atmospheric Chemistry **3 Credits**
| CHEM 3300K - Instrumental Analysis **4 Credits**
| SURV 2110 - Introduction to Mapping **4 Credits**
| ENVS 3150K - Environmental Toxicology **4 Credits**
| ENVS 3250 - Natural Resource Management **3 Credits**
| ENVS 3450 - Conservation Biology **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**

Degree Program Total: 121

Industrial Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Science* Note 1 **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**

- | Group 2 - World History **3 Credits**
- | Group 3 - Behavioral Science **3 Credits**
- | Group 4 - Cultures and Societies **3 Credits**

Area F

- | CHEM 1211 - Principles of Chemistry I **3 Credits** * Note 2
- | CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
- | TCOM 2010 - Technical Writing **3 Credits**
- | IT 1113 - Programming Principles **3 Credits**
- | EDG 1210 - Survey of Engineering Graphics **2 Credits**
- | IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
  One credit from MATH 1113 & MATH 2253 will be added to Area F to complete the 18 hour requirement.

Major Courses

- | IET 1000 - Orientation **1 Credits**
- | SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
- | ACCT 2101 - Principles of Financial Accounting **3 Credits**
- | IET 2227 - Introduction to Statistics **3 Credits**
- | IET 2449 - Logistics and Supply Chain Management **3 Credits**
- | IET 3322 - Work Measurement and Ergonomics **4 Credits**
- | IET 3339 - Statistical Quality Control **3 Credits**
- | IET 3356 - Quality Concepts and Systems Design **3 Credits**
- | IET 3403 - Advanced Statistics with Application **3 Credits**
- | IET 3424 - Engineering Economy **3 Credits**
- | IET 3433 - Product and Process Costing **3 Credits**
- | IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
- | IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**
- | IET 4451 - Systems Simulation **3 Credits**
- | IET 4475 - Senior Project **3 Credits**
- | IET 4810 - Ethics and Safety **1 Credits**
- | MGNT 4115 - Human Resource Management **3 Credits**
- | MGNT 4135 - Project Management **3 Credits**
- | MGNT 4151 - Operations Management **3 Credits**
- | Free Electives **6 Credits**

IET Electives (9 semester hours from the list below)

- | IET 3320 - Advanced Logistics **3 Credits**
- | IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**
- | IET 3410 - Principles of Team Dynamics **3 Credits**
- | IET 3511 - Sustainability Engineering **3 Credits**
- | IET 3620 - Warehousing Systems **3 Credits**

|　　IET 4111 - Design of Experiments **3 Credits**
|　　IET 4121 - Advanced Topics in Quality Assurance **3 Credits**
|　　IET 4478 - Senior Internship **3 Credits**

Degree Program Total: 128

Note 1 - Physics I and Physics II are preferred Area D Sciences, however, any Lab Sciences from the approved list is permissible.

Note 2 – Chemistry I is the preferred Area F Science, however, any Lab Science from the approved list is permissible.

A grade of "C" or better is required in all courses used in the major prescribed for the bachelor degree program.

Concentration in Logistics

The primary objective of the Concentration in Logistics is to provide training and education to students interested in entering the Supply Chain industry.

Required Courses

|　　IET 2227 - Introduction to Statistics **3 Credits**
|　　IET 2449 - Logistics and Supply Chain Management **3 Credits**
|　　IET 3320 - Advanced Logistics **3 Credits**

|　　IET 3511 - Sustainability Engineering **3 Credits** or
|　　IET 3620 - Warehousing Systems **3 Credits**

|　　IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
|　　MGNT 4115 - Human Resource Management **3 Credits**
|　　MGNT 4151 - Operations Management **3 Credits**

Total: 21

Students who successfully complete the Concentration with a grade of "C" or better in each course will be awarded a Green Belt Certificate.

Concentration in Quality Principles

The primary objective of the Concentration in Quality Principles is to provide training and education to students interested in quality system principles, methodology, elements and standards.

Required Courses:

|　　IET 3339 - Statistical Quality Control **3 Credits**
|　　IET 3356 - Quality Concepts and Systems Design **3 Credits**
|　　IET 3403 - Advanced Statistics with Application **3 Credits**
|　　IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**

| IET 3410 - Principles of Team Dynamics **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Total: 21

Students who successfully complete the Concentration with a grade of "C" or better in each course will be awarded a Green Belt Certificate.

Information Technology, BAS

This program is designed for students who have completed an AAS or AAT degree from a two year technical college in a computing discipline.

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

AREA C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 1113 - Pre-calculus **(3 credits - 1 hour to Area F)**
Take any 2 of the courses below (with labs) for a total of 8 hours:

| ASTR 1000K - Introduction to the Universe **4 credits**
| BIOL 2107K - Principles of Biology I **4 Credits**
| BIOL 2108K - Principles of Biology II **4 Credits**
| CHEM 1211K - Principles of Chemistry I **4 Credits**
| CHEM 1212K - Principles of Chemistry II **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credit**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credit**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory **1 credit**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credit**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

Students who do not have enough hours from their technical block and general education hours to equal 60 semester hours, may receive "elective" credit hours to make up the deficient number of hours.

Technical Block Course **(3 credit hours)**
Technical Block Course **(4 credit hours)**
| CSE 2300 - Discrete Structures for Computing **3 Credits**
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| IT 1324 - Advanced Programming Principles **4 Credits**
| Area D Carryover credit **1 credit**

Required Courses

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| IT 3203 - Introduction to Web Development **3 Credits**
| IT 3123 - Hardware/Software Concepts **3 Credits**
| IT 3223 - Software Acquisition and Project Management **3 Credits**
| IT 3423 - Operating Systems Concepts & Administration **3 Credits**
| IT 3883 - Advanced Applications Development **3 Credits**
| IT 4323 - Data Communications & Networks **3 Credits**
| IT 4823 - Information Security Administration & Privacy **3 Credits**
| Technical Block Remainder Courses from AAS **(30 credit hours)**
| Directed Electives - Choose 2 from the course list below. **6 credits**

Directed Electives

| IT 3503 - Foundations of Health Information Technology **3 Credits**
| IT 4123 - Electronic Commerce **3 Credits**
| IT 4153 - Advanced Database **3 Credits**
| IT 4203 - Advanced Web Development **3 Credits**
| IT 4333 - Network Configuration & Administration **3 Credits**
| IT 4683 - Management of Information Technology and Human Computer Interaction **3 Credits**
| IT 4723 - IT Policy and Law **3 Credits**
| IT 4833 - Wireless Security **3 Credits**
| IT 4843 - Ethical Hacking for Effective Defense **3 Credits**
| IT 4853 - Computer Forensics **3 Credits**

Degree Program Total: 122

All IT, CS, CSE and SWE designator courses must have a grade of 'C' or better.

Information Technology, BS

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

AREA C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2240 - Survey of Calculus or MATH 2253 - Calculus I **3 Credits**
| Take any 2 of the courses below (with labs):

| ASTR 1000K - Introduction to the Universe **4 credits**
| ASTR 1010K - Introduction to the Universe II **4 credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107K - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108K - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211K - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II **3 Credits**
| CHEM 1212K - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112K - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 credits**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**

- Group 3 - Behavioral Science **3 Credits**
- Group 4 - Cultures and Societies **3 Credits**

Area F

- TCOM 2010 - Technical Writing **3 Credits**
- MATH 2260 - Introduction to Probability and Statistics **3 Credits** OR
- IET 2227 - Introduction to Statistics **3 Credits**
- CSE 1301J - Programming & Problem Solving I **4 Credits**
- IT 1324 - Advanced Programming Principles **4 Credits**
- CSE 2300 - Discrete Structures for Computing **3 Credits** OR
- MATH 2345 - Discrete Mathematics **3 Credits**
- Carryover credit from Area A Math **1 Credit**

Requirements

- CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
- CSE 3642 - Professional Practices and Ethics **2 Credits**
- CSE 3153 - Database Systems **3 Credits**
- IT 3123 - Hardware/Software Concepts **3 Credits**
- IT 3203 - Introduction to Web Development **3 Credits**
- IT 3223 - Software Acquisition and Project Management **3 Credits**
- IT 3423 - Operating Systems Concepts & Administration **3 Credits**
- IT 3883 - Advanced Applications Development **3 Credits**
- IT 4123 - Electronic Commerce **3 Credits**
- IT 4323 - Data Communications & Networks **3 Credits**
- IT 4423 - Unix/Linux **3 Credits**
- IT 4683 - Management of Information Technology and Human Computer Interaction **3 Credits**
- IT 4723 - IT Policy and Law **3 Credits**
- IT 4823 - Information Security Administration & Privacy **3 Credits**
- IT 4983 - IT Capstone **3 Credits**
- Free Electives **7 Credits**
- Concentration or Technical Electives (see listing below) **12 Credits**

Degree Program Total: 122

Tracks

Choose one of the tracks below and complete 3 of their courses. The 4th elective can be from the same or different track.

Enterprise Systems Track

- | IT 4203 - Advanced Web Development **3 Credits**
- | IT 4153 - Advanced Database **3 Credits**
- | IT 4333 - Network Configuration & Administration **3 Credits**
- | IT 4673 - Virtual IT Systems **3 Credits**
- | IT 4713 - Business Intelligence Systems **3 Credits**
- | IT 4903 - Special Topics in Information Technology **3 Credits**

Information Assurance & Security Track

- | IT 4833 - Wireless Security **3 Credits**
- | IT 4843 - Ethical Hacking for Effective Defense **3 Credits**
- | IT 4853 - Computer Forensics **3 Credits**
- | IT 4903 - Special Topics in Information Technology **3 Credits**

Health Information Technology Track

- | IT 3503 - Foundations of Health Information Technology **3 Credits**
- | IT 4513 - Electronic Health Record Systems **3 Credits**
- | IT 4523 - Clinical Processes and Workflows: Analysis and Redesign **3 Credits**
- | IT 4533 - Health Information Security and Privacy **3 Credits**
- | IT 4903 - Special Topics in Information Technology **3 Credits**

Mobile and Web Track

- | CSE 3203 - Overview of Mobile Systems **3 Credits**
- | IT 4203 - Advanced Web Development **3 Credits**
- | IT 4213 - Mobile Web Development **3 Credits**
- | CGDD 4203 - Mobile and Casual Game Development **3 Credits**
- | IT 4903 - Special Topics in Information Technology **3 Credits**

Information Technology, BS (Online) WebBSIT

WebBSIT Curriculum

- | ENGL 1101 - English Composition I **3 Credits**
- | ENGL 1102 - English Composition II **3 Credits**
- | MATH 1111 - College Algebra **3 Credits**
- | MATH 1113 - Pre-calculus **4 Credits**
- | COMM 2400 - Public Speaking **2 Credits**

- STS 2400 - Science, Technology, and Society **2 Credits**
- Area C Group 1 - Take one course from the Literature Group **3 Credits**
- Area C Group 2 - Take one course from the Art and Culture Group **3 Credits**
- Area D - Any two lab-based science courses **8 Credits**
- Area E Group 1 - American Context **3 Credits**
- Area E Group 2 - World History **3 Credits**
- Area E Group 3 - Behavioral Science **3 Credits**
- Area E Group 4 - Cultures and Societies **3 Credits**

Area F (18 Credits)

- WBIT 1100 - Introduction to Information Technology **3 Credits**
- WBIT 1310 - Programming and Problem Solving **3 Credits**
- MATH 1401 - Intro to Statistics **3 Credits** (Available from WebBSIT participating institutions or through eCore®)
- WBIT 2000 - The Enterprise and IT **3 Credits**
- WBIT 2300 - Discrete Mathematics for IT **3 Credits**
- WBIT 2311 - Programming and Problem Solving II **3 Credits**

Required Core Courses (42 Credits)

- WBIT 3010 - Technical Communication **3 Credits**
- WBIT 3110 - Systems Analysis and Design **3 Credits**
- WBIT 3111 - Information Technology Project Management **3 Credits**
- WBIT 3200 - Database Design, Development and Deployment **3 Credits**
- WBIT 3400 - Introduction to Multimedia **3 Credits**
- WBIT 3410 - Web Applications Development **3 Credits**
- WBIT 3500 - Architecture and Operating Systems **3 Credits**
- WBIT 3510 - Data Communications and Networking **3 Credits**
- WBIT 3600 - Introduction to E-Commerce **3 Credits**
- WBIT 4020 - Professional Practices and Ethics **3 Credits**
- WBIT 4030 - Senior Project **3 Credits**
- WBIT 4112 - Systems Acquisition, Integration and Implementation **3 Credits**
- WBIT 4120 - Human-Computer Interaction **3 Credits**
- WBIT 4520 - Information Security **3 Credits**

Concentration/Electives (18 Credits)

- WBIT 4601 - Customer Relationship Management **3 Credits**
- WBIT 4602 - IT Strategy Seminar **3 Credits**
- WBIT 4610 - IT Policy and Law **3 Credits**
- Free Electives (not within the WebBSIT) - **9 Credits**

Total Required Hours: 120 Credits

International Studies, BS

By offering an International Studies degree with a required minor, SPSU seeks to produce graduates who not only understand the political and economic processes of globalization, but also possess field-specific skills and knowledge that will allow them to deal with the new demands of the global economy. Companies that will employ our graduates will be global ones, so it is necessary for their employees to understand the political, economic, cultural, as well as technical contexts in which their companies function. The International Studies degree will prepare graduates for graduate study in a number of possible fields and for employment in:

| Government
| Intelligence
| International business
| Pre-law
| Public policy
| The military
| The non-profit sector
| The transportation industry
| The travel industry

Requirements

Core Areas A through E

Area A: Essential Skills (9 credits)

Grade of C or better requied in the courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
(or other math as specified in the SPSU core)

Area B: Institutional Options (4 credits)

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

C-1: Literature (3 credits)

Choose ONE of the following:

| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

C-2: Humanities (3 credits)

Choose ONE of the following (language course recommended):

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**

Area D: Science and Math (11-12 credits)

D-1: Lab Science (8 credits)

You must take two semesters of lab science *and lab* (lecture = 3 credits; lab = 1 credit; K-course=4 credits, including lab).

Choose TWO science courses with lab:

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**

| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

D-2: Math (minimum of 3 credits)

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E: Social Sciences (12 credits)

E-1: American Perspectives (3 credits)

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia History and Constitution. Students who fulfill this requirement with transfer credit from outside the USG will need to take HIST 2911 U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation.

Choose ONE of the following:
| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

E-2: Historical Perspectives (3 credits)

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

E-3: Behavioral Science Perspectives (3 credits)

Choose ONE of the following (ECON 1101 Introduction to Economics is required in Area F and may not be used here):

| PSYC 1101 - Introduction to General Psychology **3 Credits**

| SOCI 1101 - Introduction to Sociology **3 Credits**

E-4: Global Perspectives (3 credits)

Satisfies the Global Perspectives overlay. Choose ONE of the following (POLS 2401 is required in Area F and may not be used here):

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Core Area F (18 credits):

Take ALL of the following:
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**
Or 6 credit hours of any non-English language at an equivalent level.
| COMM 2030 - Research for the Humanities & Social Sciences **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits**
| POLS 2100 - Introduction to Research Methods **3 Credits**
| POLS 2401 - Global Issues **3 Credits**

Required Courses in Major (29 credits):

Grade of C or better required. Take ALL of the following:

| IS 1000 - International Studies Orientation **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| HIST 3801 - Contemporary World History since 1945 **3 Credits**
| POLS 3001 - Comparative Politics **3 Credits**
| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**
| POLS 4301 - International Political Economy **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**
Choose ONE Regional Studies Course:
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**
To be taken in one of the last two terms before graduation (taught Spring only):
| IS 4800 - International Studies Capstone **3 Credits**

Directed International Electives (9 credits):

Grade of C or better required. Choose THREE of the following:

Take THREE of the following:

| ECON 2106 - Principles of Microeconomics **3 Credits**
| GEOG 3101 - World Regional Geography **3 Credits**
| HIST 3200 - History of Science Survey **3 Credits**
| HIST 3301 - Diplomatic and Military History since 1815 **3 Credits**
| HIST 3401 - Modern Social and Cultural History Twentieth Century **3 Credits**
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| HIST 3601 - History of the Pacific Rim **3 Credits**
| IS 3600 - Comparative Culture **3 Credits**
| IS 4600 - International Studies Internship **3 Credits**
| IS 4000 - Regional Studies - General **3 Credits**
  or any Regional Studies (IS 400X) not used to satisfy Required Courses in the Major
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3601 - Contemporary World Politics **3 Credits**
| POLS 4063 - Political Issues in Electronic Government **3 Credits**
| POLS 4101 - Political Economy of Post-Communist Transformation **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**
| RELG 1200 - World Religion **3 Credits**
| SPAN 3001 - Advanced Conversation **3 Credits**
  or any 3000- or 4000- level SPAN
| STS 4400 - Topical Studies in Science and Technology **3 Credits**
  OR any IS special topics course. Special topics courses in HIST, POLS, PSYC may be used with topic-specific departmental approval.

Minor 15-18 Hours

International Studies majors must complete at leat one of the minors offered at SPSU (in any department or program). Department policy requires that at least 9 hours in a minor not be used to meet any other reqirement *except free electives*. University policy requires that no hours used in Core Areas A-E may used toward any other requirement.

Free Electives

Additional credit hours to bring the minimum total credits to bring the total hours up to the 120 required for graduation. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Degree Program Total: 120

Manufacturing Operations, BAS

The Bachelor of Applied Science in Manufacturing Operations has been specifically designed for students who have completed an Associate of Applied Science Degree from a Technical College System of Georgia institution.

The goal of the partnership between SPSU and the TCSG schools is to provide the opportunity for degreed graduates from the technical schools of Georgia to complete a Bachelor's degree in approximately 60 semester credits which in equivalent to about two years as a full time student.

All required major courses to complete the BAS in Manufacturing Operations program are offered totally online by SPSU faculty. All general education requirements are also offered on-line through the university system called E-core.

The BAS Manufacturing Operations program prepares students in the areas of manufacturing, logistics and operations through an industry-driven curriculum encompassing manufacturing processes, quality principles, engineering economy, work measurement and facilities layout.

Companies traditionally who hire SPSU graduates include such leaders as Shaw Industries, Delta Airlines, Georgia Power, Mohawk Industries, Lockheed Martin and UPS.

Since each TCSG program is different, the website iet.spsu.edu/BAS.html outlines the articulation of each program to SPSU.

Further information on the TCSG and SPSU program can also be found at tcsg.spsu.edu.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| Technical Block - Up to 17 Semester Hours **17 Credits**
| Major Technical Block - Up to 21 Semester Hours **21 Credits**

Major Courses

| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MGNT 4151 - Operations Management **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Technical Electives

Choose any two courses

| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| ECET 3000 - Electrical Principles **4 Credits**
| MET 1311 - Manufacturing Processes **3 Credits**
| MET 2322 - Metrology and CNC Machining **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**

Degree Program Total: 120

Mathematics, BS

Requirements

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**

| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take One Course From the Literature Group **3 Credits**
| Area C Group 2 - Take One Course From the Art and Culture Group **3 Credits**
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Science **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| CSE 1301 - Computer Science I **4 Credits**
| CSE 1302 - Computer Science II **4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 3310 - Introduction to Advanced Mathematics **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| MATH 3320 - Introductory Real Analysis I **4 Credits**
| MATH 3321 - Introductory Real Analysis II **4 Credits**
| MATH 4407 - Vector Analysis **3 Credits**
| MATH 4440 - Abstract Algebra **4 Credits**
| MATH 4451 - Capstone Mathematics Project **3 Credits**

Mathematics Electives (9 Credits)

Any mathematics course numbered 2300 or above, excluding those for which dual credit is not allowed.

Guided Electives (20 Credits)

May include additional mathematics courses or other courses chosen in consultation with an advisor. May not include mathematics courses numbered less than 2000, or courses for which dual credit is not allowed.

Degree Program Total: 121

Mathematics Second Major

A student completing the B.S. degree in a field other than Mathematics may receive a second major in Mathematics at the same time to accompany that degree by completing the following courses. Note that additional courses, which are the prerequisites to these courses, are required by implication.

Mathematics Second Major Requirements

| MATH 2255 - Calculus III **4 Credits**

| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 3310 - Introduction to Advanced Mathematics **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| MATH 3320 - Introductory Real Analysis I **4 Credits**
| MATH 3321 - Introductory Real Analysis II **4 Credits**
| MATH 4407 - Vector Analysis **3 Credits**
| MATH 4440 - Abstract Algebra **4 Credits**
| MATH 4451 - Capstone Mathematics Project **3 Credits**

Second Degree in Mathematics

Students who receive a degree from SPSU in a field other than Mathematics may receive a B.S. with a major in Mathematics by completing all the requirements for the Mathematics degree. The same courses may be used to fulfill requirements for both degrees, but there must be at least 30 semester hours used to fulfill the requirements for the Mathematics degree which are not used to fulfill the requirements for any other degree.

Mathematics, Education Track, BA

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
   CSE 1301 **3 Credits** (Choose from following)
| CSE 1301C - Programming & Problem Solving I
| CSE 1301E - C++ Programming for Engineers
| CSE 1301J - Programming & Problem Solving I

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 3310 - Introduction to Advanced Mathematics **3 Credits**
| MATH 3320 - Introductory Real Analysis I **4 Credits**
| MATH 3321 - Introductory Real Analysis II **4 Credits**
| MATH 3696 - Geometry **3 Credits**
| MATH 4407 - Vector Analysis **3 Credits**
| MATH 4440 - Abstract Algebra **4 Credits**
| MATH Electives **3 Credits**
| MATH 4451 - Capstone Mathematics Project **3 Credits**

Education Courses

| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| MAED 2010 - Functions and Modeling **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**

| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 123

Mechanical Engineering Technology, BS

Requirements

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| ECON 2107 - Introduction to Economic Analysis **3 Credits** (Recommended for Area E-3)
| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (the extra hour is applied to area F)
| MATH 2254 - Calculus II **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (the extra hour is applied to Major Req.)
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take One Course From the Literature Group **3 Credits**
| Area C Group 2 - Take One Course From the Art and Culture Group **3 Credits**
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| ECET 3000 - Electrical Principles **4 Credits**
| EDG 1211 - Engineering Graphics I **3 Credits**
| EDG 1212 - Engineering Graphics II **4 Credits**
| ENGT 2124 - Statics with Applications **3 Credits**

| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| MET 3126 - Engineering Dynamics with Applications **3 Credits**

| ENGR 3122 - Dynamics **3 Credits**
| ENGT 3124 - Strength of Materials with Applications **3 Credits**

| ENGR 3132 - Strength of Materials Lab **1 Credits**

| ENGR 3131 - Strength of Materials **3 Credits**
| MET 3101 - Fluid Mechanics Principles & Applications **4 Credits**

| MET 1000 - Mechanical Engineering Technology Orientation **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MET 1311 - Manufacturing Processes **3 Credits**
| MET 1321 - Machining and Welding **2 Credits**
| MET 2322 - Metrology and CNC Machining **3 Credits**
| MET 3132 - Engineering Materials **4 Credits**
| MET 3401 - Thermodynamics I **3 Credits**
| MET 4141 - Machine Design I **4 Credits**
| MET 4421 - Instruments and Controls **4 Credits**
| MET 3501 - Engineering Computation Using MATLab **3 Credits**

Select one of the following four courses (3 Credits)

| MET 3123 - Dynamics of Machines **3 Credits**
| MET 3331 - Tool Design **3 Credits**
| MET 3402 - Thermodynamics II **3 Credits**
| MET 4112 - Computer Aided Engineering & Analysis **3 Credits**
| MET XXXX - Major Electives (For Concentration) **12 Credits**
| Free Elective **3 Credits**

Degree Program Total: 129

Note:

Note 1. MET majors are required to earn an overall 2.0 average in all courses designated as MET and ENGR.

Note 2. PHYS 1111, PHYS 1111L and PHYS 1112, PHYS 1112L may be substituted for PHYS 2211, PHYS 2211L and PHYS 2212, PHYS 2212L .

Note 3. The Free Elective may not be MATH 1111 .

Mechanical Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World - 3 credits
| Group 2 - Art and Culture of the World - 3 credits

Area D

| MATH 2254 - Calculus II **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits   *ECON 2107 is recommended**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| EDG 1211 - Engineering Graphics I **3 Credits**
One credit from MATH 1113 & MATH 2253 will be added to Area F to complete the 18 hour requirement.

Major Courses

| ME 1001 - Introduction to Mechanical Engineering **2 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ME 1311 - MATLAB for Engineers with Applications **3 Credits**
| Math or Science Electives **3-4 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| ME 3101 - Materials Science and Engineering **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| ME 4250 - Computer Aided Engineering **3 Credits**
| ENGR 4402 - Engineering Ethics **1 Credits**

| ME 4403 - Heat Transfer and Thermodynamics Lab **1 Credits**
| ME 3410 - Thermodynamics **3 Credits**
| ME 3201 - Product Realization **2 Credits**
| ME 3440 - Heat Transfer **3 Credits**
| ME 3501 - Dynamic Systems & Control Theory **3 Credits**
| ENGR 3125 - Machine Dynamics & Vibrations **3 Credits**
| ME 4141 - Machine Design I **3 Credits**
| ME 4201 - Senior Design I **1 Credits**
| ME 4202 - Senior Design II **3 Credits**
| ME 4501 - Vibrations & Controls Lab **1 Credits**
| MATH 2255 - Calculus III **4 Credits**
| Approved Technical Electives **9 Credits**

Degree Program Total: 130

The Mechanical Engineering degree requires a grade of "C" or better in all ME and ENGR courses applied to degree requirements.

Technical Electives

Technical Electives can be any non-required 3000 and/or 4000 level courses from ME, including Special Topics (ME 3903 or ME 4903) and Undergraduate Research (ME 4801, ME 4802, and ME 4803).   Additionally MTRE 3710 and SYE 3320 are allowed. Students may focus their technical electives in Aerospace Engineering (SYE 3801, SYE 3802, SYE 3803, SYE 4801, SYE 4802, SYE 4803) or Nuclear Engineering (SYE 3501, SYE 3502, SYE 4501, SYE 4502, or SYE 4503).

Some ENGR, EE, MTRE, or SYE may be approved for technical electives by the program coordinator or the department chair.

**If student does not take ECON 2107 for Core E-3, the student must take SYE 3320 - Engineering Economics and Decision Analysis as a Technical Elective.

Mechatronics Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**

Area D

| MATH 2254 - Calculus II **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

One hour from Area A Math

One hour from Area D Math

| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**

Requirements

| MTRE 1000 - Introduction to Mechatronics Engineering **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CSE 1301E - C++ Programming for Engineers **4 Credits**
| Math Elective **3 Credits**
| EDG 1211 - Engineering Graphics I **3 Credits**
| MTRE 2610 - Engineering Algorithms and Visualization **3 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| EE 3401 - Engineering Electronics **4 Credits**
| EE 2501 - Digital Logic Design **4 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| MTRE 3710 - Mechatronics Engineering Fundamentals **4 Credits**

| ECON 2107 - Introduction to Economic Analysis **3 Credits** (Recommended Area E-3)
| EE 4201 - Control Systems **4 Credits**
| MTRE 4000 - Advanced Controls **3 Credits**
| MTRE 4200 - Robotics Analysis and Synthesis **4 Credits**
| MTRE 4400 - Mechatronics System Design **4 Credits**

Degree Program Total Hours: 131

The Mechatronics Engineering degree requires a grade of "C" or better in all MTRE, EE, ME and ENGR courses applied to degree requirements.

New Media Arts, BA

The Bachelor of Arts in New Media Arts provides students with an opportunity to develop the technical and artistic skills needed to serve as practitioners in the fields of multimedia development and design, web design, and video production. As a degree that straddles two worlds--the fine and the applied arts--the degree program encourages both creativity and practical application. Students will have an opportunity to develop a strong foundation in the traditional fine arts and learn to translate these skills to new media contexts. They will also learn to approach the technical aspects of new media applications from the sensibilities of an artist as well as a technician.

With its balance between the artistic and technical aspects of new media production, the new media arts degree program should prepare students to meet a growing marketplace need for multimedia artists and to rise to the top of the pack of individuals competing for these positions. While providing an undergraduate degree option for students interested in entering careers in the fine and applied arts, it would also provide appropriate preparation for graduate study.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature of the World **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
  OR
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies **3 Credits**

Area F

Required Courses 6 Credits

| ARTS 2020 - History and Principles of Design **3 Credits**
| COMM 2170 - Introduction to Media Studies **3 Credits**
Studio Courses, Choose Three- 9 Credits
| ARTS 2010 - Introduction to Drawing **3 Credits**
| ARTS 2110 - Painting and Mixed Media **3 Credits**
| ARTS 2220 - 2D and 3D Design **3 Credits**
| ARTS 2903 - Music Theory **3 Credits**
Choose One- 3 Credits
| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**

MAJOR REQUIREMENTS

Basic Required Courses in the Major (24 Credits)

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ARTS 3000 - Visual Thinking **3 Credits**
| ARTS 3100 - History of New Media Arts **3 Credits**
| COMM 3160 - Media Theory and Practice **3 Credits**
| ARTS 4100 - Media Arts Studio **3 Credits**
| ENGL 3045 - New Media Writing **3 Credits**
| TCOM 3430 - Foundations of Graphics **3 Credits**
| TCOM 3400 - Foundations of Design for the Web **3 Credits**
| ARTS 4800 - Senior Portfolio **3 Credits**

Additional Courses in the Major (18 Credits; Choose 6)

| ARTS 3010 - Drawing for New Media **3 Credits**
| ARTS 3170 - Digital Photography **3 Credits**
| ARTS 4270 - Advanced Digital Video **3 Credits**
| ARTS 4600 - Directed Study **3 Credits**
| ARTS 4700 - Internship **3 Credits**

| ARTS 4903 - Special Topics **3 Credits**
| CGDD 3103 - Application Extension and Scripting **3 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**
| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| COMM 3060 - Media, Culture, and Society **3 Credits**
| ENGL 3180 - Film as Literature **3 Credits**
| ENGL 4170 - Media and Narrative **3 Credits**
| TCOM 4040 - Applied Graphics **3 Credits**
| TCOM 4045 - Foundations of Multimedia **3 Credits**
| TCOM 4170 - Film and Video Production **3 Credits**
| TCOM 4175 - Animation Design, 2D **3 Credits**
| TCOM 4400 - Advanced Design for the Web **3 Credits**

Free Electives

Free Electives 18 Credits

Degree Program Total: 121

For additional information about the B.A. program, contact the Digital Writing and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu. You can also visit our website at etcma.spsu.edu.

Physics, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Choose One Course from the Literature Group **3 Credits**
| Group 2- Choose One Course from the Art and Culture Group **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits**
  Choose Any Two Lab Science Courses for a total of **8 Credits**
| ASTR 1000K - Introduction to the Universe **4 Credits**

| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science   **3 Credits**
| Group 4- Cultures and Societies   **3 Credits**

Area F

| PHYS 1211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| PHYS 2213 - Introduction to Thermal and Modern Physics **2 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**

Requirements

| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| PHYS 3210 - Mechanics I **4 Credits**
| PHYS 3410K - Electronics Laboratory **2 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4410K - Advanced Physics Laboratory **2 Credits**
| PHYS 4430 - Capstone Physics Project **1 Credits**
| PHYS 4250 - Quantum Theory of Two-State Systems **2 Credits**
| Directed Electives approved by the program **9 - 15 Credits**
| Upper Division Physics Electives/Concentrations **4 - 10 Credits**

Degree Program Total: 121

A Second Degree in Physics

Students who are earning B.S. degrees in other fields at Southern Polytechnic State University may also earn a second major in Physics.

SPSU students who wish to earn a second major in physics will be required to take the following 22 hours of course work:

Second Degree Requirements

| PHYS 3210 - Mechanics I **4 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3410K - **2 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4410K - Advanced Physics Laboratory **2 Credits**

Physics, Electrical Engineering Concentration, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1- American Context **3 credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies   **3 Credits**

Area F

| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| PHYS 1211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Requirements

| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4240 - Solid State Physics **3 Credits**
| EE 3301 - Circuits Analysis I **4 Credits**
| EE 2501 - Digital Logic Design **4 Credits**
| EE 2401 - Semiconductor Devices **3 Credits**
| EE 3705 - Signals and Systems **3 Credits**
| EE 3401 - Engineering Electronics **4 Credits**
| EE 4201 - Control Systems **4 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| Free Electives **4 Credits**

Degree Program Total: 121

Physics, Mechanical Engineering Concentration, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies **3 Credits**

Area F

| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Requirements

| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**

| PHYS 2213 - Introduction to Thermal and Modern Physics **2 Credits**
| PHYS 3410K - Electronics Laboratory **2 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4240 - Solid State Physics **3 Credits**
| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| ENGR 2501 - Material Science **3 Credits**
| ME 3201 - Product Realization **2 Credits**
| ENGR 3125 - Machine Dynamics & Vibrations **3 Credits**
| Free Electives **2 Credits**
| ME 3501 - Dynamic Systems & Control Theory **3 Credits**
| ME 4501 - Vibrations & Controls Lab **1 Credits**

Degree Program Total: 121
Concentration in Mechanical Engineering

| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| ENGR 2501 - Material Science **3 Credits**
| ME 3201 - Product Realization **2 Credits**
| ENGR 3125 - Machine Dynamics & Vibrations **3 Credits**
| ME 3501 - Dynamic Systems & Control Theory **3 Credits**
| ME 4501 - Vibrations & Controls Lab **1 Credits**

Physics, Teacher Education Concentration, BS

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally

renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| PHYS 2213 - Introduction to Thermal and Modern Physics **2 Credits**
| PHYS 3210 - Mechanics I **4 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3410 - Electronics Laboratory **2 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4410K - Advanced Physics Laboratory **2 Credits**
| Physics Electives **4 Credits**

Education Courses

| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 120

Political Science, BS

There is a growing need for graduates in political science. The acquisition of methodological skills, coupled with an understanding of the political process at local, state, national and international levels, allows for employment in a variety of public and private venues where research techniques are highly prized. As well, the communication, analysis, and critical reasoning skills that our graduates obtain place them well in a competitive job market, where continual learning is essential and interpersonal and cross-cultural competencies are greatly needed.

While there are other political science programs offered in Georgia, SPSU's program will be unique in several respects:

| The SPSU program is highly quantitative in focus, offering students three additional quantitative courses in political science research methods and analysis beyond the norm required in other political science programs.
| The SPSU program offers students various inter-disciplinary course options through its Directed International Electives module.
| The SPSU program further establishes a strong international focus by encouraging students to become proficient in a second language.

Students who complete the program have the knowledge, skills, and real-world context to be productive and flexible in a rapidly changing workplace. Graduates with a bachelor's degree in political science find positions as committee staffers, budget analysts, communications consultants, research/policy analysts, corporate public affairs advisors,

foreign service officers, writers/authors/political commentators, journalists, foundation staffers, lobbyists, marketing analysts, or public opinion analysts. Additionally, SPSU's program's training in the development of research, critical thinking, and communication skills will open opportunities in for-profit/non-profit business settings, international and U.S.-based non-governmental organizations and foundations. Graduates of SPSU's BS in Political Science will be more than qualified to take advantage of the local, regional, national, and international employment opportunities offered by metro Atlanta and the State of Georgia, as well as to pursue post-baccalaureate educational opportunities in either political science or the field of law.

Requirements

All students must take:

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Core Areas A-E

Area A: Essential Skills (9 credits)

Grade of C or better required in courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
  (or other math as specified in the SPSU core)

Area B: Institutional Options (4 credits)

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

C-1: Literature (3 credits)

Choose ONE of the following:

| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**

| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

C-2: Humanities (3 credits)

Choose ONE of the following (language recommended):

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**

Area D: Science and Math (12 credits)

D-1: Lab Science (8 credits)

You must take two semesters of lab science *and lab* (lecture=3 credits; lab=1 credit; K-courses=4 credits, lab is included)

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**

| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

D-2: Math (Minimum of 3 credits)

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E: Social Sciences (12 credits)

E-1: American Perspectives (3 credits)

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia Constitution and History. Students who fulfill this requirement with transfer credit from outside the USG *may* need to take HIST 2911: U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation. Please check with your advisor.

Choose ONE of the following (POLS 1101 American Government is required in Area F and may not be used here):

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**

E-2: Historical Perspectives (3 credits)

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

E-3: Behavioral Science Perspectives (3 credits)

Choose ONE of the following (ECON 1101 Introduction to Economics is required in Area F and may not be used here):

| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

E-4: Global Perspectives (3 credits)

Satisfies Global Perspectives overlay. Choose ONE of the following (POLS 2401 is required in Area F and may not be used here):

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Core Area F (18 credits)

| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**
or 6 credits of any non-English language at an equivalent level
| ECON 1101 - Introduction to Economics **3 Credits**
| POLS 1101 - American Government **3 Credits**
| POLS 2100 - Introduction to Research Methods **3 Credits**
| POLS 2401 - Global Issues **3 Credits**

Required Courses in Major (36 credits):

Grade of C or better required.

| POLS 3001 - Comparative Politics **3 Credits**
| POLS 2800 - Research Design **3 Credits**
| POLS 3209 - U.S. Constitutional Law **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3601 - Contemporary World Politics **3 Credits**
| POLS 3701 - Seminar in American Politics **3 Credits**
| POLS 3801 - Political Behavior **3 Credits**
| POLS 4100 - Applied Methodology **3 Credits**
| POLS 4301 - International Political Economy **3 Credits**
Choose ONE of the following:
| GEOG 4101 - Geographic Information Systems **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
Choose ONE Regional Studies Course:
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**
In one of final two semesters:
| POLS 4801 - Capstone: Political Science Practicum **3 Credits**

Directed International Electives: (12 credits)
Grade of C or better required. Take any FOUR of the following courses:

| GEOG 3101 - World Regional Geography **3 Credits**
| HIST 3200 - History of Science Survey **3 Credits**
| HIST 3301 - Diplomatic and Military History since 1815 **3 Credits**
| HIST 3401 - Modern Social and Cultural History Twentieth Century **3 Credits**
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| HIST 3601 - History of the Pacific Rim **3 Credits**

| HIST 3801 - Contemporary World History since 1945 **3 Credits**
| IS 3600 - Comparative Culture **3 Credits**
| IS 4800 - International Studies Capstone **3 Credits**
| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| POLS 3501 - Intellectual Property Issues **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**
| POLS 4063 - Political Issues in Electronic Government **3 Credits**
| POLS 4101 - Political Economy of Post-Communist Transformation **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**
| SPAN 3001 - Advanced Conversation **3 Credits**
| SPAN 3002 - Grammar and Composition **3 Credits**
| SPAN 3003 - Hispanic Cultures and Civilizations **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**
| STS 4400 - Topical Studies in Science and Technology **3 Credits**
Up to 6 additional credits in Regional Studies:
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**

Free Electives (12 credits):

Any college-level credit not used above may be applied here. *Free electives may be used toward a minor and are exempt from the 9 hour rule.*

Degree Program Total: 121

Psychology, BS

Southern Polytechnic State University's Bachelor of Science degree in Psychology provides students a program of study in modern psychology. Specifically, the program embraces a strong international component with a multi-disciplinary curriculum that provides a balanced, career-based education in psychology with a wide range of skills and practical knowledge. The concentrations offered cover the subject matter from seventeen major subfields coupling science and practice. This broad spectrum provides a rich context so that students who complete the program have the knowledge, skills, and real-world context to be productive and flexible in a rapidly changing workplace.

Career opportunities for graduates with a B.S. in Psychology include: employment counselors, corporate counselor trainees, interviewers, personnel analysts, systems analysts, rehabilitation assistants, mental health assistants, probation officers and writers. Additionally, training in the development of research and writing skills will open opportunities in profit/non-profit business settings, public affairs, public health, sales and administrative support.

The concentrations offered are:

- Engineering Psychology (involves the science of applying an understanding of human behavior interacting with the design of systems and products that improve human performance)
- Industrial/Organizational Psychology (involves the science of applying an understanding of human behavior with improving productivity and the workplace quality)
- Clinical and Counseling Psychology (involves the science of applying an understanding of human behavior with an emphasis on mental disorders and their treatment)

Requirements

Core Areas A-E

Area A: Essential Skills (9 credits)

Grade of C or better required in the courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

- ENGL 1101 - English Composition I **3 Credits**
- ENGL 1102 - English Composition II **3 Credits**
- MATH 1111 - College Algebra **3 Credits**
  (or other math as specified in the SPSU core)

Area B: Institutional Options (4 credits)

- COMM 2400 - Public Speaking **2 Credits**
- STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

C-1: Literature (3 credits)

Choose ONE of the following:

- ENGL 2111 - Early World Literature **3 Credits**
- ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
- ENGL 2120 - British Literature Early to Present **3 Credits**
- ENGL 2121 - Early British Literature **3 Credits**
- ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
- ENGL 2130 - American Literature Early to Present **3 Credits**
- ENGL 2131 - Early American Literature **3 Credits**
- ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
- ENGL 2141 - Early Western Literature **3 Credits**
- ENGL 2142 - Western Literature 1600s to Present **3 Credits**
- ENGL 2300 - African-American Literature and Culture **3 Credits**

C-2: Humanities (3 credits)

Choose ONE of the following:

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| FREN 2001 - Intermediate French I **3 Credits**
| FREN 2002 - Intermediate French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| GRMN 2001 - Intermediate German I **3 Credits**
| GRMN 2002 - Intermediate German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

Area D: Science and Math (11-12 credits)

D-1: Lab Science (8 credits)

You must take two semesters of lab science *and lab* (lecture=3 credits; lab=1 credit; K courses=4 credits, including lab). Biology recommended.

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**

| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

D-2: Math (Minimum of 3 credits)

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E: Social Sciences (12 credits)

E-1: American Perspectives (3 credits)

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia History and Constitution. Students who fulfill this requirement with transfer credit from outside the USG will need to take U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation.

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

E-2: Historical Perspectives (3 credits)

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

E-3: Behavioral Science Perspectives (3 credits)

Choose ONE course (sociology recommended):

| ECON 1101 - Introduction to Economics **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

E-4: Global Perspectives (3 credits)

Satisfies the Global Perspectives overlay. Choose ONE of the following:

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| POLS 2401 - Global Issues **3 Credits**

| RELG 1200 - World Religion **3 Credits**

Core Area F (18 credits)

| COMM 2030 - Research for the Humanities & Social Sciences **3 Credits**
| PSYC 2273 - Foresic Psychology **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**
(or 3 hours of PSYC 1XXX or 2XXX elective credit if PSYC 1101 has been used in Area E-3)
| PSYC 2011 - Cognitive Psychology **3 Credits**
| PSYC 2270 - Engineering Psychology **3 Credits**
| PSYC 2271 - Clinical and Counseling Psychology **3 Credits**

Required Courses in Major (32 credits):

Grade of C or better required; take all of the following:

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| PSYC 1000 - Orientation to Psychology **2 Credits**
| PSYC 2100 - Basic Quantitative Research Methods for Psychology **3 Credits**
| PSYC 2401 - Psychology of Diversity **3 Credits**
| PSYC 3000 - Junior Seminar **3 Credits**
| PSYC 3020 - Physiological Psychology **3 Credits**
| PSYC 3031 - Experimental Psychology **4 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| PSYC 4050 - History and Systems of Psychology **3 Credits**
| PSYC 4800 - Psychology Capstone Seminar **3 Credits**

Concentrations

Choose and complete one of the concentrations below:

Engineering Psychology (28 credits)

Required Courses (22 credits):

Grade of C or better required; take all of the following:

| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
The following must be taken in the order listed:
| CSE 1301J - Programming & Problem Solving I **4 Credits**
(be sure it's 1301**J**)
| IT 1324 - Advanced Programming Principles **4 Credits**
| SWE 4324 - User-Centered Design **4 Credits**

| SWE 4783 - User Interaction Engineering **3 Credits**

Free Electives (6 credits)

Credit from any college-level course may be applied here. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Industrial / Organizational Psychology (28 credits)

Required Courses (12 credits):

Grade of C or better required; take all of the following:

| MGNT 4115 - Human Resource Management **3 Credits**
| PSYC 3301 - Psychological Testing **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**

Concentration Electives (9 credits):

Grade of C or better required; choose THREE of the following:

| PSYC 3010 - Educational Psychology **3 Credits**
| PSYC 3015 - Theories of Personality **3 Credits**
| PSYC 3040 - Motivation and Emotion **Credits**
| PSYC 4130 - Psychology of Aging **3 Credits**
| PSYC 4220 - Psychoactive Drugs, Behavior, and Society **3 Credits**

Free Electives (7 credits)

Credit from any college-level course may be applied here. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Clinical and Counseling Psychology (28 credits)

Required Courses:

Grade of C or better required; take all of the following:

| PSYC 3015 - Theories of Personality **3 Credits**
| PSYC 3230 - Abnormal Psychology **3 Credits**
| PSYC 3301 - Psychological Testing **3 Credits**

Concentration Electives (9 credits):

Grade of C or better required; choose THREE from the following:

| PSYC 2273 - Foresic Psychology **3 Credits**
| PSYC 3010 - Educational Psychology **3 Credits**
| PSYC 3040 - Motivation and Emotion **Credits**
| PSYC 3305 - Developmental Psychology **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4130 - Psychology of Aging **3 Credits**
| PSYC 4220 - Psychoactive Drugs, Behavior, and Society **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**

Free Electives (10 credits)

Credit from any college-level course may be applied here. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Degree Program Total: 120

Software Engineering, BS

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2254 - Calculus I **4 Credits**
| Take any 2 of the courses below (with labs):

| ASTR 1000K - Introduction to the Universe **4 credits**
| ASTR 1010K - Introduction to the Universe II **4 credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107K - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**

| BIOL 2108K - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211K - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II **3 Credits**
| CHEM 1212K - Principles of Chemistry II Lab **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 credits**
| PHYS 2211 - Principles of Physics I **3 credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 credit**
| PHYS 2212K - Principles of Physics II **3 credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 credit**

NO CREDIT FOR PHYS 1111K or PHYS 1112K.

In lieu of PHYS 2211, 2211L, an additional lab science course may be taken to form a sequence with one of the science courses in area D.

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| ECON 2107 - Introduction to Economic Analysis **3 credits** (Note: If area E is transferred, student must take ECON 2107 in lieu of free electives.)
| Group 4 - Cultures and Societies **3 Credits**

AREA F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Required Courses

| TCOM 2010 - Technical Writing **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits** (see note below)
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Sciences **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| CSE 1301C or CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C or CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CS 3224 - Computer Organization & Architecture **4 Credits**

- | CS 3424 - Data Structures **4 Credits**
- | CS 3243 - Operating Systems **3 Credits**
- | SWE 2313 - Introduction to Software Engineering **3 Credits**
- | SWE 3623 - Software Systems Requirements **3 Credits**
- | SWE 3633 - Software Architecture & Design **3 Credits**
- | SWE 3643 - Software Testing and Quality Assurance **3 Credits**
- | SWE 4324 - User-Centered Design **4 Credits**
- | SWE 4663 - Software Project Management **3 Credits**
- | SWE 4713 - SWE Application Domain **3 Credits**
- | SWE 4724 - Software Engineering Project **4 Credits**
- | SWE Upper Level Electives - Choose 2 courses from the approved list, at least one must be an SWE course **6 Credits**
- | Free Electives - (Excludes MATH 1111, PHYS 1111, 1111L and PHYS 1112, 1112L) **5 Credits**

Free Electives

Excludes Math 1111, PHYS 111K and PHYS 1112K.

Note:

A grade of "C" or better must be earned in all CSE, CS, SWE, CGDD, and IT courses applied to degree requirement.

Upper Level Electives

Choose any 2 courses - at least one must be an SWE course.

- | SWE 3683 - Embedded Systems Analysis & Design **3 Credits**
- | SWE 3843 - Embedded Systems Construction and Testing **3 Credits**
- | SWE 4633 - Component-Based Software Development **3 Credits**
- | SWE 4743 - Object-Oriented Development **3 Credits**
- | SWE 4783 - User Interaction Engineering **3 Credits**
- | CS 4243 - Systems Programming **3 Credits**
- | CS 4253 - Distributed Computing **3 Credits**
- | CS 4263 - Computer Networks **3 Credits**
- | CS 4283 - Real-Time Systems **3 Credits**
- | CS 4363 - Computer Graphics and Multimedia **3 Credits**
- | CS 4523 - Artificial Intelligence **3 Credits**
- | CS 4533 - Digital Image Processing **3 Credits**
- | CGDD 4003 - Digital Media and Interaction **3 Credits**
- | CGDD 4203 - Mobile and Casual Game Development **3 Credits**
- | IT 4123 - Electronic Commerce **3 Credits**
- | IT 4823 - Information Security Administration & Privacy **3 Credits**
- | IT 4833 - Wireless Security **3 Credits**
- | IT 4843 - Ethical Hacking for Effective Defense **3 Credits**

Degree Program Total: 127

Supply Chain Logisitics, BAS

The Bachelor of Applied Science in Supply Chain Logistics has been specifically designed for students who have completed an Associate of Applied Science Degree from a Technical College System of Georgia institution.

The goal of the partnership between SPSU and the TCSG schools is to provide the opportunity for degreed graduates from the technical schools of Georgia to complete a Bachelor's degree in approximately 60 semester credits which in equivalent to about two years as a full time student.

All required major courses to complete the BAS in Supply Chain Logistics are offered totally online by SPSU faculty. All general education requirements are also offered on-line through the university system called E-core.

The BAS Supply Chain Logistics prepares students for careers in managing raw materials, work-in-process and finished goods inventories and how to efficiently control the movement of those inventories.

Graduates in this type program are engaged in challenging and demanding careers in responsible positions such as Logistics Manager, Demand Planning Analyst, Senior Buyer, Purchasing Agent and Supply Chain Manager.

Companies traditionally who hire SPSU graduates include such leaders as Shaw Industries, Delta Airlines, Georgia Power, Mohawk Industries, Lockheed Martin and UPS.

Since each TCSG program is different, the website iet.spsu.edu/BASSC.html outlines the articulation of each program to SPSU.

Further information on the TCSG and SPSU program can also be found at tcsg.spsu.edu.

Area A

- ENGL 1101 - English Composition I **3 Credits**
- ENGL 1102 - English Composition II **3 Credits**
- MATH 1111 - College Algebra **3 Credits**

Area B

- COMM 2400 - Public Speaking **2 Credits**
- STS 2400 - Science, Technology, and Society **2 Credits**

Area C

- Group 1 - Literature of the World **3 Credits**
- Group 2 - Art and Culture of the World **3 Credits**

Area D

- Sciences - Lab Sciences **8 Credits**
- MATH 1113 - Pre-calculus **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| Technical Block - Up to 17 Semester Hours **17 Credits**
| Major Technical Block - Up to 21 Semester Hours **21 Credits**

Major Courses

| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 3135 - Principles of Marketing **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Degree Program Total: 120

Surveying and Mapping, BS

Requirements:

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to area F)
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take One Course From the Literature Group **3 Credits**
| Area C Group 2 - Take One Course From the Art and Culture Group **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to area F)
| MATH 2254 - Calculus II **4 Credits**

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| Math Elective - **3 Credits**
| Area D - Any Two Lab Sciences **8 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Science **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| IT 1113 - Programming Principles **3 Credits** or

| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| CET 2200 - Introduction to Structures **4 Credits**
| CET 3510 - Traffic Analysis and Road Design **2 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 3120 - Cost Estimating and Scheduling in CET **3 Credits**
| SURV 2221 - Surveying I **4 Credits**
| SURV 3222 - Surveying II **4 Credits**
| SURV 4410 - Surveying Computations and Adjustments **4 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| SURV 4465 - Legal Aspects of Land Surveying **4 Credits**
| SURV 4470 - Land Development Design **4 Credits**
| SURV 4415 - Geodetic Surveying Methods **4 Credits**
| SURV 4475 - Land Surveying Practice **2 Credits**
| SURV Electives **4 Credits**
| Free Elective **3 Credits**

Degree Program Total: 129 hours
Note:

Surveying students are required to earn a grade of "C" or better in all courses required in the major and all courses used as electives.

PHYS 1111 and PHYS 1112 are required.

If you use PHYS 1111/PHYS 1112 in Area D then you may use 4 hours of either CET or SURV 1-2000 level courses or any Lab Science to fulfill the Area F requirement.

If you use PHYS 1111/PHYS 1112 in Area D then you may use 4 hours of either CET or SURV 3-4000 level courses or any Lab Science to fulfill the major requirement.

Systems Engineering, BS

Area A

- ENGL 1101 - English Composition I **3 Credits**
- ENGL 1102 - English Composition II **3 Credits**
- MATH 2253 - Calculus I **4 Credits**

Area B

- COMM 2400 - Public Speaking **2 Credits**
- STS 2400 - Science, Technology, and Society **2 Credits**

Area C

- Group 1 - Literature of the World - **3 credits**
- Group 2 - Art and Culture of the World - **3 credits**

Area D

- MATH 2254 - Calculus II **4 Credits**
- PHYS 2211 - Principles of Physics I **3 Credits**
- PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
- PHYS 2212 - Principles of Physics II **3 Credits**
- PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

- Group 1 - American Context **3 Credits**
- Group 2 - World History **3 Credits**
- Group 3 - Behavioral Science **3 Credits**
- Group 4 - Cultures and Societies **3 Credits**

Area F

- CHEM 1211 - Principles of Chemistry I **3 Credits**
- CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
- CSE 1301E - C++ Programming for Engineers **4 Credits**
- CSE 1302E - Object Oriented C++ Programming for Engineers **4 Credits**
- MATH 2255 - Calculus III **4 Credits**

Systems Engineering Major

- SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
- TCOM 2010 - Technical Writing **3 Credits**
- MATH 3312 - Linear Algebra **4 Credits**
- EE 2301 - Circuit Analysis I **4 Credits**

| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
  or
| ME 3410 - Thermodynamics **3 Credits**
| SYE 2100 - Systems Analysis and Design **3 Credits**
| SYE 3320 - Engineering Economics and Decision Analysis **3 Credits**
| SYE 2600 - Applications of Probability **3 Credits**
| SYE 3100 - Systems Reliability and Maintainability **3 Credits**
| SYE 3120 - Contemporary Technological Systems: Design, Analysis, and Architecture **3 Credits**
| SYE 3200 - Human Machine Systems **3 Credits**
| SYE 3300 - Program Management **3 Credits**
| SYE 3400 - Engineering Optimization I: Deterministic Decision Models **3 Credits**
| SYE 3600 - Statistics with Applications **3 Credits**
| SYE 3700 - Manufacturing and Production Systems **3 Credits**
  or
| SYE 3710 - Logistics and Supply Chain Systems **3 Credits**
| SYE 4400 - Engineering Optimization II: Stochastic Decision Models **3 Credits**
| SYE 4500 - System Modeling and Simulation **3 Credits**
| SYE 4900 - System Design Project **3 Credits**
  or
| SYE 4803 - Aeronautics Project **3 Credits**
  Approved Technical Electives: **12 Credits**

Technical Electives

Technical Electives can be 3000 and/or 4000 level courses from SYE, SWE, MTRE, ME, CE, EE or MATH. Other courses may be approved by the department chair. Students may focus their technical electives in Aerospace Engineering or Nuclear Engineering.

Degree Program Total: 129

The Systems Engineering degree requires a grade of 'C' or better for any course with an ENGR or SYE prefix and ENGL 1101. A 'D' or better is required for any other course.

Technical Communication, BS

With our TCOM degree, you will learn much more than just how to use words effectively—you will have opportunities to learn document design, graphics, multimedia, web design, and video production as well as science and environmental writing, proposal writing, and medical communication.

Students in other majors can minor in technical communication through a range of campus-based and online course offerings.

Many TCOM courses are taught using a combination of on-site and online sessions that students with jobs especially appreciate. We make sure we offer enough late-afternoon and evening courses so that working students can make steady progress toward their degree.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature of the World **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
  OR
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4-Cultures and Societies **3 Credits**

Area F

Required Courses- 9 Credits
| TCOM 2010 - Technical Writing **3 Credits**
| TCOM 2020 - Introduction to the Professions **3 Credits**
| TCOM 2030 - Research in Technical Communication **3 Credits**
Choose Three- 9 Credits
| ARTS 2010 - Introduction to Drawing **3 Credits**
| COMM 2000 - Business Communication **3 Credits**
| COMM 2065 - Cross-Cultural Communication **3 Credits**
| COMM 2150 - Ethics and Communication **3 Credits**
| COMM 2170 - Introduction to Media Studies **3 Credits**
Any programming language (recommended CSE 1301J)

Major Requirements

Upper Level Required Courses in the Major (18 Credits)

| ENGL 3100 - Rhetoric: History, Theory, and Practice **3 Credits**
| ENGL 4110 - Writing in Collaborative Environments **3 Credits**
| TCOM 3120 - Technical Communication: Theory and Practice **3-0-3 Credits**
| TCOM 3400 - Foundations of Design for the Web **3 Credits**
| TCOM 3430 - Foundations of Graphics **3 Credits**
| TCOM 4800 - Project Portfolio **3 Credits**

Additional Courses in Major (12 Credits)

| Take any ARTS, COMM, ENGL, or TCOM Course
| No more than 6 credits may be at the 2000 level.
| Up to 6 credits outside of the Department with departmental approval.
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Major Concentrations

Choose one concentration from the following: (Information Design or Digital Media and Graphics)

Information Design (15 Credits)

| TCOM 3020 - Proposal Writing **3 Credits**
| TCOM 3030 - Instructional Design **3 Credits**
| TCOM 3045 - Fundamentals of Information Design **3 Credits**
| TCOM 3070 - User Assistance **3 Credits**
| TCOM 3145 - Social Media Integration **3 Credits**
| TCOM 3245 - Analytics and Search Engine Optimization (SEO) for Communicators **3 Credits**
| TCOM 4000 - Professional Editing **3 Credits**
| TCOM 4045 - Foundations of Multimedia **3 Credits**
| TCOM 4120 - Usability Testing **3 Credits**

Digital Media and Graphics (15 Credits)

| ARTS 2010 - Introduction to Drawing **3 Credits**
| ARTS 3000 - Visual Thinking **3 Credits**
| ARTS 3170 - Digital Photography **3 Credits**
| TCOM 3145 - Social Media Integration **3 Credits**
| TCOM 4045 - Foundations of Multimedia **3 Credits**
| TCOM 4040 - Applied Graphics **3 Credits**
| TCOM 4170 - Film and Video Production **3 Credits**
| TCOM 4175 - Animation Design, 2D **3 Credits**
| TCOM 4400 - Advanced Design for the Web **3 Credits**

Degree Program Total: 121

For additional information about the B.S. program, contact the Digital Writing and Media Arts Department at 678-915-

Telecommunications Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C Group 1 - Literature of the World **3 Credits**
| Area C Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits** *
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits** *
| PHYS 2212 - Principles of Physics II **3 Credits** *
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits** *

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| ECET 1101 - Circuits I **4 Credits**
| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Major Courses

| ECET 1001 - Orientation **1 Credits**
| ECET 1012 - Design Fundamentals **2 Credits**
| ECET 1200 - Digital I **4 Credits**
| ECET 2111 - Circuits II **4 Credits**
| ECET 2300 - Electronics I **4 Credits**
| ECET 2210 - Digital II **4 Credits**
| ECET 2310 - Electronics II **4 Credits**
| ECET 3400 - Data Communications **4 Credits**
| ECET 3410 - High Frequency Systems **4 Credits**
| ECET 3810 - Applications of C++, JAVA and HTML **3 Credits**
| ECET 4820 - Communications Networks and the Internet **4 Credits**
| ECET 4830 - Telecommunications Management **3 Credits**
| ECET 4840 - Advanced Telecommunications **4 Credits**
| ECET 4850 - Telecommunications Project **4 Credits**
| ECET 4860 - Network Security **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits** ******
| TCET Electives **6 Credits**

Degree Program Total: 128

Note:

* PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L .

** SPSU 1001 does not count towards the 128 total credit hours required for the degree program.

TCET majors are required to earn a "C" or better in their ECET courses, except one "D" in a 3000 or 4000 level non-prerequisite course may be used for graduation purposes. A grade of "C" or better is required in the project-based capstone course.

TCET Electives

Students may take any *non-required* 3000 or 4000 level ECET or MGNT course to satisfy the TCET elective requirement of 6 credit hours.

Minor

Aerospace Engineering Minor

Requirements

| SYE 3801 - Aerodynamics (Aeronautic Elective) **3 Credits**
| SYE 4803 - Aeronautics Project **3 Credits**

Choose 3 courses from the following:

| SYE 3802 - Aircraft Design and Performance (Aeronautic Elective) **3 Credits**
| SYE 3803 - Fundamentals of Avionics **3 Credits**
| SYE 4801 - Aircraft Propulsion **3 Credits**
| SYE 4802 - Helicopter Theory **3 Credits**

Minor Program Total: 15

Apparel and Textiles Minor

To be eligible for a minor in Apparel and Textile Technology, the student must complete 15 credit hours from the following courses with at least 9 hours of upper division course work.

Requirements

| ATT 1200 - Apparel Design Graphics **2 Credits**
| ATT 1300 - International Sourcing **3 Credits**
| ATT 1400 - Principles of Merchandising **3 Credits**
| ATT 2301 - Apparel Computer-Aided Technical Design I **4 Credits**
| ATT 3100 - Fashion Merchandising **3 Credits**
| ATT 3505 - Fabric Formation and Design **3 Credits**
| ATT 3600 - Apparel Analysis and Product Development **3 Credits**
| ATT 3602 - Apparel Computer-Aided Technical Design II **4 Credits**
| ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends **3 Credits**
| ATT 4444 - Quality Assurance for Textiles and Apparel **4 Credits**
| ATT 4670 - Apparel/Textile Business Practices **3 Credits**
| ATT 4750 - Advanced Design and Product Development **3 Credits**

Minor Program Total: 15

Architecture Minor

Minor in Architecture for non-architecture majors, provides a focused exposure to the varied dimensions of design, critical thinking and application while exercising restraint on time to complete. Students who change their major from Architecture to another major or discipline of their choice can get a Minor in Architecture after fulfilling it's course requirements. Students complete a major in a Program to be awarded with a Minor in Architecture. Minor in Architecture will not be substituted with Certificate in Architectural Studies. All studio and lecture courses must be passed with a minimum grade of "C". All studios should be taken in sequence.

Architecture Minor

| ARCH 1001 - Design Foundation I **4 Credits**
| ARCH 1002 - Design Foundation II **4 Credits**
| ARCH 1241 - Design Communication I **2 Credits**
| ARCH 2003 - Design Foundation III **4 Credits**
| ARCH 2004 - Design Foundation IV **4 Credits**
| ARCH 2242 - Design Communication II **2 Credits**
| ARCH 2311 - Environmental Tech I - Systems Selection and Materials **3 Credits**
| ARCH 2112 - Architecture Culture II - The Renaissance through 1850 **3 Credits**
| ARCH 2211 - Architecture Structures I - Introduction to Structures **3 Credits**

Minor Program Total: 29

Biology Minor

To be eligible for a minor in Biology, the student must complete:

| A minimum of 18 semester hours of BIOL or BIOC coursework
| 9 of the 18 hours in BIOL/BIOC must be above the 2199 level
| Students who use BIOL 2107/BIOL 2107L and/or BIOL 2108/BIOL 2108L to satisfy Core D requirements cannot use these courses to satisfy requirements of the minor

Chemistry Minor

Requirements

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| 10 additional hours of upper division (3000 level or higher) Chemistry or Biochemistry courses.

Total Hours: 26

Computer Game Design and Development Minor

To be eligible for a minor in Computer Game Design and Development, the student must complete the following courses with a grade of "C" or better. Any upper level (3000+) courses that are required in the major may not be used as credit for the minor. Other upper level CGDD courses may be used as substituted. Students must have at least 9 upper level CGDD hours not required for their major (CGDD courses taken as electives for your major bachelor degree can be used to complete the minor).

Minor in Game Design and Development Program Objectives:

| Provide students with game design and development knowledge that can be applied in their major area of study
| Provide students with fundamental game design and development skills

Minor in Game Design and Development Learning Outcomes

| Demonstrate skills fundamental to game design and development
| Demonstrate knowledge in at least two subfields of game design and development

Required Courses

| CSE 1301 -Any 1301 courses (C, J or E) Programming and Problem Solving 1 **4 Credits**
| CGDD 2002 - Fundamentals of Game Design **2 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**
| Three additional upper-level CGDD courses **9+ Credits**

Minor Program Total: 18+ Credits

Computer Science Minor

To be eligible for a minor in Computer Science, the student must complete the following courses with a grade of "C" or better. Students must have at least 9 upper level CS hours out of the 18 required credit hours.

Requirements:

| CSE 1301 - Any CSE 1301 (C, J or E) Programming & Problem Solving I **4 credits**
| CSE 1302 - Any CSE 1302 (C, J or E) Programming & Problem Solving II **4 Credits**
| CS 3424 - Data Structures **4 Credits**
| Two additional upper-level CS courses 6+
  NOTE: CS 3424 requires MATH 2345 - Discrete Mathematics as a pre-requisite.

Total Hours: 18 Credits

Construction Management Minor

Requirements

To be eligible for a minor in Construction Management, the student must complete the following courses:

| | CM 2000 - Construction Graphics **3 Credits** *
| | CM 3000 - Computer Applications in Construction **3 Credits** *
| | CM 3110 - Residential and Light Construction Methods **3 Credits**
| | CM 3410 - Construction Quantity Surveying **3 Credits**
| | CM 4510 - Construction Scheduling **3 Credits**

Total Hours: 15 Credits

NOTE: Students who have the prerequisite knowledge in these courses may substitute courses of greater or equal credit from the following list with the consent of the CM Department Chair:

| | CM 3411 - Construction Estimating Software **2 Credits**
| | CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
| | CM 4511 - Construction Scheduling Software **2 Credits**
| | CM 4560 - Construction Project Management **3 Credits**

Engineering Design Graphics Minor

Students who wish to receive a minor in Engineering Design Graphics must take:

| | EDG 1212 - Engineering Graphics II **4 credits**

Select four additional courses from the following:

| | EDG 3112 - Advanced Engineering Graphics **3 credits**
| | EDG 4111 - Surface Modeling **3 credits**
| | EDG 4222 - CAD Customization and Standards **3 credits**
| | EDG 4224 - Engineering Design Graphics for Custom Manufacturing **3 credits**
| | MET 3332 - Rapid Design and Manufacture **3 credits**
| | MET 4112 - Computer Aided Engineering & Analysis **3 credits**
| | OR
| | ME 4250 - Computer Aided Engineering **3 credits**

Minor Program Total: 16

Not available to MET students with a concentration in Engineering Design Graphics.

Environmental Science Minor

Requirements

| | ENVS 2202K - Introduction to Environmental Science **4 Credits**
| | BIOL 3300K - Ecology **4 Credits**

Electives - Choose 7+ credits from the list below

| BIOL 3600 - Freshwater Biology **3 Credits**
| BIOL 3650 - Marine Biology **3 Credits**
| BIOL 4400K - Human Physiology **4 Credits**
| CHEM 3150K - Environmental Chemistry **4 Credits**
| ENGL 3015 - Environmental Writing **3 Credits**
| ENVS 3100K - Soil & Water Science **4 Credits**
| ENVS 3350 - Oceanography **3 Credits**
| ENVS 3000 - Environmental Science Seminar **1 Credits**
| GEOG 4101 - Geographic Information Systems **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| ENVS 4300 - Environmental Ethics **3 Credits**

Minor Program Total: 15-18 Credits

Geographical Information Systems Minor

Minor in Geographical Information Systems

Required Courses

| SURV 2110 - Introduction to Mapping **4 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| SURV 4420 - Remote Sensing **4 Credits**
| SURV 4422 - Geographic Information Systems II **4 Credits**

Total Hours: 16 Credits

History Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

World History (3 credits):

Choose ONE course not used to satisfy core Area E-2:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

US History (6 credits):

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
If HIST 2111 or HIST 2112 has been used to satisfy Core Area E-1, any 3-hour HIST course may be substituted.

Upper-Division History courses (9 credits):

Any **9 credits** of 3000- or 4000-level HIST courses.

Total Program Hours: 18

Industrial Engineering Technology Minor

To be eligible for a minor in Industrial Engineering Technology,

Students must complete the following three courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**

And choose two courses from the following list:

| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**

Minor Program Total: 16-18

Note:

An overall 2.0 GPA is required in the courses for the IET Minor (excluding the international studies minor courses).

Information Technology Minor

To be eligible for a minor in Information Technology, the student must complete the following courses with a grade of "C" or better:

Information Technology Minor Requirements

| IT 1324 - Advanced Programming Principles **4 Credits** or
CSE 1302J - Programming & Problem Solving II **4 credits**

| IT 3123 - Hardware/Software Concepts **3 Credits** or
| CS 3224 - Computer Organization & Architecture **4 Credits**

| IT 3203 - Introduction to Web Development **3 Credits** or
| CSE 3153 - Database Systems **3 Credits**

And one of the Following:

| IT 4123 - Electronic Commerce **3 Credits**
| IT 4323 - Data Communications & Networks **3 Credits**
| IT 4823 - Information Security Administration & Privacy **3 Credits**

Total Hours: 14-15 Credits

International Studies Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor *except free electives.* No courses used to satisfy Core Areas A-E may be used in a minor.

Regional Studies (3 credits):

Choose ONE of the following:

| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**

Language Requirement:

Student must complete FREN 1002, GRMN 1002, or SPAN 1002 OR demonstrate proficiency in a non-English langage at an equivalent level.

Electives (12 credits):

Choose FOUR courses from the following list NOT used to satisfy core requirements in Areas A-E. No more than TWO may be numbered below 3000.

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits**
| ECON 2106 - Principles of Microeconomics **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| GEOG 3101 - World Regional Geography **3 Credits**
| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**
| HIST 3200 - History of Science Survey **3 Credits**
| HIST 3301 - Diplomatic and Military History since 1815 **3 Credits**
| HIST 3401 - Modern Social and Cultural History Twentieth Century **3 Credits**
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| HIST 3601 - History of the Pacific Rim **3 Credits**
| HIST 3801 - Contemporary World History since 1945 **3 Credits**
| IS 3600 - Comparative Culture **3 Credits**
    Any regional studies course NOT used to satisfy the Regional Studies requirement above.
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**
| IS 4600 - International Studies Internship **3 Credits**
| IS 4800 - International Studies Capstone **3 Credits**
| MGNT 4145 - International Management **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| POLS 3001 - Comparative Politics **3 Credits**
| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3601 - Contemporary World Politics **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**
| POLS 4063 - Political Issues in Electronic Government **3 Credits**
| POLS 4101 - Political Economy of Post-Communist Transformation **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| POLS 4301 - International Political Economy **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**

| PSYC 4600 - Conflict Resolution **3 Credits**
| RELG 1200 - World Religion **3 Credits**
| SPAN 3001 - Advanced Conversation **3 Credits**
| SPAN 3002 - Grammar and Composition **3 Credits**
| SPAN 3003 - Hispanic Cultures and Civilizations **3 Credits**
| SPAN 4001 - Professional Spanish **3 Credits**
| SPAN 4002 - Techniques in Translation for Professional Spanish **3 Credits**
| SPAN 4003 - Service Learning Project **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**
| STS 4400 - Topical Studies in Science and Technology **3 Credits**
Special topics courses in HIST, POLS, PSYC may be used as electives with topic-specific departmental approval.

Total Program Hours: 15

Latin American Studies Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses:

| ES 1100 - Ethnic Studies **3 Credits**
Latino / Hispanic Ethnic Studies ONLY; may not also be used to satisfy E-4 core
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| SPAN 3003 - Hispanic Cultures and Civilizations **3 Credits**

Total Program Hours: 15

Logistics Minor

Students must complete the following courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**

Students choose one from the following:

| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Minor Program Total: 15

Manufacturing Engineering Technology Minor

Students who wish to receive a minor in Manufacturing Engineering Technology must take the following two courses:

| MET 1311 - Manufacturing Processes **3 credits**
| MET 2322 - Metrology and CNC Machining **3 credits**

Select three additional courses from the following:

| EDG 4224 - Engineering Design Graphics for Custom Manufacturing **3 credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 credits**
| MET 3331 - Tool Design **3 credits**
| MET 3332 - Rapid Design and Manufacture **3 credits**
| MET 4342 - Numerical Control of Machines **3 credits**
| MGNT 4135 - Project Management **3 credits**

Minor Program Total: 15

Note: Not available to MET students with a concentration in Manufacturing

Mathematics Minor

To obtain a minor in Mathematics, the student must complete:

| MATH 2255
| An additional 14 semester hours of Mathematics courses at the 2300 level or higher

At least 9 of these additional 14 hours must be at the 3000 level or higher.

Courses used to fill other requirements at SPSU (excluding core areas A through E) may also be used to obtain a minor in Mathematics.

For example, if you take MATH 2306 to fulfill a requirement in the Management curriculum, you may also use it in a math minor. However, you may not use MATH 1113 to fulfill the math minor because it is in area A of the core curriculum.

TOTAL HOURS: 18

Nuclear Engineering Minor

Requirements

| SYE 3501 - Fundamentals of Nuclear Engineering **3 Credits**
| SYE 3502 - Radiation Detection and Measurement **3 Credits**
| SYE 4501 - Nuclear Power Generation **3 Credits**
| SYE 4502 - Radiation Protection and Health Physics **3 Credits**
| SYE 4503 - Nuclear Fuel Cycle **3 Credits**

Minor Program Total: 15

Physics Minor

To be eligible for a minor in Physics, the student must complete at least 15 hours of course work in physics with at least 10 hours in upper division physics courses.

Political Science Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses:

| POLS 1101 - American Government **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| POLS 3001 - Comparative Politics **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
  Choose ONE of the following:
| POLS 3601 - Contemporary World Politics **3 Credits**
  OR
| POLS 4301 - International Political Economy **3 Credits**
  Choose ONE of the following:
| POLS 3701 - Seminar in American Politics **3 Credits**
  OR
| POLS 3801 - Political Behavior **3 Credits**

Total Program Hours: 18

Pre-Law Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses (6 credits):

Take TWO of the following courses NOT used to satisfy Core Area E-1:

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

Elective Courses (12 credits):

Pick any FOUR of the following:

| MGNT 3145 - Legal Environment of Business **3 Credits**
| POLS 3209 - U.S. Constitutional Law **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| POLS 3501 - Intellectual Property Issues **3 Credits**
| POLS 3701 - Seminar in American Politics **3 Credits**

Total Program Hours: 18

Professional Writing Minor

After taking COMM 2000, Business Communication, **take only 12 more hours**, 9 of which must be at the 3000 or 4000 level, to receive a Minor in Professional Writing. Your minor credential will be designated on your SPSU transcript provided you earn a C or better in each course.

Requirements

| COMM 2000 - Business Communication **3 Credits**

Additional Courses Choose Four of the Following (12 credits)

Students majoring in Business Administration are required to take COMM 2000 as part of their existing program of study. TCOM 2010 will serve as a blanket substitution for COMM 2000 for Business Administration students interested in Professional Writing minor.

This minor is not available to students majoring in either Technical Communication or English and Professional Communication.

| COMM 3035 - Organizational Communication **3 Credits**
| COMM 3040 - Health Communication **3 Credits**
| COMM 3050 - Journalism **3 Credits**
| ENGL 3010 - Science Writing **3 Credits**
| ENGL 3015 - Environmental Writing **3 Credits**
| ENGL 3020 - Proposal Writing **3 Credits**
| ENGL 3025 - Creative Writing Workshop **3 Credits**
| ENGL 3040 - Article and Essay Workshop **3 Credits**
| ENGL 4010 - Publishing for New Media **3 Credits**
| TCOM 4000 - Professional Editing **3 Credits**

Total Hours: 15

Psychology Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor *except free electives*. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses:

| PSYC 1101 - Introduction to General Psychology **3 Credits**
(If PSYC 1101 has been used for Core Area E-3, any 2000-Level PSYC course may be substituted in the minor)
| IET 2227 - Introduction to Statistics **3 Credits**
| PSYC 2100 - Basic Quantitative Research Methods for Psychology **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
AND **6 Credits** in any PSYC 3000- or 4000- level courses

18 Credits

Public Policy Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses (6 credits):

| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**

Electives (9 credits):

Choose THREE of the following:

| POLS 3401 - Environmental Law and Policy **3 Credits**
| POLS 3701 - Seminar in American Politics **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**

Special Topics

Special Topics in POLS, STS, or IS may also be used as electives with topic-specific approval of the department.

Total Program Hours: 15

Quality Principles Minor

Students must complete the following courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**

Students choose one from the following:

| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Minor Program Total: 15
Renewable Energy Engineering Technology Minor

Renewable Energy Engineering Technology Minor

Required Course

| REET 3550 - Introduction to Alternate Energy **4 Credits**

Plus four additional courses from the following:

| REET 2020 - Engery Conversion **4 Credits**
| REET 3030 - Energy Storage Systems **3 Credits**
| REET 4100 - Solar Photovoltaics **3 Credits**
| REET 4110 - Solar Thermal Systems **3 Credits**
| REET 4200 - Wind Power Generation **3 Credits**
| REET 4210 - Oceanic and Hydropower Generation **3 Credits**
| REET 4500 - Environmental Aspects of Power Generation **3 Credits**
| REET 4510 - Sustainable Transportation Systems **3 Credits**

Minor Program Total: 16-17

Note:

An overall GPA of 2.0 is required in the courses for the Renewable Energy Engineering Technology (REET) Minor.

Software Engineering Minor

To be eligible for a minor in Software Engineering, the student must complete the following courses with a grade of "C" or better. Students must have at least 9 upper level SWE hours.

Program Objectives

Students earning a minor in Software Engineering will:

| Possess broad foundations in software engineering concepts and methodologies so they may contribute to the effective design and implementation of large scale software.

Learning Outcomes

Students earning a Software Engineering minor will have demonstrated the ability to:

| Apply SWE practices and process to software design and development.
| Demonstrate the ability to gather, analyze, develop, verify and/or validate artifacts of software engineering systems.
| Use software tools effectively in some phases of software development.

Minor Requirements

| CSE 1302 - Programming & Problem Solving II **4 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| Three additional upper-level SWE courses **9 Credits**

Note:

SWE 1302 has a pre-requisite of SWE 1301 .

Total Hours: 16 hours

Spanish Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

2000-Level (6 credits):

May not also be used to satisfy Core Area C-2:

> | SPAN 2001 - Intermediate Spanish I **3 Credits**
> | SPAN 2002 - Intermediate Spanish II **3 Credits**

3000-Level (9 credits):

Any 9 credits in 3000-level SPAN courses.

Total Program Hours: 15

Consider the Certificate in Professional Spanish as well:

Requirements for Professional Certificate

Technical Communication Minor

After taking TCOM 2010 Technical Writing, you will take **only 12 more hours,** 9 of which must be at the 3000 or 4000 level. If you earn a grade of "C" or better in each course, your minor credential will be designated on your SPSU transcript.

Requirements (6 credits)

> | TCOM 2010 - Technical Writing **3 Credits**
> | TCOM 2020 - Introduction to the Professions **3 Credits**
>   OR
> | TCOM 2030 - Research in Technical Communication **3 Credits**

> Students whose major already requires TCOM 2010 should take TCOM 2020 **and** TCOM 2030 (blanket substitution will apply).

Additional Courses for Minor (9 credits)

Choose any class with the TCOM course prefix, 3000-level or higher.

This minor is not available to students majoring in either Technical Communication or English and Professional Communication.

Total Hours: 15

Transfer Program

General Studies, A.S.

The Associate of Science General Studies Transfer Program is designed for students who wish to complete the core at SPSU and then transfer to another institution.

All students must take:

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Area A: Essential Skills (9 credits)

Grade of C or better required in the courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
(or other math as specified in the University core)

Area B: Institutional Options (4 credits)

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

Choose ONE Literature Course:

| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

Choose ONE Arts or Language Course:

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| FREN 2001 - Intermediate French I **3 Credits**
| FREN 2002 - Intermediate French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| GRMN 2001 - Intermediate German I **3 Credits**
| GRMN 2002 - Intermediate German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

Area D: Science and Math (11-12 credits)

8 hours science (two courses with labs):

You must take two semesters of lab science *and lab* (lecture=3 credits; lab=1 credit; K-courses=4 credits, lab is included)

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**

| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Math:

| MATH 1113 - Pre-calculus **4 Credits**
(or other math as specified in the University core)

Area E: Social Sciences (12 credits)

Group 1 Amerian Perspectives- (3 credits):

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia Constitution and History. Students who fulfill this requirement with transfer credit from outside the USG will need to take HIST 2911 U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation.

Choose ONE of the following:
| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

Group 2 Historical Perspectives (3 credits):

Choose ONE of the following:
| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

Group 3 Behavioral Science Perspectives (3 credits):

Choose ONE of the following:

| ECON 1101 - Introduction to Economics **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

Group 4 Global Perspectives (3 credits):

Satisfies the Global Perspectives overlay.

Choose ONE of the following:

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Elective Courses:

| At least one additional course in humanities (Area C) **3 Credits**
| At least one additional course in social sciences (Area E) **3 Credits**
| Any humanities, social science, math, lab science or any area F course from any program. **11-12 Credits**

Total Program Hours: 60

Certification

Apparel Product Development Certificate

The Fashion Design and Product Development program offers a Certificate in Apparel Product Development. The objective is to provide training and education to members of the apparel industry, graduates of fashion and design schools and other interested parties seeking to improve their skills. The courses may also be applied toward completing the Bachelor of Apparel and Textiles degree. All requirements for normal admissions are applicable. Certificate students must complete five courses from the following list:

Requirements

Certificate students must complete five classes from the following list:

| ATT 1300 - International Sourcing **3 Credits**
| ATT 1400 - Principles of Merchandising **3 Credits**
| ATT 2301 - Apparel Computer-Aided Technical Design I **4 Credits**
| ATT 3100 - Fashion Merchandising **3 Credits**
| ATT 3505 - Fabric Formation and Design **3 Credits**
| ATT 3600 - Apparel Analysis and Product Development **3 Credits**
| ATT 3602 - Apparel Computer-Aided Technical Design II **4 Credits**

| ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends **3 Credits**
| ATT 4444 - Quality Assurance for Textiles and Apparel **4 Credits**
| ATT 4670 - Apparel/Textile Business Practices **3 Credits**
| ATT 4750 - Advanced Design and Product Development **3 Credits**

Certificate Program Total: 15

Geographical Information Systems Certificate

The Geographical Information Systems (GIS) Certificate program is designed to prepare students with a practical set of GIS marketable skills who have a background in GIS applications such as surveying, real estate, marketing, geography or business background. There are five courses required in the certificate program.

Required Courses (19 Credits)

| SURV 2110 - Introduction to Mapping **4 Credits**
    OR
| SURV 2221 - Surveying I **4 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| SURV 4420 - Remote Sensing **4 Credits**
| SURV 4422 - Geographic Information Systems II **4 Credits**
| SURV 4110 - Geographical Information Systems (GIS) Practice **3 Credits**

Certificate Program Total: 19

Land Development Certificate

The Certificate in Land Development provides training and education to members of the real estate and land development field in construction and land development principles and practices. Students can complete the requirements in 3-4 semesters. These courses may also be applied toward completing a B.S. degree in Construction Management upon acceptance to SPSU.

Prerequisites must be met prior to enrollment in certain certificate courses.

Required Courses:

| CM 3310 - Introduction to Development **3 Credits**
| CM 3710 - Site Planning **4 Credits**
| CM 4570 - Development Process I **4 Credits**
| CM 3110 - Residential and Light Construction Methods **3 Credits**

Subtotal: 14 Credits

*may substitute courses from electives list if competency can be demonstrated

Elective Courses:

| CM 2000 - Construction Graphics **3 Credits**
| CM 3410 - Construction Quantity Surveying **3 Credits**
| CM 3430 - Construction Estimating for Development **3 Credits**
| CM 4510 - Construction Scheduling **3 Credits**
| CM 4620 - Development Process II **3 Credits**

Subtotal: 7 Credits (minimum)

Certificate Program Total: 21 Credits (minimum)

Land Surveying Certificate

The Land Surveying Certificate program is designed to prepare surveyors with the basic education necessary to take the Fundamentals of Land Surveying Exam and exceeds the State of Georgia academic registration requirements to become a Registered Land Surveyor. There are six courses required in the certificate program.

Required Courses (21 Credits)

| SURV 2221 - Surveying I **4 Credits**
| SURV 3222 - Surveying II **4 Credits**
| SURV 4465 - Legal Aspects of Land Surveying **4 Credits**
| SURV 4475 - Land Surveying Practice **2 Credits**
| SURV 4470 - Land Development Design **4 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4310L - Erosion Control Lab **1 Credits**

Certificate Program Total: 21

Logistics Certificate

The primary objective of the Certificate in Logistics is to provide training and education to members of the Supply Chain industry that need to improve skills and knowledge in the latest technology available in their field. Students can complete the requirements in 4-6 semesters. The courses may also be applied toward completing a B. S. degree in Industrial Engineering Technology. The program will be offered on campus, through distance learning, and over the Internet.

Admission Requirements:

Applicants must have earned a High School degree or GED and been out of high school for at least five years or have earned 30 college credits from an accredited institution of higher learning with a minimum GPA of 2.0.

Required Courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Certificate Program Total: 21

Production Design Certificate

The primary objective of the Certificate in Production Design is to provide training and education to members of the Industrial Engineering field in the measurement and analysis of work and in the design or improvement of facilities. Students can complete the requirements in 3-4 semesters. These courses may also be applied toward completing a B.S. degree in Industrial Engineering Technology upon acceptance to SPSU.

Admission Requirements:

Applicants must meet all undergraduate admission requirements.

Required Courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Certificate Program Total: 20

Project Management Construction Certificate

The professional Certificate in Project management is designed for working professionals who wish to further their

knowledge in Construction Project Management. The certificate will also be useful for those individuals who wish to make a career change to the construction industry, or to those people who find themselves in the construction industry without first gaining a background in construction.

Prerequisites must be met prior to enrollment in certain certificate courses.

Required Courses:

- | CM 2000 - Construction Graphics **3 Credits**
- | CM 3000 - Computer Applications in Construction **3 Credits**

- | CM 3110 - Residential and Light Construction Methods **3 Credits** OR
- | CM 3160 - Construction Equipment **3 Credits**

- | CM 4560 - Construction Project Management **3 Credits**
- | CM 3620 - Construction Finance and Feasibility **4 Credits**

Subtotal: 11-12 Credits

Elective Courses:

- | CM 3410 - Construction Quantity Surveying **3 Credits**
- | CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
- | CM 4510 - Construction Scheduling **3 Credits**
- | CM 4760 - Construction and Real Estate Property Law **3 Credits**

Subtotal: 9+ Credits

Certificate Program Total: 20+ Credits

Quality Principles Certificate

The primary objective of the Certificate in Quality Principles is to provide training and education to members of the Industrial Engineering field in quality system principles, methodology, elements and standards. Students can complete the requirements in 3–4 semesters. These courses may also be applied toward completing a B.S. degree in Industrial Engineering technology upon acceptance to SPSU.

Admission Requirements:

Applicants must meet all undergraduate admission requirements.

Required Courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Certificate Program Total: 21

Spanish Professional Certificate (Undergraduate)

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

All Courses Required for the Spanish Minor

Requirements for Spanish Minor

4000-Level Electives (6 credits):

Chose SIX credits from the following:

| SPAN 4001 - Professional Spanish **3 Credits**
| SPAN 4002 - Techniques in Translation for Professional Spanish **3 Credits**
| SPAN 4003 - Service Learning Project **3 Credits**

Learning Project (3 credits):

| SPAN 4003 - Service Learning Project **3 Credits**

Oral Proficiency Interview (OPI):

After all coursework is completed, student must take the American Council on the Teaching of Foreign Language OPI.

Total Program Hours: 9 credits beyond the minor

Course Descriptions

Accounting

ACCT 2101 - Principles of Financial Accounting
3-0-3

This course is the study of the fundamentals of financial accounting for economic events. Attention will be devoted to decision making, recording and reporting financial information. Students will learn about the major financial statements and elements of the financial statements such as assets, liabilities, revenues and expenses.

ACCT 2102 - Principles of Managerial Accounting
Prerequisite: ACCT 2101
3-0-3

This course is a study of the fundamentals of managerial accounting for economic events. Attention will be devoted to manufacturing, planning and controlling, decision analysis, cost management and other managerial accounting topics.

ACCT 3230 - Intermediate Accounting I
Prerequisite: ACCT 2101 with a "D" or better
3-0-3

This course builds upon the financial accounting fundamentals learned in Principles of Financial Accounting. Greater attention to detail is placed on the major financial statements, and more specifically, to the accounting for assets on the Balance Sheet and the related revenue and expense on the Income Statement.

ACCT 3231 - Intermediate Accounting II
Prerequisite: ACCT 3230
3-0-3

This course continues to build upon the financial accounting fundamentals learned in the Principles of Financial Accounting. Specifically, this course is a study of accounting for liabilities and equity on the Balance Sheet and the related revenue and expense on the Income Statement.

ACCT 3530 - Cost Accounting
Prerequisite: ACCT 2102
3-0-3

This course builds upon the cost accounting fundamentals learned in Principles of Managerial Accounting. Specific topics covered in this course are cost analysis and estimation, cost management systems, planning and control systems, and other cost accounting topics.

ACCT 4530 - Advanced Accounting
Prerequisite: ACCT 3231 and MGNT 1000
3-0-3

This course explores the theory and practice of financial accounting and reporting to business combinations and consolidated financial statements, segment reporting, accounting for partnership,

and additional advanced accounting topics.

ACCT 4535 - Accounting Information Systems
Prerequisite: ACCT 2102
3-0-3

This course is a study of effective accounting systems for business enterprises to support not only management's business operations and critical decision making, but also management's legal and fiduciary responsibilities. Topical coverage includes transaction processing systems, internal control systems, emerging information technology, and development of information systems.

ACCT 4555 - Auditing and Assurance
Prerequisite: ACCT 4535 "D" or better
3-0-3

This course covers the practice of theory of auditing financial statements. The study includes major activities performed during the conduct of a financial statement audit, from client acceptance to issuance of an audit report. It focuses on auditing transaction processing cycles such as sales, purchases, and production, as well as professional ethics and CPA legal liability.

ACCT 4560 - Intro to Federal Income Taxes
Prerequisite: ACCT 3230
3-0-3

Students are introduced to basic federal income taxation concepts as applied to individuals and sole proprietorship. Strong emphasis is placed on the application of the Internal Revenue Code and the related procedures including tax planning and ethical practices. Students are introduced to tax law sources, tax research and compensation.

ACCT 4562 - Federal Taxation II
3-0-3

This course covers the study of federal income tax concepts as applied to corporations and partnerships. Students will be introduced to tax periods and methods, international taxation, state and local taxes and wealth transfers. A distinction is drawn between income tax and financial accounting concepts.

ACCT 4565 - Fraud Examination
Prerequisite: ACCT 2102
3-0-3

This course is an initial study of fraud examinations, including a discussion of specific forensic accounting and interviewing techniques and the reason behind the use of these techniques. Coverage extends to detection, investigation, and prevention of commercial fraud (asset misappropriation, financial statement fraud, and corruption), testifying as an expert witness, and preparation of audio-visuals to simplify the complex.

ACCT 4568 - Accounting Software Applications
3-0-3

A study of the identification and modeling of business processes, identification of business and information risk exposures and the development of appropriate control strategies, and analysis and

design of accounting information systems for business processes.

Anthropology

ANTH 1102 - Introduction to Anthropology
3-0-3

Introduction to basic cultural anthropological concepts emphasizing the differences and similarities in contemporary human behavior in Western and non-Western societies. Course includes lectures and case studies.

Apparel and Textile Technology

ATT 1000 - Orientation
1-0-1

Provides ATT students an overall introduction to the apparel industry, career opportunities in the field and the ATT curriculum.

ATT 1200 - Apparel Design Graphics
2-0-2

This course covers the fundamentals of vector drawing using Adobe Illustrator and Adobe Photoshop. Students will learn software tools and techniques including drawing tools, path editing, shape manipulation, blending, shading, object layering, technical flats, illustrations, and design and reproduction considerations. Application and principles of computer graphics will be taught and used to create successful projects.

ATT 1300 - International Sourcing
3-0-3

Survey of international sourcing strategies including the decision making process, transportation, domestic production, Asia/Europe/Americas operations, foreign investment, foreign purchase, turn time, competitive advantage, communications, full package production capabilities, cultural priorities, political influence, international regulations and alliances, costs, quality, and technology.

ATT 1400 - Principles of Merchandising
3-0-3

Merchandising functions are discussed that include developing strategies to have the right merchandise, at the right price, at the right time, in the right amount and at the right locations to meet target customer needs. This course will explore apparel and consumer product strategies and methods used in planning inventory. Issues in wholesaling, retailing, advertising, and promotion will be included.

ATT 2301 - Apparel Computer-Aided Technical Design I
Prerequisite: EDG 1210 or ATT 1200
2-4-4

The use of industry standard computer systems to determine the product information for apparel and consumer textile products including source materials, processing and assembly options, pattern development, sizing theory, garment fit and product development. Students will develop a complete set of flat patterns and alternate designs utilizing manual and computer software methods through applied project work. Principles of material utilization, pattern engineering, quality, and final design will be emphasized.

ATT 3100 - Fashion Merchandising
Prerequisite: ATT 1400
3-0-3

Application of merchandising principles as they relate to buying, problem-solving, retail math and visual presentation using standard industry practices and software. Students will learn how style, color and presentation are major ingredients to successful merchandising producing customer excitement and demand.

ATT 3505 - Fabric Formation and Design
3-0-3

This course provides the student with the understanding of how fabrics are constructed and the fundamentals of fabric design through application software used in industry today.

ATT 3600 - Apparel Analysis and Product Development
Prerequisite: ATT 1400
2-2-3

This course discusses the steps involved in apparel product development from concept through delivery will be covered from the perspective of the manufacturer and the retailer. Product creation, design, marketing, merchandising, sourcing and distribution are discussed along with a study of stitch formation and seam application.

ATT 3602 - Apparel Computer-Aided Technical Design II
Prerequisite: ATT 2301 and ATT 3505
2-4-4

Manual and computerized pattern grading theory are demonstrated and practiced by students utilizing industry standard digitizing, grading, and marker making systems. Principles and methods used in the preparation, planning, and cutting of fabrics and materials in apparel/textile products are presented including preparatory processes related to fabric cutting. Also presented are basic principles and computer methods of calculating, designing, and making pattern markers for apparel/textile products including yardage, cost estimation, and garment and fabric specifications through applied project work. Laboratory work includes developing cost and quality factors and the operation of equipment for inspecting, marking, shading, fabric defects, spreading, cutting and ply numbering. A systematic appraisal of the factors governing economical fabric use, including: in-depth study of the relationship of pattern make-up to fabric consumption; the impact of width variation to total consumption; and the relationship of all fabric defects to total utilization is presented.

ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends
3-0-3

Explore the techniques used in industry today including computer software programs to assist with

consumer-driven fashion forecasting. Students will examine how to identify, track, and analyze trends in apparel and consumer products consumption. Both long-range and short-range forecasting strategies will be used for market analysis. Consumer trend research activities involve collection of information from multiple sources on a continual basis for the consumer style selection, color selection, and the fabric and trim market.

ATT 4444 - Quality Assurance for Textiles and Apparel
Prerequisite: ATT 3505
3-3-4

This course is designed to introduce the student to the quality aspects fabric and apparel. Quality assurance areas are examined such as materials testing, sampling, sewability and preparing product specifications.

ATT 4670 - Apparel/Textile Business Practices
Prerequisite: ATT 1300, ATT 3600 and ATT 3602
3-0-3

Evaluation of the comprehensive factors that determine sound business practices for an apparel enterprise. The course explores determining the targets markets, a business plan, garment costing, product lifecycle, quality assurance and marketing.

ATT 4750 - Advanced Design and Product Development
Prerequisite: ATT 3602
2-3-3

Students will examine the fashion industry design techniques through the use of technology in both 2D and 3D applications. The course surveys product development software and presentation methods used in industry today.

ATT 4820 - Senior Internship
1-4-3

This course focuses on the student completing an approved industry based project under the supervision of the industry partner and an SPSU faculty member.

 ATT 4840 - Textile/Apparel Business Project
Prerequisite: ATT 4670 and ATT 4750
1-4-3

This course is designed to provide the student with integrated knowledge from previous courses. Students are required to use their skills in forecasting, design, merchandising, sourcing and marketing along with the financial aspects of establishing a fictitious apparel company. A formal written report and oral presentation will be evaluated by faculty and industry representatives.

Architecture

ARCH 390X - Special Topics
Prerequisite: Admission to the professional program
1 to 4

This course provides an opportunity for a group of students to undertake in-depth study under the direction of a member of the full-time faculty or visiting faculty. Areas of study may include extension and enhancement of material offered in required architecture courses or exploration in an area of professional interest not covered by, but directly related to, material covered in third year architecture courses.

ARCH 490X - Directed Study
Prerequisite: Admission to the professional program
1 to 4

This course provides an opportunity for a group of students to undertake in-depth study under the direction of a member of the full-time faculty or visiting faculty. Areas of study may include extension and enhancement of material offered in required architecture courses or exploration in an area of professional interest not covered by, but directly related to, material covered in fourth year architecture courses.

ARCH 1000 - Orientation to Architecture
2-0-2

The Summer Design Workshop is a primer to design consists of varied research, design, and written exercises. These exercises engage students to know the critical and applied nature of design, studio culture, and the commitment needed to successfully complete the professional degree in Architecture.

ARCH 1001 - Design Foundation I
Prerequisite: MATH 1111 and ARCH 1000
0-12-4

ARCH 1001 is the first design studio. Through exercises and projects, it introduces a variety of skills and subjects for the beginning student in architecture including but not limited to the following: drawings, model building, verbal communication, design, and building language.

ARCH 1002 - Design Foundation II
Prerequisite: ARCH 1001
0-12-4

ARCH 1002 builds and elaborates upon the skills and subjects Introduced in ARCH 1001 . It culminates with a capstone design project that summarizes and measures the learning of the first year, and prepares students for the second year.

ARCH 1241 - Design Communication I
Prerequisite: ARCH 1000
1-3-2

This course offers lecture and practicum providing fundamentals of design communication through principles of drawing conventions and related techniques including orthographic projections, paraline drawings, and perspective construction systems to represent design ideas and built forms. This involves use of traditional manual media and introduction to basic 2D image manipulation in digital media. The intention of the course is to develop visual literacy through visual thinking and to develop skills to represent objects and simple structures in both two and three-dimensions.

ARCH 2003 - Design Foundation III
Prerequisite: ARCH 1002
0-12-4

This course concentrates on shaping, organizing, and designing architectural space using spatial and compositional strategies derived from precedent and architectural case studies.

ARCH 2004 - Design Foundation IV
Prerequisite: ARCH 2003
0-12-4

The culmination of the Design Foundation incorporates and builds upon all previous course work. It adds the fundamental concept of typology to previous experiences with architectural space, composition, and program. Students investigate layers of functional zoning, geometric organization, three dimensional configuration, openings, physical texture, color, character, and symbolic meaning.

ARCH 2111 - Architecture Culture I: Early Civilizations & Medieval
3-0-3

The Architecture Culture sequence is designed as an historical survey of Architectural history and theory. Its aim is to develop an understanding of how architecture manifests the socio-cultural conditions of an era. It achieves this aim by first examining the relationship between architecture and other cultural discourses such as philosophy, aesthetics, science, religion, politics and technology. And second, by examining how architecture as a cultural artifact transforms through time as a response to alterations in the surrounding cultural context of the discourses listed above. History is here used as a didactic device to aid the design student in problem solving by presenting him or her with examples of how architects have successfully transformed the intellectual and practical concerns of their day into built form. The first course in the sequence, Architecture Culture I covers Prehistory through Gothic and includes introductions to non-Western architectural traditions. Architecture Culture I introduces the student to the prehistoric origins of architecture and moves through the development of architecture in the Ancient world, introduces Non-Western Architectural traditions and examines the development of Western Architecture from Early Christian through Gothic.

ARCH 2112 - Architecture Culture II - The Renaissance through 1850
3-0-3

The second course in the sequence, Architecture Culture II covers the Renaissance through Neo-Classicism in the West and includes introductions to Native American and Colonial architectural traditions. Architecture Culture II begins with an introduction to the cultural forces that shaped the Renaissance and formed the backdrop for the development of Architectural theory and the defining of the profession. It follows the developmental course of Classical Architecture in the West and its transformation over time as a response to changes in the cultural context, including advances in science, technology, and philosophy. The course also introduces Native American architecture and the development of Colonial Architecture in North America.

ARCH 2211 - Architecture Structures I - Introduction to Structures
Prerequisite: PHYS 1111 , PHYS 1111L (Trig Based)
2-3-3

This course is an introduction to architectural structures with an emphasis on statics and strength of materials concepts. Focus is on force systems, shear and moment diagrams and determination of section properties.

ARCH 2242 - Design Communication II
Prerequisite: ARCH 1241 or Approval of the Instructor
1-3-2

This course offers lecture and practicum and is seen as a continuation of Design Communication I. It introduces techniques and conventions of graphic communication as an aid for architectural design. This course advances levels of visualization and representation of architectural building and related design ideas. Techniques include hand drawings, digital rendering, and 3D computer modeling. The goal is to link traditional techniques and digital modeling to various studio works both at process level and final presentation level. A variety of representation techniques are introduced to highlight design vocabulary through a series of projects ranging from page layout to building. Both small scale objects and moderate scale structures/buildings can be used as a base information to represent concepts of design and techniques of representation.

ARCH 2311 - Environmental Tech I - Systems Selection and Materials
2-3-3

This course offers lecture and practicum. It introduces selection criteria of materials and their properties relative to structural and enclosure systems. Emphasis is placed on wood, steel, masonry, and concrete structural systems. Enclosure Systems are explored in relation to various applications of existing and new materials and finishes that building systems entail within the context of sustainability.

ARCH 3011 - Architecture Studio V
Prerequisite: Acceptance into the professional program upon portfolio review
0-12-4

This course builds on the previous studio course's emphasis on space making and introduces the integration of building technology into the design process. Assignments focus on the expressive use of wood and steel within rural and light urban site contexts.

ARCH 3012 - Architecture Studio VI
Prerequisite: ARCH 3011
0-12-4

This course is a continuation of ARCH 3011 and the integration of technology. Students design a small scale project usually in a dense urban setting. Emphasis in placed on site context and systems and materials research in support of design intent. The first half of the semester is devoted to project design and the latter half is spent examining the construct of the design through large scale models.

ARCH 3113 - Architecture Culture III - 1850 through 1945
3-0-3

Architecture Culture III - 1750 through the International Style the third course in the sequence, Architecture Culture III covers the Renaissance through Neo-Classicism in the West and includes introductions to Native American and Colonial architectural traditions. Architecture Culture III begins with cultural shifts and developments in the second half of the 18th century and their impact on architectural history and theory. It proceeds with developments in the 19th century particularly the industrial revolution developments of new building materials and techniques and political structures and how they shaped the discourse of architecture. The course ends with the formulation of the theories of modernism and the development of the Avant-garde and the key

historical figures that shaped it.

ARCH 3116 - Urban Planning and Design Theory
Prerequisite: ARCH 2112
2-3-3

This course offers lecture and practicum. It critically examines the evolution and current trends in the development of modern cities. Diverse socio-economic-political and spatial issues are explored that shape and continuously transform the physical fabric of cities, metropolitan centers, regions and global facets of architecture and urbanism. Class exercises range from actual urban design project to critical and applied assignments to explore and understand theoretical and applied underpinnings of varied and diverse urban forms.

ARCH 3211 - Architecture Structures II: Steel and Wood
Prerequisite: ARCH 2211
3-3-4

This course offers lecture and pracitum. It is a continuation of ARCH 2211 , with emphasis on gravity loads and basic design of wood structural components including beams, columns, and trusses. Engineered wood products, glue-laminated, and connections are also covered.

ARCH 3212 - Architecture Structures III: Concrete and Lateral Loads
Prerequisite: ARCH 3211
2-3-3

This course is a continuation of ARCH 3211 with the design of steel structural members, connections and statically determinate structural steel systems. Approximate analysis of rigid frames is introduced and the student learns to use "pre-packaged" computer programs to input data and evaluate results.

ARCH 3313 - Environmental Technology II: Human Comfort, Sustainability and HVAC Systems
Prerequisite: ARCH 2311
2-3-3

This course offers lecture and pracitum. It focuses on the connection between basic human comfort and sustainable design mechanisms: Building Orientation, sustainable mechanisms relative to envelope materials shaping building form,. Energy conservation and energy code compliance is examined. Selection and configuration of major mechanical systems is examined in the contexts of building typology, sustainability, spatial configuration, and life cycle cost.

ARCH 3314 - Environmental Technology III: Natural & Artificial Lighting, Electrical Systems & Vertical Circulation
Prerequisite: MATH 1113
2-3-3

This course offers lecture and pracitum. It further builds on the technology sequence. This course further elaborates the connection between the Building Orientation and the role of natural and artificial lighting with an emphasis on the sustainable mechanisms shaping building form,. Energy conservation and energy code compliance is examined. Selection and configuration and distribution of artificial lighting and natural lighting and vertical circulation [escalators, elevators and other mechanical devices of vertical circulation].fostering sustainable mechanisms in diverse contexts of spatial configurations, building typologies while exploring means to defray life cycle costs.

ARCH 4013 - Architecture Studio VII
Prerequisite: ARCH 3116 and ARCH 3012
0-12-4

ARCH 4013 focuses on the design of multi-use projects with an emphasis on urban design, the integration of construction technology and the application of knowledge acquired in the concurrent history/theory course sequence. ARCH 4013 features urban revitalization and mixed use design and development as an underlying studio theme.

ARCH 4014 - Architecture Studio VIII
Prerequisite: ARCH 4013
0-12-4

ARCH 4014 focuses on Comprehensive Design as defined by NAAB criteria and the mission and vision of the SPSU Architecture Program. Students undertake one or more small-scale design challenges before executing a larger-scale design project with emphasis on the integration of technology and the application of knowledge acquired in concurrent courses.

ARCH 4114 - Architecture Cultures IV: 1945-Current
Prerequisite: ARCH 3113
3-0-3

A continuation of the Architecture Culture sequence, this course examines through lectures and projects, the development of issues and questions that began to undo the dogma of the Modern movement, exploring topical issues raised by architects, historians and critics alike that help to formulate alternative strains of Modernism, Post-Modernism leading to the Current underpinnings of Production of Architecture.

ARCH 4224 - Professional Practice I - Codes and Technical Documents
Prerequisite: ARCH 3314
2-3-3

This course offers lecture and practicum. It introduces Standard Building Code, N.F.P.A. 101 and A.D.A and / or International Building Code. Emphasis is placed on theory of building safety, code document organization and the application of codes to actual buildings. The learning of codes is further extended by applying the code knowledge to producing an actual set of technical [contract] documentation of an assigned architectural project.

ARCH 5412 - Professional Practice II - Cost Control
Prerequisite: ARCH 4224
2-0-2

This course introduces methods commonly used concepts of building economics to create budgets for the construction cost of commercial building projects from conceptual discussions with the Owner and the early stage of development of the drawings and specifications. These methods are typically used by architects and general contractors for feasibility and value engineering and building economic studies. The focus of this course is to enable architectural students to effectively create realistic estimates of probable economic cost for their clients and thereby work as a team member with the Owner and General Contractor to establish and maintain a project budget throughout the process of project design and construction.

ARCH 5413 - Professional Practice III - Practice and Ethics
Prerequisite: ARCH 4014
3-0-3

Study of professional ethics, laws governing the practice of architecture, and contractual relationships are undertaken in this course.

ARCH 5593 - Thesis Prep
Corequisite: ARCH 4014
2-0-2

The course prepares students to develop topics for their Thesis Proposal. Students must develop a clear design premise supported with research and a clear methodology to develop a robust thesis proposal for their thesis Project.

ARCH 5998F - Focus Studio
Prerequisite: ARCH 4014, ARCH 5593
0-12-4

The annual Focus Studio at SPSU is an intrinsic part of the professional core of the Architecture Program and is designed to foster a strong relationship between the program, our students, and the profession as a whole. All qualified fifth year students have the option to select a studio critic according to their interest in a subject-based studio. The Focus Studio aims to produce high student performance while allowing for a broad range of experiences. The goal is that both the invited studio critics and the students learn and grow through mutual interest and research.

ARCH 5999R - Thesis Research S/U
Prerequisite: ARCH 4014, ARCH 5593
0-3-1

Students pursue their thesis topic conceived in the Thesis-Prep course [ARCH 5593] into a fully developed thesis proposal under the guidance of their thesis committee. Thesis Committee (two internal professors) must approve student Design Proposal. This course must be passed with a grade of an "S" [Satisfactory Progress] to move forward to Thesis Studio.

ARCH 5999T - Thesis Studio
Prerequisite: ARCH 5593, ARCH 5998F , ARCH 5999R
0-12-4

Design solutions must demonstrate Ability to produce evidence to meet and exceed applicable NAAB criteria set by the Faculty. Thesis Coordinators uphold theis procedures, standards and pedagogical mechanics keeping in view applicable NAAB student performance crietria [learning outcomes], values, principles and expectations of the Architecture Faculty in line with the vision and mission of the Arch Program and the University. Thesis Projects must follow the approved design proposal [ARCH 5593] and be properly documented according to the approved theis book layout, structure and table of contents. Thesis Project Book must be approved by student's Committee and Thesis Coordinator to be acceptable for publication. Thesis requirements will be considered incomplete without the submission of the Project Book according to the approved guidelines.

Arts

ARTS 2001 - Art Appreciation
Prerequisite: ENGL 1101
3-0-3

Appreciation of visual arts is developed through an introduction to the aesthetics, criticism, history, and production of visual art in the Western world. Some non-Western art will be included.

ARTS 2002 - Drama Appreciation
Prerequisite: ENGL 1101
3-0-3

Survey of drama as a performing art, considering both literary and nonliterary elements. Some non-Western drama will be included. In addition, attendance at one or more live dramatic performances will be required.

ARTS 2003 - Music Appreciation
Prerequisite: ENGL 1101
3-0-3

Survey of music in the Western world, including historical movements and basic musical notation. The course also covers some non-Western music, as well as contemporary, classical, and popular music.

ARTS 2004 - History of Contemporary American Music
Prerequisite: ENGL 1101
3-0-3

Survey of the development of contemporary American music genres from a historical and analytical perspective from the beginnings of American contemporary styles in the late nineteenth century to the present. Additionally, the course examines the social and historical context of various cultures in the American mosaic of people in the present time, especially the two primary cultures: those of European and African ancestries. Includes a music listening component and further develops some of the topics covered in ARTS 2003.

ARTS 2005 - University Bands
Prerequisite: Instructor's approval
1-0-1

University Bands involves the study, rehearsal, and performance of concert band literature through the concert band performance medium with emphasis primarily in the Western European art music tradition of the past 500 years, with some exposure to music of other cultures. Students will develop skills in tone production, intonation, and technique, and become knowledgeable in music theory, aural skills, and music history. May be repeated for credit.

ARTS 2010 - Introduction to Drawing
3-0-3

Regardless of drawing experience, students will develop drawing skills using pencil, ink, and charcoal to master shading, contour, gesture, and perspective techniques. Studio Course; open to all students.

ARTS 2020 - History and Principles of Design
Prerequisite: ENGL 1102
3-0-3

This course is designed to introduce students to the history of design practices and the general principles surrounding visual structure and aesthetics in design practice. It focuses on the history of layout, color, and form and development in art and advertising, and specific differences between design practices for different media, subject matter and audiences. This class is essential to understanding design principles and how they have developed with cultural changes and new modes of visual presentation with new media.

ARTS 2110 - Painting and Mixed Media
Prerequisite: ARTS 2010
3-0-3

This course is an introduction to the basic elements and techniques of painting. Students will learn how to use, manipulate and transform paint into creative works building upon basic composition and drawing techniques studied in Drawing. Students will use acrylic and mixed mediums, studying the differences between the mediums and how to apply them to create artworks. The course will explore formal elements of art through painting including shape, line, form, color, composition, texture and movement. Color theory will be emphasized and an important element of the class. Students are introduced to a number of different techniques of painting to help them develop their own unique style while exposing them to traditional methods through exercises. Critical thinking and problem solving skills will be emphasized through the practice and critique. All students are required to participate in critiques.

ARTS 2220 - 2D and 3D Design
Prerequisite: ARTS 2010
3-0-3

This course is an introduction to the basic elements and techniques of 2-and3-dimensional design. While investigating, analyzing, and evaluating historical and cultural 2-and3-dimensional artworks, students will manipulate form and space to create effective 2-and 3-D projects.

ARTS 2903 - Music Theory
Prerequisite: ENGL 1101; ARTS 2003 or Departmental Approval
3-0-3

Music theory is an in-depth study of how music is "put together". Concepts learned are note reading; rhythmic notation; major and minor scales; time and key signatures; intervals; triads; triad inversions; I, IV, V7; cadences; Roman numeral analysis. It is highly recommended that students have a basic music-reading background.

ARTS 3000 - Visual Thinking
Prerequisite: TCOM 2010 or ARTS 2001
3-0-3

Study of visual thinking as an alternative to and enhancement of verbal and mathematical thinking. Helps students develop creative problem-solving skills by (1) analyzing types of conceptual blocks, and (2) developing techniques that use order and visual coherence to overcome these blocks. Students may be required to produce graphic solutions to problems; however, prior drawing experience is not required.

ARTS 3010 - Drawing for New Media
Prerequisite: ARTS 2010
3-0-3

Building on skills acquired in Intro to Drawing, this next-step course is designed to further strengthen and refine drawing and compositional abilities. Students explore the descriptive and expressive manipulation of materials using charcoal, graphite pencil, pen and ink, and colored media, while learning to create more volumetric and spatial drawings through the use of value and composition. Ultimately students develop confidence approaching a wide variety of subject matter as part of a well-composed drawing. Students will be asked to expand their stylistic approaches to include both non-objective/abstract drawing as well as representational drawing. Emphasis will be placed on augmenting and creating drawings through digital means. Those digital means include using tablets and other digital sources to create imagery related to drawing. Students will be challenged to think more conceptually and work on creative problem solving skills. Students will explore conceptual issues generated from the student's own ideas and experiences.

ARTS 3100 - History of New Media Arts
Prerequisite: ARTS 3000
3-0-3

The course is a study of the history of new media arts as it pertains to art and design. students will learn about how early developments in photography, cinema and computer aided arts lead to the advanced media arts practices that make up fine and applied arts today. Students will learn about and use traditional art mediums and understand how they work in tandem with new media creativity.

ARTS 3170 - Digital Photography
Prerequisite: ARTS 2020
3-0-3

This course will explore digital technology for its potential to push photography's aesthetic and conceptual boundaries. Fundamental photographic theory and its contexts within visual culture will be discussed. This course will explore the basics of digital equipment, encoding a practical introduction to digital photo editing and digital printing. In addition to basics in composition, exposer, aperture, shutter speed, and lighting, students will learn about different file types and how to use them effectively for editing with photography software.

ARTS 4100 - Media Arts Studio
Prerequisite: TCOM 3430 AND ARTS 3100 or ARTS 2220
3-0-3

The course concentrates on using new media as a means of creating artwork. The course is designed to allow students to use new media as a means of creating alternative ways of communicating. Students will study contemporary artists and their unique approaches to communication using new media in a fine art capacity. They will plan and execute individual art projects using various new media tools.

ARTS 4270 - Advanced Digital Video
Prerequisite: TCOM 4170
3-0-3

This course focuses on advanced video practices. Students will learn traditional and new practices in narrative construction using film and video. They will study methods for producing traditional, genre-specific film styles as well as contemporary practices and methods of camera technique and editing used in filming short documentaries, web based narratives and social media environments.

Students should start the class with technical competence in camera operations and compositional techniques for video, as well as advanced editing capabilities with current editing software. The class will also work with script writing and storyboarding methods for construction narratives. Advanced professional video production equipment will be used, so students should have some familiarity with professional video equipment upon entering the course.

ARTS 4600 - Directed Study
Prerequisite: Twenty-one hours of courses in the major
3-0-3

Directed Study in media arts provides students with an opportunity to pursue advanced study in a specialized area of media arts beyond what is covered by the program's curriculum. Directed study may also be used by an undergraduate major who needs to complete an undergraduate requirement in the major that is not offered before the student's graduation date.

ARTS 4700 - Internship
Prerequisite: Junior Standing, 3.0 or better GPA in major
3-0-3

An opportunity for students to apply principles and techniques of new media arts in a specific organization. The student is responsible for finding an Internship according to program guidelines. Each internship is monitored by the student's advisor.

ARTS 4800 - Senior Portfolio
Prerequisite: Senior standing, completion of 24 hours of upper level courses in major.
3-0-3

Course examines portfolios as new media artists and practitioners. The course includes portfolio and writing theory along with a collaborative workshop environment. Students develop a professional portfolio of sample works based on course projects, internship experiences, and/or work history. In addition, students write a reflective paper examining their growth and maturity as media artists and new media practitioners. Interviewing techniques, resume writing, and the jog search process are included in the course. Cross-listed as ENGL 4800 and TCOM 4800

ARTS 490X - Special Topics
Prerequisite: Departmental Approval
3-0-3

Advanced topics in New Media arts. This course provides students with the opportunity to pursue specialized topics within New Media Arts. The content of this course will vary from semester to semester, and will be offered at the discretion of the department. Students can take this course multiple times for degree credit.

Astronomy

ASTR 1000K - Introduction to the Universe
Prerequisite: A grade of C or better in MATH 1111
3-2-4

A survey of the universe, examining the historical origins of astronomy; the motions and physical properties of the Sun, Moon, and planets; the formation, evolution, and death of stars; and the structure of galaxies and the expansion of the universe. Laboratory exercises supplement classroom work.

ASTR 1010K - Introduction to the Universe II
Prerequisite: A grade of C or better in MATH 1111 and ASTR 1000K
3-2-4

A survey of the universe, examining the historical origins of astronomy; the motions and physical properties of the Sun, Moon, and planets; the formation, evolution, and death of stars; and the structure of galaxies and the expansion of the universe. Laboratory exercises supplement classroom work.

Biochemistry

BIOC 3111K - Biochemistry I
Prerequisite: CHEM 2512K
3-3-4

An introduction to the structure, chemistry and metabolism of biomonomeric molecules, with emphasis on monosaccharides, amino acids and fatty acids. Laboratory exercises supplement classroom work.

BIOC 3112K - Biochemistry II
Prerequisite: BIOC 3111K
3-3-4

Continuation of Biochemistry I, with emphasis on the structure, chemistry and metabolism of biomacromolecules, biopolymers/biocomplexes. Laboratory exercises supplement classroom work.

BIOC 3115K - Physical Biochemistry
Prerequisite: BIOC 3111K
3-3-4

General principles of biomolecular thermodynamics, cryogenics, kinetics, homeostasis, electrodynamics, and ultrasonics, and their applications to biological systems. Laboratory exercises supplement classroom work.

BIOC 39XX - Special Topics
1 to 5

Special topics selected by the department. Offered on a demand basis.

BIOC 4200 - Medicinal Chemistry and Drug Discovery
Prereq/Corequisite: BIOC 3111K
3-0-3

An introduction to the basic principles and concepts of drug discovery and action. This course will cover drug structure, structure activity relationships (SAR), drug targets, mechanisms of drug

action, pharmacokinetics, signal transduction and modern methods of drug discovery and drug development.

BIOC 490X - Special Topics
1 to 5

Special topics selected by the department. Offered on a demand basis.

Biology

BIOL 2050 - Fundamentals of Human Anatomy & Physiology I
Corequisite: BIOL 2050L
3-0-3

The first of a two semester course which introduces human anatomy and physiology as it pertains to individuals seeking a career in Health Sciences. Primarily using an online format, the course will cover the fundamentals of human anatomy and physiology, focusing on homeostasis, cell physiology, as well as highlighting the endocrine and nervous systems, and muscle physiology.

BIOL 2050L - Fundamentals of Human Anatomy & Physiology Lab
Corequisite: BIOL 2050
0-3-1

Introduction to human anatomy and physiology as it pertains to individuals seeking a career in Health Sciences. In a laboratory setting, the course will cover the fundamentals of human physiology, focusing on homeostasis, cell physiology, as well as highlighting the nervous system and muscle physiology. Mammalian dissection will be highlighted.

BIOL 2051 - Fundamentals of Human Anatomy & Physiology II
Prerequisite: BIOL 2050 , BIOL 2050L
Corequisite: BIOL 2051L
3-0-3

The second of a 2 semester course which introduces human anatomy and physiology as it pertains to individuals seeking a career in Health Sciences. Primarily using an online format, the course will cover the fundamentals of human anatomy and physiology, focusing on the cardiovascular, urinary, digestive, reproductive systems, as well as energy and fluid balance.

BIOL 2051L - Fundamentals of Human Anatomy & Physiology II Lab
Prerequisite: BIOL 2050 and BIOL 2050L
Corequisite: BIOL 2051
0-3-1

Introduction to human anatomy and physiology as it pertains to individuals seeking a career in Health Sciences. In a laboratory setting, the course will cover the fundamentals of human anatomy and physiology, focusing on the cardiovascular, urinary, endocrine, reproductive systems, as well as energy and fluid balance. Mammalian dissection will be highlighted.

BIOL 2099 - Biology Teaching Assistant
Prerequisite: Junior standing, a "B" or better
0-3-1

This course is an opportunity to develop teaching, leadership, and communication skills by assisting

in a biology course they have already taken. The student teaching assistant aids the professor in the setup/takedown of the laboratory and assists the professor during the lab period. The teaching assistant is expected to be the primary instructor (with professor supervision) of at least two labs during the semester.

BIOL 2107 - Principles of Biology I
Corequisite: BIOL 2107L
3-0-3

This is the first course in a two-semester sequence covering the fundamental principles of biology. Topics include the chemistry of life, cell structure and functions, bioenergetics, genetics, basic statistics, biotechnology, and evolution.

BIOL 2107L - Principles of Biology I Laboratory
Corequisite: BIOL 2107
0-3-1

This lab corresponds with BIOL 2107 lecture. This course focuses on major concepts addressed in lecture, including plant and animal structure and divisoin, biochemical processes such as enzyme activity and osmosis, Mendelian and population genetics, and DNA manipulation and analysis. Skills to be developed include making scientific observations, performing experiments, and generating and interpreting data.

BIOL 2108 - Principles of Biology II
Prerequisite: BIOL 2107 and BIOL 2107L
Corequisite: BIOL 2108L
3-0-3

This is the second course in a two-semester sequence covering the fundamental principles of biology. Topics include organ system anatomy and physiology, a survey of the diversity of life, animal behavior, and ecology.

BIOL 2108L - Principles of Biology II Laboratory
Prerequisite: BIOL 2107 and BIOL 2107L
Corequisite: BIOL 2108
0-3-1

This lab corresponds with BIOL 2108 lecture. This course focuses on the diversity and anatomical features of prokaryotes, protists, fungi, plants, and animals, the structure and function of vertebrate organ systems, and the ecological mechanisms controlling population growth. Students will develop skills in microscope use, animal dissection, and analytical techniques.

BIOL 2500K - Bioinformatics I - Tools & Databases
Prerequisite: BIOL 2107 , BIOL 2107L
3-3-4

This course covers the use of computational methods to access biological information. Concepts covered include introduction to databases, pairwise and multiple sequence alignments, structural homology, structural motifs and databases, homology modeling of macromolecules, phylogenetic trees, energy minimization and relaxation and molecular docking.

BIOL 2800 - Drug Development and Regulation
Prerequisite: CHEM 1211, 1211L and CHEM 1212, 1212L, a "C" or better in BIOL 2107 and BIOL 2108
3-0-3

Examination of the development process of new prescription pharmaceuticals, over-the-counter drugs, and biologics. Topics include non-clinical characterization of new drug entities, regulatory requirements and the role of the FDA, and the design and structure of clinical trials.

BIOL 3000K - Genetics
Prerequisite: BIOL 2107, BIOL 2107L
3-3-4

Structure, function, regulation, and transmission of hereditary information in viruses, prokaryotes, and eukaryotes. Laboratory includes exercises in both classical and molecular genetics.

BIOL 3100K - Microbiology
Prerequisite: BIOL 3000K
3-3-4

The morphology, physiology, genetics and biochemistry of microorganisms with emphasis on bacteria and viruses. Laboratory exercises supplement classroom work. Biochemistry I is recommended , but not required, prerequisite for this course.

BIOL 3200K - Applied Molecular Biology Laboratory
Prerequisite: BIOL 3310K
3-3-4

Application of modern molecular biochemical techniques and principles in a project-based laboratory setting. Students will use recombinant DNA technologies to pursue research projects, present results in informal group meetings, and be responsible for keeping records of all experiments and data for possible publication in research journals. May require additional time outside of the scheduled lab hours.

BIOL 3201 - Biophysics I
Prereq/Corequisite: BIOC 3111K
3-0-3

An introduction to the biophysics of living systems with emphasis on growth, energy transduction, transport processes, light and vision.

BIOL 3202 - Biophysics II
Prerequisite: PHYS 3001
3-0-3

A continuation of Biophysics I with emphasis on the biophysical aspects of contractile and neural systems, kinesiology, biomedical applications of radiation, thermal, magnetic resonance and sonic techniques.

BIOL 3250K - Ecosystem Ecology
Prerequisite: BIOL 2108 and BIOL 2108L , CHEM 1211 and CHEM 1211L
3-3-4

Ecosystem ecology is the study of energy and material flows (water, nutrients) through both the living (plants, animals, microbes) and non-living (soils, atmosphere) components of natural systems. Classes and lab exercises will examine the influence of biological, ecological and physical processes on energy and elemental cycling (C, N,P), considering the roles of microorganisms, plants and animals and whole ecosystems. Factors that regulate the ecosystem function including soils, climate, disturbance, and human activities will be considered from the molecular to the global scale. Cross-listed as ENVS 3250K Ecosystem Ecology

BIOL 3300K - Ecology
Prerequisite: BIOL 2108, BIOL 2108L or ENVS 2202K
3-3-4

An examination of the relationship of organisms with their abiotic and biotic environments. Population, community, and ecosystems interactions are evaluated from both ecological and environmental perspectives.

BIOL 3310K - Molecular Biology
Prerequisite: BIOL 3000K
3-3-4

Examination of the synthesis, function and modification of nucleic acids. Includes gene expression and regulation with an emphasis on experimental approaches used to study them. Laboratory exercises use modern techniques to reinforce lecture material and may require additional time outside of the scheduled lab hours.

BIOL 3400K - Cell Physiology
Prerequisite: BIOL 2108, BIOL 2108L , BIOL 3000K
3-3-4

An overview of the structure and function of cells and their organelles. Includes membrane structure and transport, catabolism, energy metabolism, photosynthesis and biosynthesis. Laboratory exercises use modern techniques to reinforce lecture material.

BIOL 3500 - Biostatistics
Prerequisite: MATH 2260
3-0-3

This course provides an overview of commonly used statistics in biological research, including t tests, analysis of variance, regression analysis, covariate analysis, and other techniques. Students gain practical experience in applying statistical tests to biological data. Other topics covered include a review of the scientific method and proper design of research experiments in biology.

BIOL 3600 - Freshwater Biology
Prerequisite: BIOL 2108
3-0-3

An examination of freshwater biota and their environments, with emphasis on the ecology of organisms and the structure and function of freshwater communities and ecosystems.

BIOL 3650 - Marine Biology
Prerequisite: BIOL 2108, BIOL 2108L
3-0-3

This course is designed to help students understand the physical and biological aspects of the marine environment, as well as the impact of humans on oceanic ecosystems. Although this course will emphasize and ecological perspective, examples of marine flora and fauna will be described to elaborate on important points.

BIOL 3700K - Ichthyology
Prerequisite: BIOL 2108, BIOL 2108L
3-3-4

A survey of fishes, with emphasis on the anatomy and physiology, taxonomy, evolutionary history, and ecology of these organisms. Field and laboratory exercises will develop skills in fish identification and the analysis of fish populations and assemblages.

BIOL 4100K - Entomology
Prerequisite: BIOL 2108, BIOL 2108L
3-3-4

An overview of the study of insects including: functional anatomy and physiology, life histories, taxonomy, behavior, ecology, insects as vectors of pathogens, chemical and biological control of pests.

BIOL 4110 - Parasitology
Prerequisite: BIOL 2108, BIOL 2108L
3-0-3

This course is designed to provide students with an understanding of classical parasitology, with emphasis on parasites of major medical/veterinary importance. Topics covered will include basic principles of parasitology, life cycles, epidemiology, host-parasite interactions, host-parasite population dynamics, drug treatments and vector control programs.

BIOL 4200K - Zoology
Prerequisite: BIOL 2108, BIOL 2108L
3-3-4

A survey of the animal phyla emphasizing morphology, life histories, ecology, evolution, behavior, and coordination of structure and function.

BIOL 4300 - Virology
Prerequisite: BIOL 3000K
3-0-3

Topics explored include the structure and replication strategies of virus, techniques used for the study and diagnosis of viruses, the immune system defense against viruses, and the relationship between viruses and cancer. The historical significance, pathogenesis and replication of important human viruses can be discussed in detail.

BIOL 4350K - Cell and Tissue Culture
Prerequisite: BIOL 3400K
2-4-4

This course covers the culturing of eukaryotic cells, tissues, and organs in vitro. Lectures topics include the history of tissue culture, cell lines, basic cell culture techniques, stem cells, and tissue engineering. In laboratory, students will investigate the propagation of adherent and non-adherent cell lines, cloning techniques, primary cell and organ explants cultures, and sterile micropropagation of plant tissues.

BIOL 4400K - Human Physiology
Prerequisite: BIOL 2108, CHEM 1211, 1211L
3-3-4

This course is designed to introduce biology majors to the fundamentals of mammalian physiology, with the human as the model organism. This course emphasizes the normal functioning of the human body, homeostatic mechanisms, and the relationship between form and function; however, disease states will be described at various times to illustrate how normal functions become

disrupted.

BIOL 4410 - Immunology
Prerequisite: A "C" or better in BIOL 3000K
3-0-3

Biology of the immune system including the functions and interactions of the innate and adaptive immune system components, T lymphocyte classes, antibody-antigen interactions, structure and function of antibodies, and the cellular and physiological consequences of the immune response as it pertains to anti-pathogen responses, hypersensitivities, autoimmunity, vaccination and transplantation biology.

BIOL 4420K - Advanced Immunology
Prerequisite: PHYS 4410K
3-3-4

The lecture material focuses in depth on the molecular and cellular events of innate and adaptive immune responses. The function of the innate immune system and rudimentary immune systems in lower organisms will be discussed. Intracellular signaling following cytokine or antigen receptors binding will be presented. Case studies and primary research literature supplement lecture material. Laboratory work uses modern immunological techniques to reinforce lecture material and may require additional time outside of the scheduled lab hours.

BIOL 4430K - Animal Physiology
Prerequisite: BIOL 2108 and BIOL 2108L , CHEM 1212 and CHEM 1212L , PHYS 1111 and PHYS 1111L
3-3-4

This course examines the homeostatic and physiological mechanisms that allow animals to survive in a wide range of extreme environments. Topics include, but are not limited to, respiration, metabolism, nervous/endocrine control systems, cardiovascular physiology, water balance/regulation, thermal biology, locomotion, and musculoskeletal physiology.

BIOL 4440K - Botany
Prerequisite: BIOL 2108, BIOL 2108L
3-3-4

A survey of land plants, with emphasis on the ecology, field identification, economic importance, and natural history of these organisms. Laboratory exercises supplement classroom work.

BIOL 4460K - Human Anatomy
Prerequisite: BIOL 2108,BIOL 2108L, CHEM 1211, CHEM 1212L
3-3-4

This course is designed to introduce biology majors to the anatomical structure of the human body. Body structure will be studied from an organ system perspective, and will include histological and gross anatomical examinations. Particular emphasis will be placed on the relationship between form and function in the human body. Laboratory activities will involve working with human skeletons, models, diagrams, and dissection of animal cadavers/preserved specimens.

BIOL 4470 - Plant Physiology
Prerequisite: BIOL 3000K, BIOC 3111K
3-0-3

Introduction to plant physiology, including biochemical, genetic and developmental aspects of the

plant life cycle. Topics include: photosynthesis, respiration, metabolism, water relations, plant hormones, embryogenesis and early development, flowering, stress physiology, response to pathogens and plant genetic engineering.

BIOL 4480 - Evolution
Prerequisite: BIOL 2108, BIOL 2108L
3-0-3

Origins of life-mechanisms and processes of organic evolution stressing evidence from population genetics, systematics, paleontology, and comparative physiology; biochemistry; the evolution of humans and human culture.

BIOL 4510K - Bioinformatics II
Prerequisite: BIOL 2500K
3-3-4

The course covers use of homology to extract information about structure and function from amino acid, DNA and RNA sequences. Concepts covered include structural homology, structural motifs and databases, homology modeling of macromolecules, energy minimization and relaxation, molecular docking, and introduction to molecular dynamics.

BIOL 4550 - Cancer Biology
Prerequisite: BIOL 3400K
3-0-3

This course will present an overview of the cancer development process at the cellular and molecular level, including regulatory networks involved in growth control and tissue organization and an introduction to anima, cell and molecular techniques for studying progression, treatment and prevention of cancer.

BIOL 4600K - Biotechnology
Prerequisite: BIOL 3310K and BIOL 3400K
3-3-4

Fundamentals of biotechnology and its applications in microbial and eukaryotic systems. Topics include transgenic organisms, cloning, medical diagnostics, therapeutics, vaccines, environmental biotechnology, and regulation and societal issues. Laboratory exercises use modern techniques to reinforce lecture material.

BIOL 4700 – Internship
Prerequisite: Junior standing
3-0-3

An opportunity for students to apply principles and techniques of biology in a specific organization. The student is responsible for finding an internship, but the biology program office will assist. The student must submit a written proposal describing the internship according to department guidelines. Each internship is monitored by the student's advisor.

BIOL 490X - Special Topics
Prerequisite: Senior standing or permission of department
1-0-1

Special research projects offered by the program faculty on a student demand/need basis.

Business, Marketing and Finance

MGNT 390x - Special Topics
Prerequisite: Junior standing
1 to 5

Special topics offered by the department on a demand basis.

MGNT 490x - Special Topics
Prerequisite: Senior standing
1 to 5

Special topics offered by the department on a demand basis.

MGNT 1000 - Orientation to Business
1-0-1

A part of this course is devoted to an orientation to the Business Administration Department, to college policy, and to expectations for students. The rest of the course is devoted to an orientation to the field of Business Administration.

MGNT 2201 - Business Computer Applications
Prerequisite: MGNT 1000
3-0-3

Study of the role of the computer as a tool used for business. Topics include business software such as word processing, spreadsheets, database, presentation, and Internet applications.

MGNT 3105 - Management and Organizational Behavior
3-0-3

This course integrates the study of management principles and practices with the study of human behavior within organizations. The focus will be upon translation of management and organizational behavior theory to practices which result in organizational effectiveness, efficiency, and human resources development.

MGNT 3120 - Entrepreneurial Finance
Prerequisite: ACCT 2101
3-0-3

An introductory course to cover the entrepreneurial process from the business idea to the implementation of a new venture. There is an emphasis on assessing opportunities, planning, securing financial capital, launching and implementation. This course will not substitute for MGNT 3125 Business Finance.

MGNT 3125 - Business Finance
Prerequisite: ACCT 2101
3-0-3

An introductory course on financial analysis, budgeting, sources and uses of funds, management of assets, short and long run financial strategy and interpretation of financial data as these relate to the process of business decision-making.

MGNT 3135 - Principles of Marketing
3-0-3

Examination of the ways organizations satisfy consumer and organizational needs and wants for products and services. Emphasis is placed on the creation of value for customers and how the elements of the marketing mix are used to provide customer satisfaction in the marketing of goods and services, both domestically and internationally. Offered every semester.

MGNT 3145 - Legal Environment of Business
3-0-3

Legal Environment of Business introduces students to the fundamental legal and regulatory parameters that define, promote, and limit business activities. Topics covered include: overview of the law and the American legal system; Ethical Considerations; Constitutional Law; Torts: Contracts: Business Organization: Partnership and Corporate Law and the various business activities.

MGNT 3170 - Leadership
Prerequisite: MGNT 3105
3-0-3

This course is a comprehensive study of organizational leadership and will introduce concepts of the nature of power, leadership, and roles and responsibilities of management. Leadership theories, frameworks, techniques, organizational structures, methodologies, case studies, and procedures used in leadership will also be covered.

MGNT 3205 - Management Information Systems
Prerequisite: MGNT 2201 or CM 3000
3-0-3

Study of information systems and management in business environments. Provides fundamental concepts on the needs of management, the use of information technology in various business subsystems, the use of information systems to gain a competitive advantage, and managing information as an organizational resource.

MGNT 3210 - Professional Selling and Customer Relationship Management
Prerequisite: MGNT 3135
3-0-3

Focus is on developing and maintaining customer relationships, professional selling, understanding organizational buying behavior, customer opportunity analysis, problem identification, needs assessment, value analysis, and value-based selling. Both analytical and sales/selling skills are developed. Offered as an elective.

MGNT 3224 - Business Marketing
Prerequisite: MGNT 3135
3-0-3

In recent years, the role of marketing within corporate business has become more widespread and defined. With global markets has come increased competition that requires attunement to customer needs and demands in order to survive. This course focuses on the expanded contemporary marketing strategies that are essential for today's business graduate, who intends to serve the needs of organizations rather than households. Emphasis will be placed on case studies, group presentations, and class interactions.

MGNT 3228 - Market Research
Prerequisite: MGNT 3135 and IET 2227
3-0-3

The value and methods of marketing research in the context of business decision making are explored. The course stresses the scientific process and its relation to the marketing process of defining the problem, collecting, tabulating, analyzing data for the purpose of reducing the risks associated with decision making. Student readings, cases, and assignments are used. Offered as an elective.

MGNT 3231 - Management of Financial Institutions
Prerequisite: MGNT 3125
3-0-3

The purpose of this course is to provide a broad Introduction to the foundations of financial management within financial institutions. It focuses on a set of theories and applications that forms the basis for the financial institutions organization and risk management.

MGNT 3500 - Database Management
Prerequisite: MGNT 2201
3-0-3

Focuses on fundamental concepts for database management and components of information systems within the functional areas of business. Covers analysis, design, implementation, maintenance, and administration of databases. Focuses on the application of database software to manage resources and support managerial and operational decision making.

MGNT 4075 - Healthcare Management
3-0-3

This course emphasizes essential management skills in the health care industry such as planning, organizing, directing, and controlling. This course addresses the supply chain of health care services involving physicians and health care organizations. Topics include health care finance, accounting, billing, budgeting, and theories of human resources management.

MGNT 4100 - Business Systems Analysis and Design
Prerequisite: MGNT 2201 or Equivalent Experience
3-0-3

Provides practice in structured analysis and design of business processes, with emphasis on the development of information systems for a variety of business environments. Topics include maintenance of information systems, systems development life cycles, systems success factor, and systems investigation, analysis, design, development, and implementation.

MGNT 4103 - Marketing Management
Prerequisite: MGNT 3135
3-0-3

The marketplace has been transformed from historical production domination to a consumer driven catalyst based on abundant supplies of products and services and the emergence of a world marketplace. This transformation has created the need for managers to understand the mechanisms that drive production and consumption; a process referred to as "marketing." This course will deliver the logic and common sense associated with sound marketing management principles under changing global conditions.

MGNT 4115 - Human Resource Management
Prerequisite: MGNT 3105
3-0-3

The course introduces the technical and legal aspects of human resource management. Topics include: human resources planning, recruitment, selection, training and development, performance appraisal, compensation, labor relations, occupational health and safety , and the evaluation of human resources management programs.

MGNT 4125 - Technology and Public Issues
Prerequisite: MGNT 3105
3-0-3

This course examines developing technologies and the impact on society and business. The stakeholders, policy shapers, and decision makers of the future need to address the social implications of technology, guide society to the appropriate uses of technology, alert society to technology failures, and provide a vision to society in helping to solve societal problems in a wise and humane manner.

MGNT 4135 - Project Management
Prerequisite: IET 2227 and (MGNT 3105 or IET 2305)
3-0-3

This course will provide a comprehensive, balanced view, one which emphasizes both the behavioral and quantitative sides of project management. A study of the systems philosophy, systems development process, human organizations and behavior, methods and procedures, and managing systems will provide the background necessary for managers to "do" project management.

MGNT 4140 - Management of Networks and Telecommunications
3-0-3

This course focuses on the management components of telecommunications/data communications system for business. Special emphasis is placed on technical and managerial issues related to the design, operation, and maintenance of computer networks. Topics include communication devices and architecture, local and wide area networks, and other telecommunications aspects.

MGNT 4145 - International Management
Prerequisite: MGNT 3105 , MGNT 3135
3-0-3

This course prepares students for careers in a dynamic global business environment where strategic, organizational, and interpersonal management skills are critical. Such topics studied are global manager's environment, culture context, strategy formulation and implementation of global operations, and global resource management.

MGNT 4151 - Operations Management
Prerequisite: IET 2227 and (MGNT 3105 or IET 2305)
3-0-3

A first course in production/operations management. Topics include forecasting, master planning, MRP, productivity, competitiveness, strategy, product and service design, process selection, capacity planning, facility layout, design of work systems, and location planning.

MGNT 4185 - Technology Management
Prerequisite: MGNT 3105
3-0-3

This course focuses on the management of technologies within organizations. Specific topics include the management of innovation, technological development, research and development, the justification and strategic implications of new technologies, and the development of a technological strategy. The management of both manufacturing and information technologies will be emphasized.

MGNT 4190 - Entrepreneurship
Prerequisite: MGNT 3105 and MGNT 3135
3-0-3

This course is about new venture creation. You should learn the role and place of new ventures as they relate to the creation of personal wealth, employment in general community, and their impact upon our daily lives.

MGNT 4195 - Current Readings in Management of Technology and Operations
Prerequisite: MGNT 3105
3-0-3

This course will examine how technology impacts public issues. The content of the course will be based on the issues currently of concern and will range from ecology to health care to telecommunications.

MGNT 4232 - Financial Planning and Capital Budgeting
Prerequisite: MGNT 3125
3-0-3

This course is designed to provide students with an in depth background in financial planning and corporate capital budgeting decisions.

MGNT 4233 - Investment Analysis and Portfolio Management
Prerequisite: MGNT 3125
3-0-3

This course introduces the major theoretical foundations of portfolio management and investment analysis. It covers the skills necessary to conduct an assessment of investment decisions, security analysis, portfolio risk measurement and asset allocation.

MGNT 4234 - International Finance
Prerequisite: MGNT 3125
3-0-3

This course provides an in-depth understanding of the risks and opportunities facing a multinational corporation. Specifically, it focuses on managerial decisions regarding exchange rate exposure, international capital budgeting, and managing economic exposure and translation exposure. It offers an extensive introduction to foreign exchange rate determination, factors and forecasting.

MGNT 4545 - Legal Environment of Business II
Prerequisite: MGNT 3145
3-0-3

Legal Environment of Business II is an intermediate course that examines the fundamental legal and regulatory parameters in the accounting environment. Topics covered include ethics, a review of contract law, negotiable instruments, agency and employment, adminstrative law, international law, consumer protection, insurance, securities regulation, real property, environmental law, personal property and estate law.

MGNT 4595 - Business Strategy
Prerequisite: Senior standing
3-0-3

An examination of the process of managing the total organization. Emphasizes innovations in structure, product, markets, and long-term organizational commitments as these relate to organizational success. Capstone course for the degree.

Chemistry

CHEM 1211 - Principles of Chemistry I
Prerequisite: MATH 1111, or MAT 1+MAT 2 score is 24 or higher
Corequisite: CHEM 1211L
3-0-3

First course in a two-semester sequence covering the fundamental principles and applications of chemistry designed for science majors. Topics to be covered include composition of matter, stoichiometry, periodic relations, and nomenclature.
Also offered as an eCore (online) course as CHEM 1211K with lab included (3-3-4).

CHEM 1211K - Principles of Chemistry (ECORE)
Prerequisite: High school chemistry course with laboratory or introductory college chemistry course with laboratory. Pecalulus MATH 1113 required with a grade of "C" or higher.
3-3-4

First course in a two-semester sequence covering the fundamental principles and applications of chemistry designed for science majors. Topics to be covered include composition of matter, stoichiometry, periodic relations, and nomenclature. Lab is included; laboratory exercises supplement the lecture material. (eCoreCourse - Online) This course is equivalent to CHEM 1211 & CHEM 1211L.

CHEM 1211L - Principles of Chemistry I Lab
Prerequisite: MATH 1111 , or MAT 1 + MAT 2 score is 24 or higher
Corequisite: CHEM 1211
0-2-1

Laboratory exercises designed to supplement the lecture material presented in Principles of Chemistry I.

CHEM 1212 - Principles of Chemistry II
Prerequisite: CHEM 1211, CHEM 1211L or CHEM 1211K
Corequisite: CHEM 1212L
3-0-3

Second course in a two-semester sequence covering the fundamental principles and applications of chemistry designed for science majors. Topics to be covered include properties of substances and solutions, kinetics, equilibrium, acids and bases, thermodynamics, and electrochemistry. Also offered as an eCore (online) class with lab included (3-3-4).

CHEM 1212K - Principles of Chemistry II (ECORE)
Prerequisite: CHEM 1211K   Precalculus as a prerequisite or co-requisite is highly recommended.
3-3-4

Second course in a two-semester sequence covering the fundamental principles and applications of chemistry designed for science majors.
Lab is included; laboratory exercises supplement the lecture material. (eCore Course - Online) This course is equivalent to CHEM 1212 & CHEM 1212L.

CHEM 1212L - Principles of Chemistry II Lab
0-3-1

Laboratory exercises designed to supplement the lecture material presented in Principles of Chemistry II.

CHEM 2510 - Survey of Organic Chemistry
Prerequisite: CHEM 1211, CHEM 1211L or CHEM 1211K
3-0-3

A survey of the chemistry of the compounds of carbon. Topics include a study of the synthesis, reactions, and properties of acyclic and cyclic compounds and their derivatives.

CHEM 2511K - Organic Chemistry I
Prerequisite: CHEM 1212, CHEM 1212L or CHEM 1212K
3-3-4

An introduction to the chemistry of the compounds of carbon. Topics include a study of the synthesis, reactions, reaction mechanisms, and properties of acylic and cyclic compounds and their derivatives. Laboratory exercises supplement classroom work.

CHEM 2512K - Organic Chemistry II
Prerequisite: CHEM 2511K
3-3-4

A continuation of the study of organic molecules. Topics include a survey of heterocycles, natural products and synthetic polymers. Laboratory exercises supplement classroom work.

CHEM 2601 - Chemical Literature
Prerequisite: CHEM 1212, CHEM 1212L or CHEM 1212K
2-0-2

This course will focus on familiarization with the scholarly literature used in the chemistry discipline. Students will study the techniques for efficient information searching, use of online data bases in locating books, journals, patents, scholarly papers, etc. Students will also focus on the MLA and the APA style for developing a list of references.

CHEM 3100K - Analytical Chemistry
Prerequisite: CHEM 1212, CHEM 1212L or CHEM 1212K
3-6-5

An introduction to classical and instrumental methods of quantitative analysis and their underlying principles. Laboratory exercises supplement classroom work.

CHEM 3150K - Environmental Chemistry
Prerequisite: CHEM 1212, CHEM 1212L   or CHEM 1212K with a grade of "C" or better
3-3-4

This course provides the fundamentals of environmental chemistry. Topics covered include sources, reactions, transport, effects, and fates of important chemical species in atmosphere, hydrosphere and lithosphere. Major environmental issues discussed ozone destruction, photochemical smog, acid rain, climate change, heavy metals and waste management. Laboratories involve sampling and sample preparation, qualitative and quantitative analysis and data treatment. Cross-listed as ENVS 3150K Environmental Chemistry

CHEM 3200K - Atmospheric Chemistry
Prerequisite: CHEM 1212, CHEM 1212L PHYS 1112, PHYS 1112L
3-0-3

Atmospheric chemistry is a branch of environmental science in which chemistry processes in the atmosphere are studied. It is designed for science major students with junior or senior status. Topics in this course include: atmosphere layers, atmospheric transport, biogeochemical cycles of gaseous nitrogen, oxygen, carbon, and sulfur compounds, aerosol, fog, smog, and acid rain, troposphere air pollutions, ozone hole and stratosphere ozone depletion, green house gases and global warming, industrial revolution and anthropogenic climate change, chemical kinetics in mesosphere and thermosphere, cicumsteller and planetary atmosphere. Atmospheric chemistry is aimed to show students how to use the fundamental principles of physics and chemistry to describe phenomena is aimed to show students how to use the fundamental principles of physics and chemistry to describe phenomena and solve problems in a complex system (atmosphere).

CHEM 3300K - Instrumental Analysis
Prerequisite: CHEM 3100K
3-3-4

Principles of operation and application of instrumental methods including ultraviolet/visible and infrared spectroscopy, atomic absorption and emission, nuclear magnetic resonance spectroscopy, chromatography, and electrochemistry. Laboratory exercises supplement classroom work.

CHEM 390X - Special Topics
1 to 5

Special topics selected by the department. Offered on a demand basis.

CHEM 4111K - Physical Chemistry I
Prerequisite: CHEM 2512K, MATH 2254
3-3-4

An introduction to the physical laws, theoretical principles, and mathematical relationships in chemistry, particularly in regard to non-ideal gases, chemical thermodynamics, , and changes of state. Laboratory exercises supplement classroom work.

CHEM 4112 - Physical Chemistry II
Prerequisite: CHEM 4111K
3-0-3

A continuation of the coverage begun in Physical Chemistry I. Topics include chemical kinetics, electrochemistry, an introduction to quantum mechanics, and statistical mechanics. The laboratory is optional.

CHEM 4112L - Physical Chemistry II Lab
Prereq/Corequisite: CHEM 4112
0-3-1

Laboratory experiments to accompany CHEM 4112, Physical Chemistry II

CHEM 4121 - Quantum Chemistry
Prerequisite: CHEM 4112
3-0-3

Postulates of quantum mechanics and their application to model systems, atoms and molecules. Introduction to molecular spectroscopy.

CHEM 4411 - Inorganic Chemistry

Prerequisite: CHEM 2512K
3-0-3

Structure of the atom, ionic and covalent bonding models; the solid state; advanced acid-base concepts; chemistry in non-aqueous solvents; structure and reactivity of coordination compounds; organometallic chemistry. Consideration of atomic structure, valence, complex compounds, and systematic study of the periodic table.

CHEM 4412 - Main Group Inorganic Chemistry
Prerequisite: CHEM 4411
3-0-3

Structure, bonding and reactivity of the main group elements and their compounds.

CHEM 4413 - Transition Metal Chemistry
Prerequisite: CHEM 4411
3-0-3

A survey of the bonding, structure, and reactivity of the transition metals and their compounds, including organometallic chemistry.

CHEM 4415 - Solid State Chemistry
Prerequisite: CHEM 4112, CHEM 4412
3-0-3

How basic principles of chemistry and physics apply in describing the behavior of the solid state. The relationship between electronic structure, chemical bonding, and crystal structure is developed. Defects in crystalline material and their effects on the material properties will be covered. Attention will be given to characterization of atomic and molecular arrangements in crystalline and amorphous solids: metals, ceramics, semiconductors and polymers and their application to engineering systems including functional materials, nanostructured materials, new approaches to solid-state synthesis and fabrication, and bio-related materials.

CHEM 4511 - Advanced Organic Chemistry
Prerequisite: CHEM 2512K and MATH 2253
3-0-3

Selected organic reactions from synthetic and mechanistic viewpoints.

CHEM 490X - Special Topics
1 to 5

Special topics selected by the department. Offered on a demand basis.

Civil and Construction Engineering

CE 1000 - Orientation to Engineering and Surveying Professions
1-0-1

Introduction to the professional practice and options within the disciplines of civil engineering and construction engineering: engineering ethics, career opportunities, professional licensing, and industry expectations in the professional disciplines, as well as department policies on advisement and curriculum requirements to graduation.

CE 3201 - Structural Analysis
Prerequisite: ENGR 3131 and Engineering Standing
3-0-3

This course is the introductory course in identification and analysis of basic structural elements. Topics include the determination of beam deflections, methods for the computational analysis of statically indeterminate trusses, moment distribution, and the analysis of frames.

CE 3202 - Design of Concrete Structures
Prerequisite: CE 3201 and Engineering Standing
3-0-3

ACI design procedures for reinforced concrete beams, columns, footings, slabs and other members, Introductory to masonry design.

CE 3501 - Materials for Civil & Construction Engineering
Prerequisite: ENGR 3131 and ENGR 3132 and Engineering Standing
Corequisite: CE 3502
3-0-3

A study of different materials used for light and heavy construction projects, such as aggregates, woods, metals, concretes, masonry, and bituminous materials. An overview of materials science will be introduced, as well.

CE 3502 - Materials for Civil & Construction Engineering Lab
Prerequisite: Engineering Standing
Corequisite: CE 3501
0-3-1

A study of standard laboratory tests (ASTM and AASHTO) on the materials commonly used in Civil and Construction engineering field. The lab will reinforce the principles of CE 3501 through laboratory experiments. Developing experimental data into effective technical reports will be emphasized.

CE 3701 - Geotechnical Engineering
Prerequisite: ENGR 3131, ENGR 3132 and ENGR 3343 and Engineering Standing

Corequisite: CE 3708
3-0-3

Introduction to fundamental knowledge of soil/foundation engineering for construction projects such as commercial building, highway, bridge, airport, and water/wastewater treatment plant. Course topics will include composition of soils, subsurface investigation, soil classification systems, groundwater flow, permeability, compaction, stress/strain analysis, shear strength, consolidation/settlement, shallow and deep foundations, earth retaining structures, slope stability, and ground modification methods.

CE 3702 - Environmental Engineering
Prerequisite: ENGR 3343 and CHEM 1212, CHEM 1212L and Engineering Standing
3-0-3

Introduction to environmental engineering issues, legal aspects, engineering solutions, and basic approaches to abatement system design including water supply, water treatment, water quality management, wastewater treatment, air pollution control, solid and hazardous waste management, and environmental impacts.

CE 3703 - Environmental Engineering II
Prerequisite: CE 3702 and Engineering Standing
3-0-3

Introduction to environmental engineering design of unit processes and pollution abatement systems including water treatment plant design, waste water treatment plant design, sludge management, air pollution abatement systems, and solid and hazardous waste engineering management.

CE 3704 - Environmental Engineering Lab I
1-3-1

CE 3708 - Geotechnical Engineering Lab
Prerequisite: ENGR 3131, ENGR 3132, and ENGR 3343
Corequisite: CE 3701
0-3-1

A study of standard laboratory tests (ASTM and/or AASHTO) on soils. The lab will reinforce the principles of Geotechnical Engineering studied in CE 3701, and developing experimental data into effective laboratory reports will be emphasized.

CE 390X - Special Topics
Prerequisite: Junior standing, Engineering Standing and consent of the Department Chair
1 to 4

Special topics offered by the program on a demand basis.

CE 4103 - Design of Steel Structures
Prerequisite: CE 3201 and Engineering Standing
3-0-3

AISC design procedures for steel beams, joints, girders, columns, base plates, and connections.

CE 4105 - Foundation Design

Prerequisite: CE 3701, CE 3708 and Engineering Standing
3-0-3

A study of the selection and design of foundation types for structures and of the behavior of the foundation earth materials both during and after construction. Topics covered include subsurface investigation, stress distribution, settlement, bearing capacity, structural design of footings, lateral earth pressure and retaining wall behavior, and pile foundation analysis and design.

CE 4177 - Transportation Engineering
Prerequisite: MATH 2260 and Engineering Standing
Corequisite: CE 4179
3-0-3

A study of the fundamentals of vehicular transportation and vehicle operating characteristics. Areas of study include driver abilities and expectancies as they relate to the driving task, geometric design of roadways, pavement design and maintenance, traffic flow theory and its application to level of service analysis, and intelligent transportation system design.

CE 4178 - Highway Design and Construction
Prerequisite: CE 4177 and Engineering Standing
3-0-3

This course addresses the challenges facing engineers when designing and constructing highways. Areas of study include the design of horizontal and vertical alignments, roadside design, the use of geographic information systems during the design process, pavement design, constructability, and the digital transfer of information during construction.

CE 4179 - Transportation Engineering Lab
Prerequisite: MATH 2260 and Engineering Standing
Corequisite: CE 4177
0-3-1

This lab will reinforce the principles of Transportation engineering lecture CE 4177. The lab will include experiments in the field of transportation engineering and data analysis. The course will emphasize data collection, analysis, and the development of effective laboratory reports.

CE 4202 - Steel and Concrete Design
Prerequisite: CE 3201 and Engineering Standing
4-0-4

Introductory course in the design of steel and concrete structures. Code applications of load development, the design of beams and columns in steel, as well as reinforced concrete are covered.

CE 4343 - Solid Waste Management and Engineering
Prerequisite: CE 3702
3-0-3

Fundamentals of solid waste treatment, storage, disposal, and control processes. Detailed design and regulatory requirements of solid waste landfills and other solid waste management facilities. Soil and ground water contamination and site remediation.

CE 4703 - Engineering Hydrology
Prerequisite: ENGR 3343 and Engineering Standing
3-0-3

The course presents the hydrological processes and their relationship to the design of structures for control and management of water resources, rainfall-runoff relationships, and probability and frequency analysis as they relate to surface and groundwater hydrology.

CE 4704 - Engineering Hydraulic Analysis and Design
Prerequisite: ENGR 3343
3-0-3

The course applies principals of fluid mechanics to the design and analysis of hydraulic systems. The course emphasizes open channel flow and addresses topics of interest to the Civil Engineer. Topics include hydraulic grade line calculations, pump design, culvert analysis and design, based flood elevation studies using HEC-RAS, non-uniform flow, gutters and inlets, water distribution, open channel design.

CE 4705 - Advanced Soil Mechanics
Prerequisite: CE 3701 and Engineering Standing
3-0-3

After a brief review of drained and undrained shear strength of soils under traditional triaxial compression testing, the advanced topics to be covered in shear strength will include modified Mohr-Coulomb diagrams, including p-q diagrams, stress paths, triaxial extension and triaxial compression tests, and drained and undrained failure at principle stress difference versus principal stress ratio. In consolidation, the components of settlement and the effect of submergence on ultimate consolidation settlement will be covered.

CE 4706 - Pavement Engineering
Prerequisite: CE 3201 and Engineering Standing
3-0-3

A study of the methods used to determine thickness and composition of the components of both flexible and rigid highway pavements. Class work will also include paving materials, drainage systems, pavement distresses, and maintenance & rehabilitation. Standard techniques and computer software such as that of PCA, ACPA, the Asphalt Institute and AASHTO will be utilized in pavement thickness design.

CE 4707 - Design of Wood Structures
Prerequisite: CE 3201 and Engineering Standing
3-0-3

The course introduces the design of wood structure and properties of wood. The course will cover the topics such as determination of horizontal and vertical loads, horizontal and vertical load-resisting systems, design of horizontal diaphragms, and bolted and nailed connections.

CE 4708 - Hazardous Waste Engineering
Prerequisite: CE 3702 and Engineering Standing
3-0-3

Introduction to environmental engineering design of unit processes and pollution abatement systems including water treatment plant design, wastewater treatment plant design, sludge management, air pollution abatement systems, and solid and hazardous waste engineering management.

CE 4709 - Advanced Structural Analysis
Prerequisite: CE 3201 and Engineering Standing

3-0-3

Analysis of indeterminate structures by the matrix force and replacement methods, wind load calculation, seismic load calculation, introduction to lateral force resisting systems, introduction to stability and collapse analyses of structural systems, use of digital computers in structural analysis.

CE 4800 - Senior Project
Prerequisite: Senior Standing, Engineering Standing and consent of the Department Chair
2-3-3

Capstone design experience for graduating Construction Engineering majors.

CE 490X - Special Topics

Civil Engineering Technology

CET 1001 - Orientation to the Civil ET, Environmental ET, and Geospatial Professions
1-0-1

Introduction to the professional practice and options within the disciplines of civil engineering technology, environmental engineering technology, and geospatial technology (surveying and geographical information systems (GIS). Topics discussed include career opportunities, professional licensing, and industry expectations in the professional disciplines, as well as SPSU and department policies on advisement and curriculum requirements to graduation.

CET 2110 - Problem Solving Methods in CET
Prerequisite: MATH 2253
2-3-3

Introduction to engineering design processes using mathematics and principles of sciences, as well as engineering analysis as a decision-making tool for evaluating design alternatives. The concepts and tools of critical thinking are applied.

CET 2200 - Introduction to Structures
Prerequisite: PHYS 1111, PHYS 1111L (or concurrent enrollment).
4-0-4

An introduction to architectural structures with emphasis on statics and strength of materials concepts. Subject matter includes force systems, shear and moment diagrams, determination of section properties, and the design of wood beams and columns. (Not for credit for CET students).

CET 3110 - Construction Materials and Sustainability
Prerequisite: CHEM 1211, CHEM 1211L and (ENGT 3124 and ENGT 3124L or CET 2200) CET 3110L or concurrent enrollment
3-0-3

Introduction to materials science and the engineering properties of a variety of civil engineering materials such as metals, wood, aggregates, Portland cement products and concretes, asphalt products and concretes. The relationship between composition, material properties and manufacturing will be examined. Laboratory will emphasize the analysis of data and the application of standard tests to design and construction specifications.

CET 3110L - Construction Materials Lab
Prerequisite: CET 3110 (or concurrent enrollment)
0-3-1

Laboratory will emphasize the analysis of data and the application of standard tests to design and construction specifications. ASTM tests on aggregates, mortar cubes, fresh concrete, hardened concrete cylinders and beams are performed by student teams. Asphalt binder and asphalt concrete tests are also studied.

CET 3120 - Cost Estimating and Scheduling in CET
Prerequisite: CET 3110, CET 3110L or SURV 3222) andCET 3120L or concurrent
Corequisite: CET 3120L
3-0-3

Practice and methods of cost estimating, and scheduling in civil engineering projects. Emphasis is placed on reading construction drawings, critical path scheduling, and application of the Means Building Construction Cost data book. Application of "engineering economy" topies is included.

CET 3120L - Plan Reading and Take Offs Lab
Prerequisite: CET 3120 (or concurrent enrollment)
0-3-1

Students will learn to read project blue prints in the civil, structural, or related discipline. Students will practice quantity take offs in cost estimation applications.

CET 3130 - Applied Fluid Mechanics and Hydraulics
Prerequisite: (CET 2200 or ENGT 2124) and CET 3130L (Concurrent enrollment)
2-0-2

A study of basic principles of fluid mechanics and the application of these principles to practical problems. The subject matter will consist of fluid properties, fluid pressure, buoyancy, pipe flow analysis, open channel flow, and pump selection. Pressure pipe systems, flow measurement, and open channel systems are examined.

CET 3130L - Fluids and Hydraulics Lab
Prerequisite: CET 3130 (or concurrent enrollment)
0-3-1

Laboratory will determine properties of fluids, usage of various fluid instruments, and apply fluid mechanics principles on flat and curved surfaces, buoyant objects, closed piping systems, and pumping systems.

CET 3210 - Structural Mechanics
Prerequisite: ENGT 3124 , ENGT 3124L
3-0-3

This course is a detailed introduction to the classical methods of analysis of both statically determinate and indeterminate structures. Subject matter includes Methods of Consistent Deformations, Unit Load Analysis, Beam Reflection Methods, Truss Deflections and The Design and usage of Influence Lines for Continuous Beams. The methods of moment distribution is emphasized for continuous beams and frame analysis. Rigid frame analysis and sidesway is also included.

CET 3220 - Applied Structural Steel Design

Prerequisite: CET 3210
3-0-3

An in-depth study of techniques used in structural design. Determination of structural loads and the analysis and design of structural steel elements used in buildings and related structures. Current design procedures for steel joists, beams, girders, columns, base plates, and connections are applied. American Institute of Steel Construction Steel Design Manual and the Steel Joist Institute's joist manual specifications are used.

CET 3230 - Concrete Infrastructure Design
Prerequisite: CET 3110, CET 3110L and CET 3210
3-0-3

ACI design procedures for reinforced concrete beams, T-beams, columns, slabs, and other components. Includes also design of square footings, box culverts, and analysis of beams subject to torsion.

CET 3310 - Water Treatment and Distribution
Prerequisite: CHEM 1211, CHEM 1211L , and CET 3130, CET 3130L , CET 3310L (or concurrent enrollment)
2-0-2

Application of chemistry concepts on water quality and treatment processes. This course also includes the performance of mass balance calculations and study of reactor configurations in the design and operation of water treatment systems; and the design approach for water distribution systems and their basic components.

CET 3310L - Water Treatment and Distribution Lab
Prerequisite: CET 3310 (or concurrent enrollment)
0-3-1

This course covers the most common lab testing physicochemical techniques used in water characterization and assessment of drinking water quality.

CET 3320 - Wastewater Collection and Treatment
Prerequisite: (CET 3310, CET 3310L (or concurrent enrollment), CET 2110 , CET 3320L (or concurrent enrollment)
2-0-2

Application of hydraulics in the design of wastewater collection systems and ancillary structures. This course also includes hydraulic analysis of equalization tanks, the study of metabolic processes and its application in wastewater treatment, design of conventional and individual wastewater treatment processes.

CET 3320L - Wastewater Collection and Treatment Lab
Prerequisite: CET 3320 (or concurrent enrollment)
01-3-1

This course covers the most common lab testing physicochemical techniques used in wastewater characterization and assessment of wastewater treatment systems.

CET 3410 - Soil Properties and Site Exploration
Prerequisite: CHEM 1211, CHEM 1211L , CET 3130, CET 3130L and (ENGT 3124 , ENGT 3124L or CET 2200), CET 3410L (or concurrent enrollment)
3-0-3

This course provides an introduction to geotechnical engineering and foundation design. Students will study engineering properties of soil, stress distribution in soil, settlement and consolidation, seepage, shear strength and slope stability, shallow foundations, pile foundations, and retaining walls.

CET 3410L - Soil Properties Lab

Prerequisite: CET 3410 (or concurrent enrollment)
0-3-1

Students will classify soils and conduct standard lab experiments such as index property tests, proctor compaction, permeability, direct shear, unconfined compression, consolidation and triaxial tests.

CET 3420 - Geosynthetics

Prerequisite: CET 2110 and CET 3410
3-0-3

This course provides a comprehensive introduction to analysis and design of geosynthetics in geotechnical engineering applications. Since early 1970's geosynthetics materials, proven to be economically attractive, have been developed and used for reinforcement, separation, drainage, filtration, and containment purposes. The topics covered in this course are: physical & chemical properties and stress-strain behavior of geosynthetics, and design of earth structures with geotextiles, geogrids, and geomembranes.

CET 3430L - Site Exploration and Field Testing Lab

Prerequisite: CET 3410 (or concurrent enrollment)
0-3-1

Students will study site exploration procedures and will utilize destructive and non-destructive field testing methods to determine physical and mechanical properties of soils.

CET 3510 - Traffic Analysis and Road Design

Prerequisite: SURV 2221, CET 2110 , CET 3510L (or concurrent)
2-0-2

An overview of transportation engineering as it applies to land, air, and sea systems is presented. Course emphasizes the design factors required in planning and constructing roads and highways including traffic analysis and capacity; intersection design and signalization; location, geometrics and drainage; and materials and pavements. The lab focuses on the preparation of highway design plans, as well as data measurement techniques unique to transportation analysis.

CET 3510L - Traffic Analysis and Road Design Lab

Prerequisite: CET 3510 (or concurrent enrollment)
0-3-1

This course emphasizes sound data collection and analysis techniques. Industry accepted techniques for several traffic engineering topics are presented. Studies are organized to facilitate preparation of formal transportation engineering reports. Each study follows conventional formats to aid the student in quality data collection and appropriate analysis procedures.

CET 390X - Special Topics

Prerequisite: Junior standing, consent of the Program Head.
1 to 4

Special topics offered by the program on a demand basis.

CET 4110 - Ethics of Engineering
1-0-1

A review of the theoretical and practical aspects of ethical problems in engineering, along with their suggested solutions. Specific examples, situations and limitations of ethics and ethical relationships are discussed in detail.

CET 4120 - Senior Design and Engineering Documentation
Prerequisite: Senior Standing, consent of the Program head.
2-3-3

This course is designed to be the culmination of the undergraduate civil engineering technology education. Under the guidance of the professor, students will form design teams, choose a proposed or ongoing project in the metropolitan area of Atlanta and conduct design or redsign. Working as independent teams with guidance from the lead professor the projects will be completed and the results presented for review to a panel of faculty and students. Each phase of design will include appropriate engineering documentation. All final designs will include engineering drawings and a construction cost estimate.

CET 4130 - Special Inspections
Prerequisite: CET 3220 , CET 3230 , CET 3410 , CET 3410L
2-0-2

Students will learn the specialized practice of inspecting concrete and steel buildings, bridges, and foundations.

CET 4210 - Computer Methods in Structures
Prerequisite: CET 3210
3-3-4

Review of matrix algebra, structural analysis by matrix methods (Flexibility and Displacement), Slope-Deflection theory, true stiffness determination of spans with varying moments of inertia, multi-story analysis, global stiffness matrix determination as applied to trusses, beams and frames (2D, 3D). Use of commercially available software for analysis and design such as PC-STRAN, GTSTRUDL or STAAD-III emphasized.

CET 4220 - LFRD Steel Design
Prerequisite: CET 3220
4-0-4

This is a follow up steel design course with an emphasis on the AISC Load and Resistance Factor Design method. Topics covered are beams (fully plastic, inelastic, elastic), concentric columns, leaner columns, standard connections (bolted and welded), eccentric connections, frame design (braced), modified effective lengths, base plates, and composite beam design (both ASD and LRFD).

CET 4230 - Advanced Concrete Design
Prerequisite: CET 3230
4-0-4

This is a continuation of the concrete design procedures covered in CET 3230. Topics include pre-stress member design, post-tensioned member design, retaining wall design, biaxial bending in short and long concrete columns, and two-way slab design.

CET 4240L - Structural Detailing Lab
Prerequisite: CET 3220 , CET 3230
0-3-1

Students will learn the practice structural connection detailing in concrete and steel structures.

CET 4310 - Stormwater Management and Erosion Control
Prerequisite: CET 3130, CET 3130L and CET 4310L (or concurrent enrollment)
2-0-2

Study of rain distributions, run-off generation, peak flow estimations, hydrograph generation, as well as stormwater conveyance systems. This course also includes the study of structures and best management practices for erosion control to maintain or improve water quality.

CET 4310L - Erosion Control Lab
Prerequisite: CET 4310 (or concurrent enrollment)
0-3-1

Student applies the process for the selection and implementation of best management practices in erosion control. Students will visit operating stormwater retention facilities to assess the implementation of outlet structures to reduce erosion control.

CET 4320 - Unit Operations in Environmental Engineering
Prerequisite: CET 3130 and CET 3320 or (CET 3344)
3-3-4

Study of the unit operations for advanced water and waterwaste treatment. Standard laboratory tests with accompanying reports are included. Topics include membrane processes, carbon absorption, air stripping, nutrient removal and sludge treatment.

CET 4330 - Solid Waste Management
Prerequisite: CET 3320 or CET 3344
2-3-3

Study of management and equipment alternatives in solid waste generation, collection, processing, transferring, transporting and disposal. Consideration of legislation, regulation and management of solid wastes. Activities include field trips and a municipal solid waste landfill design with both oral and written project reports.

CET 4331 - Highway Design
Prerequisite: CET 3510 , CET 3510L
3-3-4

A continuation of the highway design concepts introduced in Transportation Systems. The changing role of the highway designer and the impacts of GIS on the design process will be examined. Design projects will be used to reinforce material studied.

CET 4340 - Air Pollution Control
Prerequisite: CET 3320 or CET 3344
3-0-3

Global and local effects of air pollution, pollution sources, emission controls, meteorology, plume dispersion and rise, particulate, sulfur oxides, nitrogen oxides, air quality and emission standards,

and control systems and devices.

CET 4410 - Foundation and Retaining Wall Design
Prerequisite: CET 3410 or CET 3301
2-3-3

This course presents the basic concepts and fundamental principles that are necessary to understand the standard methods of foundation and earth retaining structure design. Students will be encourages to use Excel spreadsheets to solve foundation engineering design problems. Course topics will include shallow foundations, mat foundations, pile foundations, conventional retaining walls, braced excavations, mechanical stabilized earth walls and soil nail walls.

CET 4411 - FE Exam Preparation - Civil Discipline
Prerequisite: Senior Standing or consent of the Department Chair.
4-0-4

A review of the civil engineering technology discipline and associated math and sciences in preparation for the Fundamentals of Engineering exam. (Not for credit for CET and Surveying and Mapping majors).

CET 4420 - Earth Dam and Levee Design
Prerequisite: CET 2110 and CET 3410
3-0-3

Earth dam and levee failures are important issues engineers must consider during the design and operation of the structure. Factors such as internal erosion and piping occurrences caused by seepage can lead to failure, resulting in a disaster. Levee analysis becomes an important topic as the infrastructure ages. This course will cover fundamentals of seepage, stress, deformation and overall stability issues in water retaining structures under unsaturated conditions, with fluctuating water tables, and under rapid draw down scenarios. Students will apply the fundamentals to the design of earth dams and levees, and perform risk analyses.

CET 4430 - Slope Stability
Prerequisite: CET 2110 and CET 3410
2-3-3

This course focuses on empirical and numerical analytical methods to evaluate and predict landslide failure behavior. Topics will include limit equilibrium slope stability analysis, including Bishop, Janbu, Spenser, Morgenstern-Price methods, and effects of water on slope stability. Students will review case studies and examine initiation, development, and failure of slopes. The course will include the use of finite element, Program SLOPE/W, and Excel spreadsheet applications.

CET 4510 - Transportation Network Design
Prerequisite: CET 3510 or CET 3321
3-3-4

A study of the principles and concepts employed in the design of multi-model transportation networks. Topics include: interaction of multi-model systems, terminal design, ports and harbors, airport design, and mass transit. Design projects will look at solutions to network problems facing metropolitan Atlanta.

Communication

COMM 1000 - Integrated Skills for International Students
Prerequisite: Departmental Approval
6-0-6

This course focuses on developing academic reading, writing, speaking and listening skills for international students. Students practice language and academic activities, such as note-taking, basic research and discourse designed to support concurrent academic course work.

COMM 1050 - Holistic Communication for Non-Native Speakers of English
Prerequisite: Department Approval
3-0-3

This course provides students with an opportunity for integrated language study, with a focus on oral and written comprehension, as well as written and spoken expression.

COMM 1100 - Human Communications
Prerequisite:

3-0-3

This course is a broad approach to oral communication skills including intrapersonal, interpersonal, small group, and public speaking. Students in this course will be expected to participate in discussions on a frequent basis, take 12 short online quizzes, complete a variety of unit assignments and take a proctored final exam. (eCore Course – Online)

COMM 2000 - Business Communication
Prerequisite: ENGL 1102, COMM 2400
3-0-3

Introduction to the communication skills needed in the business world, learned through exposure to mock business situations. The job search is covered, and emphasis is placed on writing business correspondence and delivering business-related oral presentations.

COMM 2030 - Research for the Humanities & Social Sciences
Prerequisite: ENGL 1102
3-0-3

This course develops the methods and skills needed to conduct research in the social sciences, history, international studies, and other humanities disciplines. Students will be expected to produce documents that demonstrate an understanding of the following topics: research design and development, literature reviews, annotated bibliographies, effective use of primary and secondary source data, and proper use of discipline-specific style guides.

COMM 2065 - Cross-Cultural Communication
Prerequisite: ENGL 1102
3-0-3

Intercultural Communication is an interdisciplinary course that explores significant social and psychological issues that grow out of interactions among people representing different cultures. It will examine these issues through comparison, integration, and synthesis of several of the social sciences, but primarily from a communication perspective. This course is designed to introduce students to issues involved with communication across different cultures. Communication is the focal point, so we will consider all aspects of communication in this course - both verbal and

nonverbal. In addition, this course is designed to: increase each student's understanding of the global village in which she/he will travel, study, work and play.

COMM 2150 - Ethics and Communication
Prerequisite: ENGL 1102
3-0-3

This course will focus on analysis of relevant case studies in fields of communication. Emphasis will be placed on critical reading, writing and thinking. Comprehension of ethical issues in case studies and other readings will be demonstrated through completion of weekly writing assignments, formal and informal written examinations, research reports, and active class participation.

COMM 2170 - Introduction to Media Studies
Prerequisite: ENGL 1102
3-0-3

This course provides students with a foundation in the study of mass media and emerging new media. It provides an introduction to the important key concepts and critical methodologies that are essential to an understanding of the historical, social and political effects of media as both technological tool and cultural artifact.

COMM 2400 - Public Speaking
2-0-2

A general course in public speaking designed for students with limited experience. This course deals with all aspects of effective planning, preparation, and presentation of different types of speeches. It focuses on basic principles of speech rather than on professional presentations.

COMM 2500 - Advanced Public Speaking
Prerequisite: COMM 2400
3-0-3

The study of principles and methods of selected forms of public speaking and oral presentation for various purposes and audiences. Speaking coverage ranges from speeches for special occasions, argumentation and debate, persuasive speaking, extemporaneous speaking and oral interpretation of literature.

COMM 2510 - Intercollegiate Forensics
Prerequisite: COMM 2400 or concurrently
1-0-1

Training, practice, and participation in individual college forensics events. Repeatable up to a 4-credit maximum

COMM 3000 - Oral Communication for International Students
Prerequisite: ENGL 1101 and Departmental approval
3-0-3

Designed for international students enrolled in ETCMA degree programs, this class addresses the specific needs of non-native speakers in technical and professional communication to allow them to develop the oral communication skills to become effective communicators. Students will read, summarize, and analyze various texts in various genres and make oral presentations. The class promotes spoken language proficiency through small group and individualized instruction in oral communication, complemented by the development of critical reading, listening, and writing skills.

COMM 3035 - Organizational Communication
Prerequisite: ENGL 1102
3-0-3

This course provides an introduction to the fundamental approaches, concepts and theories associated with the study of organizational communication. Students will identify career paths associated organizational communication and investigate the flow of communication through organizational structures. Emphasis will be placed on content application, team work and the study of real life organizations.

COMM 3040 - Health Communication
Prerequisite: ENGL 1102
3-0-3

This course will focus on the essential role communication plays in health promotion and disease prevention. Strategies used to influence both individuals and communities when making health care decisions will be examined, and the students will become familiar with the communication processes used in managing individual and community health and health care programs. Specifically, theoretical frameworks and communication techniques will be examined that promote health. In addition, students will gain an understanding of health communication concepts, research,and practice. Topics discussed in this course include health literacy, physician to patient communication, effective public health messages and mass media campaigns, social support, self-disclosure, health education, and risk and emergency communication.

COMM 3050 - Journalism
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or concurrently
3-0-3

Study of technical and scientific reporting, including mass media theory. Emphasis on making technical information understood by a general audience. Students practice many in-house and external forms of writing such as news releases, feature articles, bulletins, brochures, and pamphlets. Cross-listed as ENGL 3050

COMM 3060 - Media, Culture, and Society
Prerequisite: ENGL 1102
3-0-3

Students will explore the relationship between various media and a range of social and cultural concerns, including (but not limited to): gender roles, representations of race and ethnicity, sex and sexuality, family relations, and violence. The course will explore various theories of how media both shape and reflect society.

COMM 3065 - International Communication
Prerequisite: COMM 2065
3-0-3

This class is an introduction to and survey of the broad area of international communication. Discussion topics include the rising influence of culture in the post-cold-war world; language and especially English as the world language; Anglo-American dominance of all aspects of global communication; the influence of technology in the globalization of communication; communication in national development or social change; and the emergence of a global style of journalism.

COMM 3100 - Rhetoric: History, Theory, and Practice
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or concurrently
3-0-3

Introduction to rhetoric as the relationship between thought and expression. Examines connections between rhetoric and writing, between a public act and a personal thinking process, by exploring classical and contemporary accounts of rhetorical history and theory. Students apply theory to their own writing as they explore the relationship between writers, readers, and subjects and the range of options they have available to them as communicators. Cross-listed as ENGL 3100

COMM 3150 - Public Relations Practice
Prerequisite: ENGL 2030 or TCOM 2030
3-0-3

History theory, and practice of public relations, introducing students to the requirements of a public relations career. Students will apply fundamental principles of rhetoric and journalism to writing assignments such as news releases, backgrounders, feature stories, an editorials.

COMM 3160 - Media Theory and Practice
Prerequisite: ENGL 1102
3-0-3

This course will introduce students to major media theorists of the 20th and 21st century. Students will explore theories of print, radio, film, television, and various digital media. Students will also explore applications of theory to the production of media objects.

COMM 3250 - Newspaper Practicum
Prerequisite: ENGL 1102
3-0-3

Through a combination of required seminar sessions and hands-on experience, Newspaper Practicum provides students with an introduction to the process of creating content, designing layout, and producing final product for a school newspaper. Students will also discuss a range of concepts important in contemporary journalism, including professional ethics, First Amendment rights, and the impact of new media on newspaper publishing.

COMM 4200 - New Media Leadership Strategies
Prerequisite: ENGL 1102
3-0-3

This course explores theories of new media and strategies for engaging audiences in a variety of digital environments. Topics include the uses of social media in leadership, new media analysis, interactivity, new media rhetorical strategies and the development of cross-platform electronic portfolios.

COMM 4600 - Directed Study
Prerequisite: Twenty-one hours of courses in the major variable credit
1 to 3

A directed study for an undergraduate major who needs to complete an undergraduate requirement in the major that is not offered before the student's graduation date. The directed study is also for an undergraduate major who wishes to pursue a special area of communication not covered by the curriculum.

Computer Game Design and Development

CGDD 490x - Special Topics in Game Design and Development

Prerequisite: Senior standing
1 to 4

Special topics selected by the department. Offered on a demand basis.

CGDD 2002 - Fundamentals of Game Design
2-0-2

This course presents an overview of the history of computer games and the theory of gaming. Topics include game genres, content, patterns, playability, suspension of disbelief and immersion, storytelling, and game balance and fairness. Students are required to analyze historic and current games and must also develop a prototype of an original game.

CGDD 3103 - Application Extension and Scripting
Prerequisite: CGDD 2002
3-0-3

This course provides an introduction to the use and extension of applications for content creation and management. Both the theoretical as well as applied aspects of extensible application architectures and plug-ins are covered. Existing and emerging scripting languages will also be discussed extensively, and programming in these scripting languages is covered. Students will explore and utilize current applications and must create extensions to these applications.

CGDD 4003 - Digital Media and Interaction
Prerequisite: CGDD 2002 or CS 3424
2-3-3

This course explores how digital media is created and utilized within computer games and simulations. Topics include sound, video, text, images, character modeling, animation, game world and level generation (2D and 3D), and current and emerging interaction techniques. Students are required to work in teams to produce a multimedia term project.

CGDD 4113 - 3D Modeling and Animation
Prerequisite: CGDD 3103 and CS 4363
3-0-3

This course explores the theory and application of 3D geometric model generation and animation. Topics include mesh and Non-uniform Rational B-Spline (NURB) modeling, textures, subdivision and levels of model detail, rigid/constrained body dynamics, and non-rigid/fluid dynamics. Students will be required to develop and animate a complex model, and a significant project is required.

CGDD 4203 - Mobile and Casual Game Development
Prerequisite: CGDD 4003 or CSE 3203
3-0-3

This course explores the segments of mobile (handheld, PDA and cell-phone) and casual gaming. Aspects of mobile hardware resources such as smaller memory, limited processor capabilities, and smaller displays are discussed; implications of such limitations to design and playability are also presented. Patterns of casual game development and emerging markets for casual games are also explored. A term project exploring mobile and/or casual game development is required.

CGDD 4303 - Educational and Serious Game Design
Prerequisite: CGDD 4003
3-0-3

This course presents the history, theory, and current best practices of serious gaming and the use of serious games to educate and train. This course focuses on how to engage and entertain while presenting informative interfaces to the user. Topics include motivation, designing engaging learning interfaces, knowledge transfer from the game environment to the real world, assessment of learning, and instructional value. A design/prototype project is required.

CGDD 4313 - Designing Online Learning Content and Environments
Prerequisite: TCOM 3030 or other approved upper-division TCOM course
2-3-3

This course explores the use of online environments to present educational content for users. Topics include: interaction patterns in online learning environments, providing accessible and intuitive materials, multi-modal presentations of content, and the benefits and limitations of online learning environments. This course requires a critique of existing online environments and the development of a new learning environment, and human-computer interaction issues are an important consideration for this course.

CGDD 4603 - Production Pipeline and Asset Management
Prerequisite: CGDD 4113 and SWE 3643
2-3-3

This course provides an in-depth exploration of the production of media content. This course covers elements of the production pipeline from concept to content generation to post production and quality assurance. Topics include asset creation and management, cost-quality tradeoffs, and phases of production. Current and emerging models of the production pipeline such as user-generated content and participation will also be discussed. A significant, team-based project is required.

CGDD 4703 - Data Modeling and Simulation
Prerequisite: MATH 2260
3-0-3

This course provides an introduction to modeling and simulation. Both the theoretical as well as applied aspects of simulation are covered. Topics include discrete-event simulation, states, transitions, model definition, model quality, input and output analysis, input distributions, experimental design, optimizing models, levels of model detail, cost-quality tradeoffs, verification, and validation. Students will be required to simulate a complex system which necessitates the creation of models. Students will explore and utilize a simulation API.

CGDD 4803 - Studio
Prerequisite: CGDD 4003
1-6-3

This course begins the studio experience and explores the application of game design and development in a structured environment; teams build applications utilizing best practices in software engineering including asset, project, configuration, and requirements management. Students in this Studio course will assume an apprentice position within their teams and learn from more senior students taking the Capstone course. This course involves weekly status, design, and development meetings.

CGDD 4814 – Capstone
Prerequisite: CGDD 4803
1-9-4

This course continues the studio experience from CGDD 4803 and further explores the application of game design and development in a structured environment; teams build applications utilizing

best practices in software engineering including asset, project, configuration, and requirements management. Students taking this Capstone course will assume a senior position within their teams and provide mentoring to students taking the Studio course. This course involves weekly status, design, and development meetings.

Computer Science

CS 3123 - Programming Language Concepts
Prerequisite: (CSE 1302C or CSE 1302J or CSE 1302E) and CS 3224
3-0-3

A comparative study of programming languages covering their history, development, and different design criteria; their formal definitions of syntax and semantics; their concepts and constructs; and the similarities and differences between languages. This course includes examination of object-oriented, functional, and concurrent languages, exception handling, modularization, scoping, etc. The use of programming tools that enable the student to practice the course objectives are incorporated.

CS 3224 - Computer Organization & Architecture
Prerequisite: (CSE 1302C or CSE 1302J or CSE 1302E) and (MATH 2345 or CSE 2300)
3-2-4

Introduction and overview of basic computer organization. Computer arithmetic: binary, hexadecimal and decimal number conversions, binary number arithmetic and IEEE binary floating point number standard. Basic computer logic: gates, combinational circuits, sequential circuits, adders, ALU, SRAM and DRAM. Basic assembly language programming, basic Instruction Set Architecture (ISA), and the design of single cycle CPU.

CS 3243 - Operating Systems
Prerequisite: CS 3224 and CS 3424
3-0-3

An introduction to basic operating system principles. Process management, memory management (real and virtual), peripheral device management, file systems, and distributed systems are introduced and examined from a conceptual viewpoint. Selected aspects of operating systems are explored in greater depth via software simulation projects.

CS 3424 - Data Structures
Prerequisite: (CSE 1302C or CSE 1302J or CSE 1302E), and SWE 2313, and(MATH 2345 or CSE 2300)
3-2-4

Common data structures and algorithms for their processing are covered. Elementary analysis of algorithms is included. Data structures include stacks, queues (including priority queues), binary search trees, advanced trees, graphs and their representations (including depth- and breadth-first traversals), and hash tables (including collision-avoidance strategies). Additional topics include searching and sorting. All data structures are presented using object-oriented implementations.

CS 3693 - Applications Programming
Prerequisite: CS 3424
3-0-3

Students will be exposed to writing larger applications than in the introductory programming sequence (CSE 1301, CSE 1302, and CS 3424). In depth coverage of the programming language

of choice is used to design and implement applications. Large scale projects are required.

CS 390X - Special Topics
Prerequisite: Junior standing
1 to 4

Special topics selected by the department. Offered on a demand basis.

CS 4243 - Systems Programming
Prerequisite: CS 3243
3-0-3

This course covers command line interfaces, shell and scripting tools like AWK and PERL. It also covers Unix file I/O and process control, as well as the use and construction of user interfaces.

CS 4253 - Distributed Computing
Prerequisite: CS 3243
3-0-3

A course that introduces students to the fundamental principles common to the design and implementation of programs that run on two or more interconnected computer systems. The subtopics, which are based on these principles, include: distributed operating system and network protocols for process communication, synchronization, scheduling, and exception and deadlock resolution; understanding of client-server, web-based collaborative systems; parallel computing; concurrency issues; and API's for distributed application development. Several distributed computing environments, like MPI, PVM, and Java RMI are discussed and used in developing experimental projects in a cluster of networked computers.

CS 4263 - Computer Networks
Prerequisite: CS 3243
3-0-3

Issues involved in computer networks and the Internet are examined based on the layered network architecture model. Objectives and methodologies of each layer are studied with particular emphasis on the Application, Transport, Network, and Datalink layers. Both the principles in computer networking and practical implementations (via network programming labs) are covered. Other interesting topics such as network security are briefly introduced.

CS 4283 - Real-Time Systems
Prerequisite: CS 3243
3-0-3

This course covers the software-development life cycle as it applies to real-time systems. Labs involve the use of a real-time operating system and an associated development environment. System performance issues are also discussed. Major project included.

CS 4363 - Computer Graphics and Multimedia
Prerequisite: CS 3424
3-0-3

The basic principles and practices of interactive computer graphics and multimedia systems are covered in this introductory course. The design and implementation of state-of-the-art computer graphic rendering and visual multimedia systems are the main part of the course. The sub-topics of the course deal with specific input/output hardware devices and their technology, software and hardware standards, programming methods for implementing 3-dimensional graphical applications

and interactive multimedia applications, and a study and evaluation of the effectiveness of graphic/multimedia communications. A large component of the class is the building of a large-scale application.

CS 4413 - Algorithm Analysis
Prerequisite: CS 3424
3-0-3

Advanced algorithm analysis including the introduction of formal techniques and the underlying mathematical theory. Topics include asymptotic analysis of upper and average complexity bounds using big-O, little-o, and theta notation. Fundamental algorithmic strategies (brute-force, greedy, divide-and-conquer, backtracking, branch-and-bound, pattern matching, and numerical approximations) are covered. Also included are standard graph and tree algorithms. Additional topics include standard complexity classes, time and space tradeoffs in algorithms, using recurrence relations to analyze recursive algorithms, non-computable functions, the halting problem, and the implications of non-computability. Algorithmic animation is used to reinforce theoretical results. Upon completion of the course, students should be able to explain the mathematical concepts used in describing the complexity of an algorithm, and select and apply algorithms appropriate to a particular situation.

CS 4523 - Artificial Intelligence
Prerequisite: CS 3424
3-0-3

A survey of Artificial Intelligence principles and applications, along with in-depth coverage of search techniques. Some emphasis on knowledge representation and problem-solving strategies is included.

CS 4533 - Digital Image Processing
Prerequisite: (MATH 2345 or CSE 2300) and CS 3424
3-0-3

Application of digital image processing. Topics include image enhancement and restoration, image transforms, geometrical image modifications, edge detection, image segmentation and classification, image coding, feature extraction, morphological image processing, and parallel image processing

CS 4893 - Computer Science Capstone
Prerequisite: CS 3243, SWE 3613, TCOM 2010 and COMM 2400
2-2-3

Team projects in software design, construction, and implementation for a complex real-world application project. The capstone project offers the opportunity to integrate the knowledge acquired in preceding courses. Components that are emphasized include analysis and design, effective documentation, team management, verification and validation of implementation, and communication skills. Additional material and topics related to current projects may also be included. Final projects will be evaluated by faculty and/or Industrial Advisory Board members. Students will be expected to present their final projects on one day that may be different from a scheduled class day.

CS 490X - Special Topics
Prerequisite: Senior standing
1 to 4

Special topics selected by the department. Offered on a demand basis.

Computing and Software Engineering

CSE 1002 - Introduction to the Computing Disciplines
2-0-2

This course examines the various aspects of computing and the computing disciplines in today's world. The students will become familiar with topics such as computer software, hardware, algorithms, and number systems. They will also be exposed to what is expected in the fields of computing and the types of job opportunities that are available, as well as the facilities and curriculum offered within the School of Computing and Software Engineering. Institutional credit only.

CSE 1301C - Programming & Problem Solving I
3-2-4

This course provides an introduction to computer science with a focus on object-oriented programming within a gaming context. Instruction centers on an overview of programming, problem-solving, and algorithm development by using games as examples. Specific topics include primitive data types, arithmetic and logical operators, selection and repetition structures, interactive user input, using and designing basic classes, single dimension arrays with searching and sorting, and lists. Programming assignments focus on techniques of good programming style including proper documentation. The student is taught to efficiently design, code, and debug problem solutions. A Windows environment is used in the closed lab using XNA to be able deploy to Xbox 360s.

CSE 1301E - C++ Programming for Engineers
3-2-4

Upon completion of this course, the student will have the basic concepts of structured programming using C++. This will include basic syntax and semantics for sequence, conditional, and iteration control structures, as well as single dimensional arrays. The student will also be able to solve engineering problems by designing and modularizing their solutions with proper use of functions and usage of objects. The student will also understand the techniques of good programming style and how to design, code, debug, and document program solutions. This course is intended for Engineering Majors only.

CSE 1301J - Programming & Problem Solving I
3-2-4

This course provides an introduction to computer science with a focus on object-oriented programming using Java. Instruction centers on an overview of programming, problem-solving, and algorithm development. Specific topics include primitive data types, arithmetic and logical operators, selection and repetition structures, interactive user input, using and designing basic classes, single dimension arrays with searching and sorting, and lists. Programming assignments focus on techniques of good programming style including proper documentation. The student is taught to efficiently design, code, and debug problem solutions. A Windows environment is used in the closed lab.

CSE 1302C - Programming & Problem Solving II
Prerequisite: CSE 1301C or CSE 1301J and MATH 1113
3-2-4

The second course in computer science provides coverage of more advanced topics of object-oriented programming in a gaming context. This includes the use of static variables and classes,

multi-dimensional arrays, inheritance and polymorphism, exception handling, recursion, and parameterized types. Elementary data structures (linked lists, stacks, and queues) are introduced to solve application problems. Students must continue to use good programming style including proper documentation. Students continue to use XNA in the closed lab to deploy to Xbox 360s.

CSE 1302E - Object Oriented C++ Programming for Engineers
Prerequisite: CSE 1301E and MATH 1113
3-2-4

Upon completion of this course, the student will understand both abstraction and advanced programming techniques of object-oriented programming in C++. This will include learning about abstract data types, multi-dimensional arrays, recursion, pointers and the STL. The student will be able to solve problems using objects, including designing and writing their own classes. The student will also understand the techniques of good programming style and software engineering concepts such as information hiding, re-use, use of symbolic debuggers, and separate compilation.

CSE 1302J - Programming & Problem Solving II
Prerequisite: CSE 1301C or CSE 1301J and MATH 1113
3-2-4

The second course in computer science provides coverage of more advanced topics of object-oriented programming. This includes the use of static variables and classes, multi-dimensional arrays, inheritance and polymorphism, text files and exception handling, recursion, and parameterized types. Elementary data structures (linked lists, stacks, and queues) are introduced to solve application problems. Graphical user interfaces and event driven programming are also introduced. Students must continue to use good programming style including proper documentation.

CSE 2300 - Discrete Structures for Computing
Prerequisite: CSE 1302C , CSE 1301J . CSE 1302E , MATH 1113
3-0-3

Coverage of discrete structures is crucial to any program in computing. This course covers propositional and predicate logic, proofs, set theory, relations and functions, algorithms and complexity theory, matrices, graphs and trees, and combinatorics. Throughout the emphasis will be on applications of these concepts in computing.

CSE 3153 - Database Systems
Prerequisite: (CSE 1302C or CSE 1302J or CSE 1302E) or IT 1324
3-0-3

The topics in this course span from a review of the traditional file processing systems to database management systems. Topics include files systems and file processing logic, planning, and major phases of database development: analysis, design and implementation. Labs use an SQL based database product such as Oracle.

CSE 3203 - Overview of Mobile Systems
Prerequisite: CSE 1302C CSE 1302E CSE 1302J or IT 1324
3-0-3

This course explores the use and issues of mobile applications in business including information security issues, connecting to cloud computing services, and mobile interface and programming. A significant design or development project will be created in the course.

CSE 3642 - Professional Practices and Ethics

Prerequisite: CSE 1301C CSE 1301J CSE 1302C CSE 1302J or IT 1324
2-0-2

This course covers the historical, social and economic consideration of the discipline. It includes studies of professional conduct, risks, and liabilities, and intellectual property relative to the software engineering and computing professions. Software engineering/computing case studies will be used.

CSE 4983 - CSE Computing Internship
Prerequisite: Senior standing or at least 20 major hours in a CSE degree program
2-2-3

This course helps students gain practical experience through real-world projects and professional work. Students will demonstrate an ability to apply computing principles and technologies relevant to their major in a specific real-world project jointly supervised by an industry mentor and a faculty advisor. Students will work in a project team in an enterprise environment, demonstrating ethical behavior as a computing professional, an understanding of social, professional and ethical issues related to computing, and an ability to integrate the knowledge acquired in preceding courses. Communication skills and leadership are also evaluated as well as professional computing skills and knowledge.

Construction Management

CM 1000 - Orientation to Construction and Development
1-2-2

An introduction to construction industry careers; an overview of construction industry sectors and the industry's impact on the economy; and discussion of the basics of the construction process. Also includes a preview of the construction degree curriculum and an overview of Southern Polytechnic policies, procedures, and resources.

CM 2000 - Construction Graphics
2-2-3

A study of the fundamentals of graphic language used by construction professionals, with an emphasis on developing skills in expressing concepts in visual form and in reading architectural and engineering construction documents.

CM 290X - Special Topics
Prerequisite: Consent of the department head
1 to 4

Special topics in Construction Management. Offered by the department at its discretion.

CM 3000 - Computer Applications in Construction
2-3-3

An introduction to microcomputers and commercial software. Students learn DOS and Windows manipulations, spreadsheets, word processing, visualization, and presentation software by actively using tutorials and help screens in a structured laboratory setting. Scheduling and estimating software are introduced.

CM 3040 - Building Information Modeling Applications I

Prerequisite: CM 2000 and CM 3000
2-2-3

A course on study of building information modeling for pre-construction applications. The course will enable the students to develop and modify building information models. It includes integration of estimates and schedules with building information models. It also prepares the students to identify conflicts caused by architectural, structural, mechanical, plumbing, and electrical systems during pre-construction stages.

CM 3110 - Residential and Light Construction Methods
Prerequisite: CM 1000, CM 2000
2-2-3

A study of materials, techniques, and methods used in residential and light construction. Foundations, wood frame and masonry structural systems, interior and exterior finishes, residential electrical, plumbing, and mechanical systems are included. Also included are residential building code requirements.

CM 3160 - Construction Equipment
2-2-3

Study of the basic principles, practices, and techniques used in the construction industry for selecting and managing construction equipment. Focuses on understanding the time value of money, estimating equipment ownership and operating costs, selecting the proper equipment for specific construction tasks, and estimating equipment production.

CM 3170 - Heavy Construction Practices
Prerequisite: CM 3160
3-2-4

Introduction to the various heavy construction systems such as roads, bridges, sewer/water treatment facilities, and other transportation systems. Topics include: contract analysis, work breakdown, equipment selection, site logistics planning, and project scheduling, cost productivity and performance management, quality control, and risk management.

CM 3180 - Mechanical and Electrical Building Systems
Prerequisite: CM 3160
3-2-4

A study of mechanical and electrical system types, how they are built, and how they affect the construction project. Topics will include air conditioning, heating, plumbing, fire protection, electrical power, electrical lighting, and building control materials and systems. The analysis of current construction drawings will be integrated into each topic.

CM 3190 - Sustainable Construction
Prerequisite: CM 3180
3-0-3

This course will emphasize the techniques and methods of sustainable construction. Importance of a collaborative team effort from owners, architects, engineers, constructors, and consultants will be integrated into the course. Influences on the cost and schedule due to a sustainable construction project will be analyzed. Topics will include performance certification techniques for sustainable sites, water efficiency, energy & atmosphere, materials & resources, indoor environmental quality, innovation and design. MEP systems such as ventilation, air conditioning, heating, electrical lighting and building control systems will be covered from a sustainable perspective.

CM 3210 - Applied Structures
Prerequisite: CET 2200
4-0-4

A study of structural design analysis and design concepts used in steel and concrete construction. Topics include selection of structural systems and the design of columns, beams, and other structural components.

CM 3230 - Heavy Materials & Temporary Structures
Prerequisite: CET 2200
4-0-4

Materials commonly used and the various methods employed with an emphasis on heavy, civil and highway construction. An introduction to the materials, methods, and techniques associated with the design of temporary structures used to support construction operations such as shoring systems, cofferdams, underpinning, slurry walls, and construction dewatering systems. Lab exercises of heavy construction operations with emphasis on productivity enhancement focusing on an integrated approach to planning, modeling, analysis, and design of construction operations, and the use of simulation models and other analytical tools.

CM 3260 - Temporary Structures
Prerequisite: CM 3210
2-2-3

A study of structural design and analysis concepts of temporary structures used in the construction process. Topics include formwork design, scaffolding, and material handling equipment and staging.

3 Credits

CM 3270 - Strategic Facilities Management
Prerequisite: CM 3160
3-0-3

Introduction to the various heavy construction systems such as roads, bridges, sewer/water treatment facilities, and other transportation systems. Topics include: contract analysis, work breakdown, equipment selection, site logistics planning, and project scheduling, cost control, productivity and performance management, quality control, and risk management.

CM 3280 - Building Mechanical and Electrical Codes and Loads
Prerequisite: CM 3180
4-0-4

Study of building mechanical and electrical system loads and applicable codes. Emphasis on how they affect the construction project. Topics will include air conditioning, heating, plumbing, fire protection, electrical power, electrical lighting and building control systems. The analysis of current construction drawings will be integrated into each topic.

CM 3290 - Facilities Management
Prerequisite: CM 3180
4-0-4

This course will emphasize the techniques and methods used in facility management. Importance of a collaborative team effort from owner, developers, architects, engineers, constructors, technicians and consultants will be integrated into the course. Influences on the environment,

society, budget and schedule due to construction, maintenance and energy needs will by analyzed. Topics will include LEED green building operations and maintenance, facility financial forecasting and management, construction management, maintenance management, energy management and real estate considerations. MEP systems such as ventilation, air conditioning, heating, electrical lighting and building control systems will be discussed from a sustainable construction, maintenance, and energy perspective.

CM 3310 - Introduction to Development
Prerequisite: CM 2000
3-0-3

The course provides an overview of the land development process and provides a foundation for the advanced land development courses. The course focuses on the steps in planning and carrying out the land development project and on the legal issues encountered in the land development profession. The course includes lectures, readings from the texts and closed library reserves, class discussion, problems, exercises and student presentations.

CM 3410 - Construction Quantity Surveying
Prerequisite: CM 3000, CM 3110, CM 3160
2-2-3

A study of techniques in the process of construction estimating, with an emphasis on development of the quantity survey. The completion of a specification takeoff and a quantity survey of commercial construction are required.

CM 3411 - Construction Estimating Software
Prerequisite: CM 3410
1-2-2

Hands-on computer application of commonly used commercial construction estimating software to construction projects. Instruction in use of the software.

CM 3420 - Construction Estimating and Bid Preparation
Prerequisite: CM 3410
3-2-4

The continued study of the estimating process emphasizing pricing the general contractor's work, including estimating procedures, development of direct and indirect unit costs, evaluation of subcontractor bids, bidding strategy and bid opening. The completion of an estimate, bid submission, and development of a schedule of values are required. Also included is an introduction to conceptual estimating.

CM 3430 - Construction Estimating for Development
Prerequisite: CM 3410
2-2-3

A study of quantity take-off techniques and equipment productivity analysis necessary to development. Small scale development project budgeting will be analyzed from the developer viewpoint. Initial conceptual design budget is based on square foot or assembly pricing for the various construction systems and detailed estimate for the infrastructure costs including site work and utilities. Indirect costs associated with zoning, local codes, and ordinances, as well as soft cost associated with design and engineering will be discussed.

CM 3440 - Heavy Estimating
Prerequisite: CM 3410

3-2-4

Advanced estimating techniques and bid preparation for heavy construction projects. Study of the principles used in developing cost estimates for heavy construction projects. Includes interpretation of contact documents, quantity take-off, pricing, and preparation of unit-price bid documents. Introduction and practice with takeoff software for bidding earthwork, paving, utilities, roads, and bridges.

CM 3480 - Mechanical and Electrical Systems Estimating
Prerequisite: CM 3410
4-0-4

A continuation of the study of the estimating process emphasizing the specialty contractors portion of the construction project. Topics covered will include the estimating procedure, soft costs, using standard industry references and software, and bidding strategy. A current set of mechanical, plumbing and electrical plans will be estimated.

CM 3500 - Building Codes
Prerequisite: CM 3110
2-0-2

This course will provide an overview of building codes from the perspective of construction managers and superintendent. Various issues related to building codes, which must be considered by the PM/CM/superintendent, will be discussed and follow the scheduled reading assignments.

CM 3620 - Construction Finance and Feasibility
Prerequisite: ACCT 2101
4-0-4

A study of Financial Management for the Contractor, and Builder/Developer Organization. Topics include: balance sheet analysis using Percentage of Completion Method, Completed Contract Method with Absorption Analyses, and Work in Process Accounting regarding construction progress payments in excess of costs and estimated earnings. Ratio analysis for construction industry and bid and payment/bond performance. Cash flow projection for construction projects. Also included is building construction economics in terms of: Value Engineering, Constructability, building delivery systems and real estate processes for the Builder/Developer and Construction Management organizations. Graduate students will do additional work on construction cost accounting.

CM 3710 - Site Planning
Prerequisite: CM 3310
3-2-4

An integrated theory and applications course that provides an exposition of theoretical principles associated with the site planning process, and then involves the students in hands-on application. The inter-relationship between site planning decisions and their potential consequences will be demonstrated through practical exercises.

CM 3800 - Construction Seminar
2-0-2

Business and management topics pertinent to the construction industry. The course consists of a series of seminar presentations by prominent industry representatives.

CM 3810 - Advanced Construction Practice

Prerequisite: CM 2000, CM 3000
3-0-3

This course will prepare students to participate in formal interdisciplinary competitions against other Construction Management/Architecture/ Civil Engineering programs at the 4 year university level. At these competitions students are given a real life project from which they must be able to prepare a preliminary design (Design/Build competitions only), complete estimate, CPM schedule and staffing plan and present these items both in a formal bound written report, as well as a formal oral presentation. The first nine (9) weeks of the course involves intensive instruction in the areas of writing, oral presentation, estimating, scheduling and preliminary design skills as part of the pre-competition preparation process. During the final third of the course students will be expected to make corrections to their competition submittal package based on feedback from the judges at the competition. Following the competition, additional topics involving the use of Building Information Modeling importance of a collaborative team effort from owner, developers, architects, engineers, constructors, technicians and consultants is the overall focus of this course.

CM 390X - Special Topics
Prerequisite: Consent of the department head
1 to 4

Special topics in construction. Offered by the department at its discretion.

CM 3912 - Workplace Law
3-0-3

A study of the legal constraints encountered in the workplace. Topics included are drugs and drug testing, sexual harassment, labor management cooperation, discrimination, worker compensation, foreign labor regulation, minority/women's business enterprises and professional regulation.

CM 4190 - Sustainable Operation & Maintenance
Prerequisite: CM 3180
3-2-4

This course will emphasize the techniques and methods used in sustainable operations and maintenance. Importance of a collaborative team effort from owner, occupant, facility management, and maintenance providers will be integrated into the course. Influences on the Environment, society, maintenance and energy needs will be analyzed. Topics will include LEED green building operations and maintenance
(Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation In Operations). MEP systems such as ventilation, air conditioning, heating, electrical lighting and building control systems will be discussed from a sustainable operations and maintenance perspective.

CM 4230 - Soils & Earthmoving
Prerequisite: CM 3230
3-2-4

Origin, classification, and physical properties of soil as used in engineering and construction applications, together with loads and stresses of soil on, and the more common types of engineering structures. To include an introduction of field sampling and testing for earthwork construction.

CM 4480 - Design/Build MEP Systems
Prerequisite: CM 3280, CM 3190
4-0-4

A study of the design-build delivery method applied to construction projects. The study starts with details of the process and how it differs from other project delivery methods. Topics will include building MEP systems (air-conditioning, heating, ventilation, plumbing, electrical power, electrical lighting and building control) and how they are planned and delivered in a design-build project. The analysis of current construction drawings will be integrated into the course.

CM 4510 - Construction Scheduling
Prerequisite: CM 3410
2-2-3

A study of the management techniques used in controlling the progress of construction projects, including development of a commercial project schedule, as well as simulation of updating and monitoring progress using critical path methodology. Commonly used commercial software packages are introduced.

CM 4511 - Construction Scheduling Software
Prerequisite: CM 4510 or approval of the Department Head
1-2-2

Hands-on computer application of commonly used commercial construction scheduling software to construction projects. Instruction in use of the software.

CM 4560 - Construction Project Management
Prerequisite: CM 4760, MGNT 3105
3-0-3

A study of traditional, design-build and construction management delivery methods, the management of field operations and administration of the construction contracts. Contract documents, project organization, supervision, working with owners and design professionals, procurement, management of subcontractors.

CM 4570 - Development Process I
Prerequisite: CM 3310
4-0-4

A study of development as a process with special emphasis on teams built around the developer. The various issues that must be considered by the development team will be discussed. These include conformity of the development process to sound business principles, adherence of development activities to relevant zoning and permitting requirements, and the potential environmental impact of the considered development.

CM 4620 - Development Process II
Prerequisite: CM 4570, CM 3620
3-0-3

The course provides an overview of the development process from project acquisition through construction/development and ultimately the management and sale of the property. For each one of the major types of commercial income producing properties, the course focuses on the preparation of development cost budgets and financial operating proformas. Property management strategies commencing with lease up/ revenue stabilization and continuing through the holding period and eventual sale are discussed. The roles of asset, portfolio and property management are reviewed. Topics in real estate finance including participants, their respective roles and risk tolerance are discussed. The three methods for traditional real property appraisals will be also covered. Finally, marketing research and analysis for each one of the major property types is discussed with a focus on developing product type, price point and absorption conclusions. The course includes lectures, readings from the texts, class discussion, problems and exercises.

CM 4639 - Construction Safety & Law
4-0-4

A study of construction safety and law as they pertain to day to day needs of the construction professional. Topics include but are not limited to safety and loss control principles and practices, contract documents and claims, insurance and dispute resolutions.

CM 4710 - Construction Safety
Prerequisite: CM 4760
4-0-4

A study of construction safety and loss control principles and practices. Topics include project security control, construction accident prevention, safety information sources, weather precautions, emergency planning, and OSHA procedures and regulations.

CM 4760 - Construction and Real Estate Property Law
Prerequisite: MGNT 3145
3-0-3

A study of Construction Contract Documents and Claims. Topics include: analyses of AIA B141, A101, A201, and contractual graphic and technical documents. Other supporting construction contract documents such as bid bonds, payment and performance bonds and construction modifications are studied. The traditional tri-union construction contract formation process is examined in relation to the owner, contractor, material men, and subcontractors. Discussions regarding damages for differing and unforeseen conditions, defective workmanship, and construction delay claims are surveyed in conjunction with AAA construction arbitration rules regarding emerging construction manager contracting processes.

CM 4800 - Construction Management Technique
Prerequisite: For General Concentration: CM 3420, CM 4510, CM 4560, CM 4710, CM 3620 For Specialty Concentration: CM 4510, CM 4560, CM 4710, ACCT 2101, CM 3480
1-4-3

Simulations and case studies of events that affect the construction organization and project. Topics and event simulations will include problems typically encountered in the construction industry such as changed conditions, strikes, inconsistencies in documents, and surety assumption of the contract. Presentations by prominent industry representatives pertinent to the event being simulated are included.

CM 4900 - Capstone Project
Prerequisite: General Concentration Students: CM 480 Specialty Concentration Students: CM 4800, CM 4710, CM 4480, CM 3280, CM 3500 Development Concentration Students: MGNT 3105, CM 4710, CM 4510, CM 3430, CM 4570, Facilities Management Students: CM 4620, CM 4480, CM 3500
2-2-3

This proposal is the application of course materials covered in the four-year curriculum to an actual construction project with a simulated business construct. Proposal includes developing a company organization, preparing a bid on a construction project approved by course professor, executing all documents necessary to create the company, implement the project management plan, and complete the construction contract.

Economics

ECON 1101 - Introduction to Economics
Prerequisite: MATH 1111
3-0-3

An analysis of the economics of production in society. Particular emphasis is given to the study of fiscal and monetary policies, and their impact on industry. Topics include marginal productivity analysis, graphic models, national income analysis, and the importance of the labor market in American industry.

ECON 2105 - Principles of Macroeconomics
Prerequisite: MATH 1111 or MATH 1113
3-0-3

A study of economics that examines the behavior of the aggregate economy as a whole. Particular emphasis is given to the study of economy-wide phenomena such as changes in unemployment, national income, rate of growth, gross domestic product, inflation and price level.

ECON 2106 - Principles of Microeconomics
Prerequisite: MATH 1111 or MATH 1113
3-0-3

An analysis of a market behavior of individual consumers and firms in an attempt to understand their decision-making in society. In particular, microeconomics focuses on patterns of supply and demand and the determination of price and output in individual markets in society.

ECON 2107 - Introduction to Economic Analysis
Prerequisite: MATH 1111
3-0-3

An analysis of finance and the economics of production in society. Particular emphasis is given to the study of fiscal and monetary policies, and their impact on industry. Topics include opportunity cost, marginal productivity analysis, national income analysis, the determinants of market demand, pricing strategy, market power, how the importance of the labor market in American industry, how time and interest affect economy, and interest rates.

Education

EDUC 1101 - UTeach Step 1
1-0-1

Step 1 allows students to explore teaching as a career. Following an introduction to the theory and practice behind excellent inquiry-based science and mathematics instruction, students teach lessons in elementary classrooms to obtain firsthand experience in planning and implementation.

EDUC 1102 - UTeach Step 2
1-0-1

In Step 2, students continue developing the lesson planning skills learned in Step 1 as they become familiar with exemplary middle school mathematics and science curricula. After observing a lesson being taught in a local school district classroom, students work alone or in pairs to evaluate the lesson, then, plan and teach three inquiry-based lessons to sixth, seventh, or eighth graders.

EDUC 1103 - UTeach Integrated Steps 1 and 2
2-0-2

This course is a combined version of EDUC 1101 and 1102. It allows students to explore teaching as a career. Following an introduction to the theory and practice of quality inquiry-based science and mathematics instruction, students teach lessons in elementary classrooms to obtain firsthand experience in planning and implementation. Students continue developing the lesson planning skills learned in the first part of the course as they become familiar with exemplary middle school mathematics and science curricula and instruction. After observing a lesson being taught in a local school district classroom, students work alone or in pairs to themselves plan and teach three inquiry-based lessons to sixth, seventh, or eighth graders.

EDUC 2010 - Knowing and Learning
Prerequisite: EDUC 1102 or EDUC 1103, C or Better
3-0-3

This course expands the prospective teacher's understanding of current theories of learning and conceptual development. Students examine their own assumptions about learning. They critically examine the needs of a diverse student population in the classroom.

EDUC 2020 - Classroom Interactions
Prerequisite: EDUC 2010, C or Better
3-0-3

This course moves from a focus on thinking and learning to a focus on teaching and learning. Prospective teachers are introduced to the way in which curriculum and technology are used in classroom settings to build interrelationships among teachers and students. They are taught how content and pedagogy combine to make effective teaching. This course has a field component that includes 3-4 days each of observation and teaching. Students should also expect to dedicate some out-of-class time to video transfer, lesson planning, and working on the portfolio project.

EDUC 4030 - Project Based Instruction
Prerequisite: Admission into Teacher Education Program
3-0-3

In this course, students master new technologies for problem-based investigations in math and science classrooms. Students also compare and contrast assessments to improve student learning. Students teach project-based lessons to secondary school students. This course has a field component that includes 2 observation days and 3 teaching days. Unlike previous field experiences, the teaching days in PBI run consecutively, which means that students should plan for 2 Fridays (3PM-7PM) and 2 Saturdays (8AM - 2PM). Students should also expect to dedicate some out-of-class time for lesson planning, and working on the portfolio project.

EDUC 4401 - Apprentice Teaching Seminar
Prerequisite: Admission into the apprentice teacher preparation program
Corequisite: EDUC 4406
1-0-1

Class meets once a week on campus for 1 1/2 hours. Apprentice Teachers share experiences and work on solutions for difficulties experienced in the Apprentice Teaching field experience. Teacher candidates learn about legal and logistical issues in teaching, and become familiar with how the diverse components of a high school are organized into a highly effective system. For their final product, Apprentice Teachers submit a portfolio, which documents their progress toward meeting the Ga PSC Certification standards for new teachers.

EDUC 4406 - Apprentice Teaching
Prerequisite: Admission into the apprentice teacher preparation program
Corequisite: EDUC 4401
0-25-6

Supervised practicum in high school classroom teaching, conducted in cooperating schools, as part of the teacher preparation program. Consists of teaching, analysis, and evaluation, and at least twenty-five hours of fieldwork a week for one semester.

MAED 2010 - Functions and Modeling
Prerequisite: MATH 2254
3-0-3

This course expands knowledge of topics in Mathematics, with an emphasis on how they can be presented and taught at the secondary level. It includes topics from precalculus through calculus and utilizes lab-based activities and technology. Students explore a variety of contexts that can be modeled using families of functions, including linear exponential, polynomial, and trigonometric functions.

RSCH 3610 - Research Methods
Prerequisite: Completion of 4 lab-based science courses or completion of 2 lab-based sciences and MATH 2255
3-0-3

Students perform independent inquiries and use skills from mathematics and science to solve research problems.

Electrical and Computer Engineering Technology

ECET 1001 - Orientation
1-0-1

This course will provide an introduction to Electrical and Computer Engineering Technology, to include: an introduction to the ECET faculty, an overview of career opportunities, available campus facilities, student organizations, etc. Some of the skills necessary to students will also be introduced. These include: writing formal lab reports and learning basic computer skills.

ECET 1012 - Design Fundamentals
Prerequisite: ECET 1001 or concurrently, MATH 1113 or concurrently
1-3-2

This course will indtroduce students to engineering technology design principles by having them participate in team based design competitions. Major goals of the course include learning how to work in teams and learning how to approach a complex design problem from many different perspectives. Fundamental Engineering Technology skills will also be taught which include critical thinking, debugging methodologies, and circuit construction techniques.

ECET 1101 - Circuits I
Prerequisite: ECET 1012, ENGL 1101, MATH 2253 or concurrently
3-3-4

This course introduces basic electrical quantities. Techniques for analyzing resistive networks are heavily emphasized. In addition, the physical mechanisms underlying capacitance and inductance

are examined along with analysis of transient responses in circuits containing resistors and capacitors or resistors and inductors. The course concludes with a treatment of dependent sources. Laboratory exercises reinforce theoretical concepts presented in the class and provide various opportunities to become familiar with standard instrumentation in electrical engineering technology.

ECET 1200 - Digital I
Prerequisite: ECET 1101 or concurrently
3-3-4

A study of digital circuit fundamentals with an emphasis on combinational and sequential logic design, logic simplification and implementation using standard digital IC's and programmable logic devices. Topics include: binary number systems, binary arithmetic, logic families, design techniques, logic simulation, F/F's, counters, registers, memory technologies and PLD's.

ECET 2000 - Introduction to Biomedical Engineering Technology
Prerequisite: ECET 2111, BIOL 2107,
Corequisite: ECET 2310
3-0-3

An overview of Biomedical Engineering Technology and the Biomedical Engineering industry. The course provides an introduction to engineering applications in the medical and health care industry. Emphasis will be on the analysis of biological/biomedical problems utilizing fundamental concepts and tools. Topics include the acquisition, monitoring and analyzing biological signals, electrodes, bi-potential measurements, ECG, pacemakers, defibrillators, pressure transducers, blood flow monitoring, ultrasonics, troubleshooting, and electrical safety.

ECET 2111 - Circuits II
Prerequisite: ECET 1101, and MATH 2254, and either PHYS 1111 or PHYS 2211 can be taken concurrently.
3-3-4

This course primarily extends the circuit analysis techniques learned in ECET 1101 to circuits containing all three types of passive circuit elements and sinusoidal sources. Several adjunct topics are then presented including analysis of complex networks, dependent sources, transformers, 3-phase circuit analysis, resonance, filters and Bode plots. Laboratory exercises reinforce theoretical concepts presented in the class and provide various opportunities to become proficient in working with standard instrumentation in electrical engineering technology.

ECET 2210 - Digital II
Prerequisite: ECET 1200, ECET 2300
3-3-4

The study of digital design principles with emphasis on the use of LSI, MSI, and SSI circuits in the application and design of complex digital systems. Principles covered include: the study of an industry standard micro-controller, assembly language programming, logic family characteristics, system interfacing and system timing issues.

ECET 2300 - Electronics I
Prerequisite: ECET 2111 and, MATH 2254 ,and either PHYS 1111, 1111L or PHYS 2211 course can be taken concurrently
3-3-4

A study of the characteristics, analysis, and practical applications of diodes, BJTs, and FETs. Semiconductor theory, biasing, stability and small-signal models of BJTs and FETs are included. The course covers an introduction to the characteristics of the ideal op-amp including some basic op-amp circuits. Laboratory exercises include proto-boarding, designing and analyzing selected

circuits.

ECET 2310 - Electronics II
Prerequisite: ECET 2111, ECET 2300
3-3-4

A study of BJT and FET amplifiers including: amplifier frequency response, multistage amps, differential amps, feedback principles and heat sink principles. The characteristics, performance and practical applications of modern linear integrated circuits including: operational amplifiers, comparators, multipliers, logarithmic amplifiers and oscillators are also covered. Laboratory exercises include proto-boarding, designing and analyzing selected practical circuits. P-Spice simulations and computer-aided testing are utilized in conjunction with some laboratory exercises.

ECET 2800 - Introduction to Telecommunications
Prerequisite: ECET 2110
3-0-3

A study investigating the fundamentals of the telecommunications industry regulations, standards (international & national), state-of-the- art telecommunications systems and management issues as well as other topics will be explored.

ECET 3000 - Electrical Principles
Prerequisite: PHYS 1112, 1112L or PHYS 2211 , 2211L
3-3-4

Covers basic circuit theory including the ac and dc characteristics of resistors, capacitors and inductors as used in elementary single and three-phase circuits. Characteristics of basic industrial electric motors and single and three-phase connections are studied. Basic factory automation is covered including sensors, relay control and programmable logic controllers. Laboratory exercises supplement the material discussed in class. This course cannot be used for credit by CpET or EET majors.

ECET 3010 - Health Care Safety
Prerequisite: ECET 1012
3-0-3

A discussion of the safety considerations and practices employed in health care facilities. This course emphasizes the examination, study, and review of safety codes and procedures within the health care field. Topics include: JCAHO, BRH, CAP, OSHA, NFPA, and AAMI codes; first aid and CPR; electrical, fire, and radiation safety; infectious control; and hazardous communications.

ECET 3020 - Biomedical Instrumentation
Prerequisite: ECET 2000
3-3-4

An introduction to biomedical instrumentation principles, design, measurement and analysis techniques. This course provides an overview of typical biomedical instruments used in the field. Topics include the acquisition and analysis of biomedical signals, a study of medical diagnostic instruments and equipment; monitors, intensive care units, coronary care units, operating room equipment, telemetry systems, ECG machines, life support equipment, respiratory instrumentation, brain monitors, medical ultrasound, electro-surgery units, and hemodialysis machines.

ECET 3030 - Biomechanics
Prerequisite: ECET 3020
3-3-4

An introduction to mechanical properties of bone, muscle, and soft tissue. Topics include static and dynamic analysis of human bodily movement, the design of orthotic/prosthetic devices and orthopedic implants, rehabilitation engineering, biomechanics simulation, kinetic analysis of biological systems and medical devices.

ECET 3220 - Digital III
Prerequisite: ECET 2210 and ECET 2310
3-3-4

The student will design a single board computer (SBC) incorporating standard components such as RAM, ROM, address decode, and input/output devices such as keyboards and LCD displays. A complete software monitor system will be developed for the SBC utilizing industry standard development tools. One of the major objectives of this class is to provide an environment within which the student can experience a complete industry-like project development cycle. This cycle will include the design, development, construction and test of the project. Advance I/O topics will also be covered including ADC and DAC operation and interfacing.

ECET 3400 - Data Communications
Prerequisite: ECET 2310, PHYS 1112, 1112L or PHYS 2212, PHYS 2212L
3-3-4

This course is a survey of data communication topics. The OSI and TCP/IP protocol models are covered, with emphasis placed on protocols associated with the lower layers. The course includes synchronous and asynchronous transmission, line codes, modems, signaling, effects of bandwidth and noise, and digital and analog modulation techniques. Transmission media and error detection and correction are also covered. Other areas studied include analog-to-digital conversion, multiplexing, circuit and packet switching, and network topologies.

ECET 3410 - High Frequency Systems
Prerequisite: ECET 2310, PHYS 1112, 1112L or PHYS 2212 , 2212L
3-3-4

A study of electronic transmission systems. The course includes the detailed study of rf transmission lines with a concentration on their fundamental principles, specifications, operation and practical applications. The course also includes the study of the fundamental principles of wireless and fiber-optic communications. Electromagnetic interference and electrostatic discharge, standards and regulations, and an introduction to the concepts of distributed networks is also introduced.

ECET 3500 - Survey of Electric Machines
Prerequisite: ECET 2310, PHYS 1112 1112L, or PHYS 2212 2212L
3-3-4

This introductory course in the characteristics and applications of basic electric machinery will begin with a review of magnetic circuits and transformers. Single-phase, three-phase, autotransformers, instrument transformers and buck-boost transformers will be covered. Three-phase and single-phase induction motors, synchronous motors and synchronous generator, dc motors and dc generators will also be included. The laboratory exercises will involve operating and testing transformers and machines to determine their operating characteristics. Among these characteristics will be the efficiency and voltage regulation as determined by direct and indirect methods.

ECET 3600 - Test Engineering
Prerequisite: ECET 2210, ECET 2310
3-3-4

An introduction to test engineering principles with emphasis on computer-controlled instrumentation and data acquisition using industry standard bus structures such as the IEEE-488 bus and related protocol, D/A, A/D, and parallel I/O interfaces. Application software will be written in Visual Basic for testing a particular unit and interfacing various GPIB instruments. Visual Basic will be used as the overall project management software for the Unit Under Test. Design for testability and related topics will also be covered. Laboratory projects will emphasize automated testing using the principles covered in class.

ECET 3620 - Signals and Systems Analysis
Prerequisite: ECET 2310, MATH 2306
3-3-4

Analysis of continuous -time signals occurring in circuits and systems containing linear and nonlinear elements. Analysis methods include graphical techniques, Laplace transform, Fourier analysis, convolution, and difference equations. Fundamental topics regarding AM and FM communication systems, Bode plots for transfer functions of arbitrary complexity, classical filter responses, and practical second-order filter designs are also presented. An introduction to discrete-time systems including sampling theory is also covered. MathCad and PSpice are utilized in conjunction with some of the computational laboratory exercises.

ECET 3640 - Introduction to Systems Engineering and Robotics
Prerequisite: ECET 2310
3-3-4

This course will introduce students to the general principles of Systems Engineering through the development of an actual robotic systems. When completed, each student will understand the basic elements of system engineering design including requirements analysis, functional decomposition, subsystem decomposition, risk analysis, physical and logical interface specification, physical modeling, simulation, and life cycle planning.

ECET 3701 - Embedded PCs
Prerequisite: ECET 2210, ECET 3710/ECET 3810
3-3-4

Introduction to the programming and interfacing of embedded PC's, with emphasis on systems using single-board, x86-based, computers. Programming will introduce both assembly and C languages. Interfacing will emphasize the use of the serial, parallel and USB ports. Operating systems will emphasize Linux and DOS. The PC BIOS and peripherals such as disk drives and video interfaces will also be studied.

ECET 3710 - Hardware Programming and Interfacing
Prerequisite: ECET 1200 , ECET 2300
3-3-4

This course will teach students the fundamental concepts of hardware programming and interfacing using the C programming language and several interfacing technologies commonly used in microcontroller design. The associated laboratory experiments will be oriented around a popular microcontroller and associated peripheral devices. In addition to learning basic design and interfacing techniques, other skills such as writing pseudo code, developing C-based applications, and applying statistical analysis will be explored.

ECET 3810 - Applications of C++, JAVA and HTML
Prerequisite: ECET 1012
2-3-3

A study in the applications of several key programming environments. This course covers such topics as: data types, structures, functions, arrays, file I.O., system calls, data portability, security and Internet related topics as they pertain to the appropriate programming language.

ECET 390X - Special Topics
Prerequisite: Junior standing
1 to 4

Special topics selected by the department. Offered on a demand basis.

ECET 4010 - Virtual Biomedical Instrumentation
Prerequisite: ECET 3020, ECET 3810
3-3-4

An introduction to the design of biomedical instrumentation using a graphical programming language such as LabVIEW or HP VEE. Topics include the design and programming of virtual systems such as cardiac monitors, healthcare information management systems, and patient monitoring systems.

ECET 4020 - Biomedical Imaging
Prerequisite: ECET 3020, PHYS 2212, 2212L or PHYS 1112 1112L
3-3-4

An introduction to the principles of the major imaging equipment including x-ray radiology, x-ray computed tomography (CT), ultrasonography and magnetic resonance imaging (MRI). Includes a discussion of other emerging imaging technologies such as nuclear imaging (PET and SPECT).

ECET 4030 - Bioinformatics and Telemedicine
Prerequisite: ECET 3600, ECET 3810
3-3-4

An introduction to computer-assisted technology used in the medical and health care industry. Design of communication network infrastructure related to accessing medical databases, visualizing medical techniques, and manipulation of histological medical data. Provides as introduction to wireless/wired LANs/WANs, computer-assisted surgical software, and hardware/software for medical image analysis.

ECET 4040 - Biometrics
Prerequisite: MATH 2260, ECET 2310
3-3-4

An introduction to biometric recognition systems that utilize the physiological or behavioral characteristics of an individual for identification. In this course students will study the design of various biometric systems based on fingerprints, voice, face, hand geometry, palmprint, iris, retina, and other modalities. The performance of biometric systems and issues related to the security of these systems will be discussed. Multimodal biometric systems that use two or more of the above human characteristics will also be discussed.

ECET 4050 - BMET Capstone
Prerequisite: Senior standing
3-3-4

This course introduces the student to an on-site learning experience at an operating biomedical equipment section of a health care facility. Supervision of the intern is shared by the working environment supervisor and a faculty advisor. Internist performance is evaluated at weekly

seminars. Topics include: problem solving, use of proper interpersonal skills, interpreting work authorizations, identifying logistical support requirements, servicing biomedical instruments, evaluating operating cost, and professional development.

ECET 4320 - Active Filters
Prerequisite: ECET 2310
3-3-4

A study of the characteristics, analysis, and practical topologies of active filters. The state-variable and Sallen-Key topologies are emphasized. Various filter responses are studied including Butterworth, Chebyshev, Bessel, and Cauer (elliptic). Delay, sensitivity, frequency scaling, impedance scaling, determination of pole-zero locations, and transformations of transfer functions are covered. Filter synthesis by equating coefficients of applicable transfer functions is included. The design of filters using normalized tables is presented. An introduction to switched-capacitor and digital filters is also included. Laboratory investigations include proto-boarding, designing and analyzing selected practical active filters. P-Spice, Math-Cad, and computer-aided testing are utilized in conjunction with the laboratory exercises.

ECET 4330 - Audio Technology
Prerequisite: ECET 2210, ECET 2310
3-3-4

The fundamentals of specifications, standards, devices, circuits and systems used in audio are studied. Acoustics, power amplifiers, preamplifiers, frequency contouring circuits, signal processors, microphones, loudspeakers and sound reinforcement systems are covered. During the first half of the term, approximately six laboratory exercises are utilized to reinforce associated lecture topics. During the second half of the term, an audio design project is completed. Students are required to research, design, analyze, and implement the audio project. Computer based simulation software (such as PSpice) and a computer-aided-testing system are used to analyze several of the lab exercises and the audio project.

ECET 4420 - Communications Circuit Applications
Prerequisite: ECET 2310, PHYS 1112, 1112L or PHYS 2212, 2212L
3-3-4

A study of radio frequency and optical-wavelength communications circuits and their applications. A variety of basic transmitter and receiver circuits are studied, including amplifiers, tuned oscillators, phase-locked loops, modulators and demodulators. Spectral analysis is introduced and the effects of noise in communications systems are investigated. Laboratory experiences demonstrate circuits and concepts discussed in the classroom.

ECET 4431 - Wireless Communications Systems
Prerequisite: ECET 3410
3-3-4

This course investigates point-to-point radio frequency (rf) communications systems. The underlying principles, requirements, and characteristics of electromagnetic propagation and antennas are studied. Existing systems and recent advances in the area of wireless communications will be covered, including terrestrial and satellite applications. Topics covered include FDMA, TDMA, and CDMA based design. The application of wireless design principles to radar will also be discussed. Laboratory experiences and computer simulations supplement the classroom discussions.

ECET 4432 - Fiber-optic Communications Systems
Prerequisite: ECET 3410
3-3-4

A detailed study of optical-wavelength communications systems . The underlying principles, requirements, and characteristics of optic sources, detectors, and dielectric wave-guides (fibers) are studied. Heavy emphasis is placed on systems analysis, including power budgets, bandwidth budgets, and signal-to-noise ratios. Recent advances in the area of fiber-optics will be covered, as well as emerging technologies and applications. Laboratory experiences supplement the classroom discussions.

ECET 4450 - RF Electronics
Prerequisite: ECET 2310, ECET 3410, and either PHYS 1112, 1112L or 3 Credits PHYS 2212, 2212L
3-3-4

A study of practical RF transceiver design and fabrication techniques. Theoretical concepts underlying transmitter and receiver circuits such as oscillators, mixers, filters, amplifiers, transformers and automatic gain control are discussed. Students build and test a 7 MHz superheterodyne Morse code transceiver in the lab.

ECET 4510 - Power System Analysis
Prerequisite: ECET 2111
3-3-4

This course involves the analysis of power systems starting with the calculation of line resistance, line inductance, and line capacitance of power transmission lines. These parameters are used to model power systems in order to derive the bus impedance matrix, perform network calculations and analyze systems for symmetrical and unsymmetrical faults. The laboratory will be of a problem solving nature and will involve the solution of network problems with computer software such as Math-Cad.

ECET 4515 - Power Distribution Systems
Prerequisite: ECET 3500
3-3-4

A detailed study of the segment of the electric power system between bulk power sources and customer services drops, including sub transmission circuits, distribution substations, primary feeders, distribution transformers, and secondary circuits. Methods of analysis and design are applied to topics such as load characteristics, voltage drop, power loss, capicitor applications, voltage regulation, and system protection. Laboratory work - primarily simulation - parallels lecture coverage.

ECET 4520 - Industrial Distribution Systems, Illumination, and the NEC
Prerequisite: ECET 2111, ECET 3500
3-3-4

This introductory design course involves the lighting, wiring and electrical protection systems in commercial and industrial buildings. This course will cover: lighting fundamentals, light sources, lighting system layouts for interior spaces, protection of electrical systems, fuses, circuit breakers, instrument transformers and protective relays, grounding and ground-fault protection, feeder design and branch circuits for lighting and motors. This course will include projects - designing lighting and wiring systems for commercial/industrial buildings.

ECET 4530 - Industrial Motor Control
Prerequisite: ECET 2111, ECET 3500
3-3-4

This introductory design course is a study of manual and automatic, starters and controllers of ac

and dc motors. The course will concentrate on three-phase induction motor starters and controllers with some study of dc motor starters and controllers. The induction motor coverage will include both full-voltage and reduced voltage techniques, with the emphasis on the reduced voltage methods. Line impedance, auto-transformer, wye-delta and part-winding starters will be included. The laboratory will consist of several projects in designing, testing and demonstrating various motor starters and controllers. The designs will require using Programmable Logic Controllers in the projects. The course will conclude with variable frequency drives.

ECET 4540 - Introduction to Power Electronics
Prerequisite: ECET 2310, ECET 3500
3-3-4

An introduction to the devices, circuits and systems utilized in power electronics. An overview of power semiconductors: switches diodes, thyristors, gate turn-off thyristors, insulated gate transistors, MOS-controlled thyristors and other controllable switches. General power electronic circuits such as uncontrolled and phase controlled dc converters, dc -to-dc switch mode converters, switch mode dc-to-ac inverters and their application in motor drive, speed control and power supplies are included.

ECET 4560 - Electric Drives
Prerequisite: ECET 3500, and ECET 4610
3-3-4

This course covers basic AC/DC electric-machine drives for speed/position control. It presents an integrated discussion of electric machines, power electronics, and control systems. Computer simulations are used for understanding power-electronics based converters and the design of feedback controllers. Applications of electric drives can be found in electric transportation, robotics, process control, and energy conservation.

ECET 4610 - Control Systems
Prerequisite: ECET 2310, MATH 2306
3-3-4

This course is a study of feedback control systems theory including practical applications of compensation and PID concepts. Control system modeling, transient and steady state characteristics, stability and frequency response are analyzed. Compensation and controller design using Root locus methods are covered. The use of control system software, such as MATLAB, in the analysis and design of control systems is emphasized.

ECET 4630 - Digital Signal Processing
Prerequisite: ECET 2310 , ECET 3220, MATH 2306
3-3-4

An introduction to the concept of discrete and digital signals and systems. Difference equations, Discrete Fourier Transforms (DFTs), Fast Fourier Transforms (FFTs), Z-Transform techniques, IIR filter design, and FIR filter design are covered. An introduction to the architecture, assembly language and application examples of general and special purpose microprocessors such as the TMS 320 and DSP56000 families is included.

ECET 4710 - Network Programming and Interfacing
Prerequisite: ECET 3400, ECET 3810
3-3-4

Introduction to the application and design of embedded and networked PC systems. Programming emphasis will be Visual C++ including TCP/IP. Networking emphasis will be on an Ethernet LAN connecting desktop and embedded PC's. Interfacing emphasis will be on robotic subsystems

including vision, voice, motion-control, web-based data acquisition, and wireless sub-systems. WinCE and pocket PC networking will also be introduced.

ECET 4720 - Distributed Microcontrollers and PCs
Prerequisite: ECET 3220, ECET 4710
3-3-4

A study of networked PIC microcontrollers connected to a host PC or several networked PCs. Two popular versions of various microcontroller architectures will be discussed. Software will emphasize both assembly language programming and ANSI C programming. Hardware will emphasize the bus interconnections between the devices such as RS232/RS485, I2C, CAN, SPI, etc. Example Real Time Operating Systems (RTOS) for microcontrollers is introduced as well. Development of a capstone project, through the design of a printed circuit board is also included.

ECET 4730 - VHDL and Field Programmable Gate Arrays
Prerequisite: ECET 2210
3-3-4

Provide a thorough introduction to the Virtual Hardware Description Language (VHDL) and apply this knowledge to Field Programmable Gate Arrays (FPGA's). Current applications will be presented and students will design, develop, test and document complete FPGA based designs. The use of schematic capture tools for configuring FPGA's will also be covered.

ECET 4820 - Communications Networks and the Internet
Prerequisite: ECET 3400
3-3-4

This course covers the fundamental concepts, operational characteristics, and design principles of digital networks. The course focuses on local-area and wide-area network topologies and protocols that are used in the Internet. Topics include: TCP/ IP protocol, Internet standards, routing and switching devices, Internet organization, Ethernet and virtual LANS, Frame Relay, and an overview of aspects of computer network operating systems related to networking. In the lab, students work with the protocols and devices used in local area networks and the Internet.

ECET 4830 - Telecommunications Management
Prerequisite: ECET 3400
3-0-3

A study investigating the issues encountered by management in the telecommunications industry. Course covers such broad topics as: regulations, national and international standards, the management of several key telecommunications technologies and managing telecommunication professionals. Laboratory exercises are also designed to illustrate the management of telecommunications environments.

ECET 4840 - Advanced Telecommunications
Prerequisite: ECET 2210, ECET 4820, ECET 3810
3-3-4

A study investigating several advanced telecommunications technologies and techniques. Course covers such topics as: data transmission principles, time and frequency domain concepts, Fourier signal analysis, transmission impairments (delay distortion, noise), channel capacity, sampling and quantization, routing and switching theory, routing algorithms and protocols, high-speed networking technologies, queuing theory, congestion control mechanisms, mobile and residential broadband systems, wireless technologies, network security techniques and implementation, and emerging technologies (IPv6, 3G and 4G networks).

ECET 4850 - Telecommunications Project
Prerequisite: ECET 4830 or concurrently, ECET 4840 or concurrently
3-3-4

This course teaches the student how to design, implement and troubleshoot advanced telecommunications networks. Both individual and team tasks are undertaken to challenge the student's acquired skill set. A comprehensive telecommunications project is completed, piece-by-piece, throughout the semester.

ECET 4860 - Network Security
Prerequisite: ECET 3400
3-3-4

This class teaches the fundamental concepts of network security including symmetric and asymmetric encryption techniques, key distribution systems, authentication mechanisms, IP Security, Web Security, Email Security, Intruders, and Malicious Software. The class includes several hands-on laboratory exercises related to the principles and concepts discussed in lecture.

ECET 490X - Special Topics
Prerequisite: Senior standing
1 to 4

Special topics selected by the department. Offered on a demand basis.

Electrical Engineering

EE 1000 - Foundations of Electrical Engineering
Prerequisite: Electrical Engineering Major
2-0-2

This course provides an introduction to Electrical Engineering and to SPSU including an introduction to the EE faculty, an overview of career opportunities, available campus facilities, student organizations, etc. Some of the skills necessary to EE students will also be introduced. These include: writing formal lab reports, preparing a speech, drafting a winning resume, learning basic computer skills, and a research project.

EE 2301 - Circuit Analysis I
Prerequisite: PHYS 2211
3-3-4

This course introduces basic circuit analysis including resistive circuits, voltage and current sources, analysis methods, network theorems, energy storage elements, and AC steady-state analysis. Techniques for analyzing resistive networks are heavily emphasized. In addition, the physical mechanisms of capacitance and inductance are examined along with analysis of transient responses in circuits containing resistors, capacitors, and inductors. Laboratory exercises reinforce the theoretical concepts presented in class and provide various opportunities to become proficient with standard instrumentation used in electrical engineering.

EE 2302 - Circuit Analysis II
Prerequisite: MATH 2306, PHYS 2212, and EE 2301
3-0-3

A continuation of basic Circuit Analysis I which focuses on RC, RL, and RLC circuits, mutual

inductance, series and parallel resonance, two-port networks frequency response, AC power including power factor correction, as well as three phase circuits. Simulation is heavily emphasized using state of the art software such as PSPICE.

EE 2401 - Semiconductor Devices
Prerequisite: CHEM 1211, CHEM 1211L, and MATH 2253
3-0-3

This course focuses on the fundamentals of semiconductor chemistry and physics and how it applies to electrical engineering. Basic electrostatics, such as electric field and potential capacitance, energy and Poisson's equation, quantum nature of electrons in atoms and their energy, quantum nature of light, and energy band concept of single crystals are studied. Various crystalline structures of semiconductors are studied along with proper doping strategies.

EE 2501 - Digital Logic Design
Prerequisite: EE 2301
3-3-4

This course is a study of digital circuit fundamentals with an emphasis on combinational and sequential logic design, Boolean algebra and switching theory, logic simplification and implementation using standard digital IC's of various logic families and programmable logic devices. A significant emphasis is placed on the study of digital design principles with emphasis on the use of LSI, MSI, and SSI circuits in the application and design of complex digital systems with a detailed examination of CMOS and TTL at the transistor level. Laboratory exercises reinforce theoretical concepts presented in the lecture utilizing an industry standard micro controller.

EE 3401 - Engineering Electronics
Prerequisite: EE 2301
3-3-4

This course emphasizes internal operation, terminal characteristics, and models of diodes, op-amps, transistors (bipolar & field-effect), and optical devices (LED's & phototransistors). In addition, areas of nanotechnology such as carbon nanotubes and grapheme are explored. A lab component in the course focuses on applying the skills attained in this course to emerging technologies such as robotics, biomedical, motors, etc.

EE 3405 - Electronic Materials
Prerequisite: EE 2401
3-0-3

EE 3405 is a course in the electronic properties of materials and devices for engineering applications. Elementary materials science concepts beginning with quantum mechanics is covered. Additional topics covered include electrical and thermal conduction in solids; dielectric materials, strength and breakdown; and magnetic materials, properties, devices and superconductivity.

EE 3501 - Embedded Systems
Prerequisite: EE 2501 and Engineering Standing
3-3-4

An introduction to microcontrollers and integrated microprocessor systems. Emphasis is placed on the Intel 8051 and Motorola 68HC11 families and derivatives. Hardware/software trade-offs, system economics and functional configurations are examined along with serial and parallel communications, watchdog timers, low power operation, and assembly language programming techniques. The architecture of design of sampled data systems is explored using case studies of representative applications.

EE 3601 - Electric Machines
Prerequisite: EE 2301 and Engineering Standing
3-3-4

The study of the fundamentals of electro-mechanical energy conversion, magnetic circuits and electromagnetic devices, theory of operation and operating characteristics of transformers, DC machines, AC induction and synchronous machines and stepper motors.

EE 3605 - Electromagnetics
Prerequisite: MATH 2255, PHYS 2212, 2212L,
3-0-3

An advanced treatment of static electric and magnetic fields and their sources, Poisson and Laplace equations and boundary value problems, time-varying electromagnetic fields and Maxwell's equations. Plane wave propagation in free space and in materials is examined.

EE 3701 - Signals and Systems
Prerequisite: MATH 2306 and EE 2301
3-0-3

This course explores discrete and continuous-time systems analysis, with emphasis on linear time-invariant (LTI) systems, the classification of continuous-time systems, convolution and its application to LTI systems and analysis of LTI systems via the Laplace transform, Fourier transform, and Fourier series.

EE 3702 - Communication Systems
Prerequisite: EE 3701 and Engineering Standing
3-0-3

Amplitude modulation, frequency and phase modulation and demodulation techniques are examined. Bandwidth and power considerations, noise in communication systems, signal analysis and transmission are included as are noise and probability aspects of communication systems and practical communication systems

EE 4201 - Control Systems
Prerequisite: Engineering Standing, EE 2301, MATH 2306 , and ENGR 2214
3-3-4

This is the first control course for engineering students. The following topics will be covered in the course: Basic Ideas of Feedback Control; Control System Modeling; Laplace Transform; Transfer Functions; Time Response of First-Order and Second-Order Systems; Reduction of Multiple Subsystems; Stability Analysis; Stead-State Errors; Design Via Root Locus; Frequency Response Analysis; PID Control, MATLAB/Simulink and its Control Toolbox.

EE 4405 - Fundamentals of Solar Power and Renewable Energy
Prerequisite: EE 2301
3-0-3

EE 4405 is a course that evaluates and assesses energy resources, global issues and 21st century sustainability. Renewable energy technologies including photovoltaic, concentrated solar, wind, geothermal, biomass and hydro power are covered. An emphasis is placed on solar power, including device physics, system design and operation principles. Economic and societal impacts of the use of fossil fuels in today's power plants are addressed, and engineering and alternative

energy solutions explored.

EE 4701 - Professional Practice
Prerequisite: EE 3401and Engineering Standing
3-0-3

This course covers the historical, social and economic considerations of the electrical engineering discipline. It includes studies of professional conduct, risks, and liabilities, and intellectual property relative to the electrical engineering profession. Electrical Engineering case studies will be use. Further the study of professional ethics, electrical code fundamentals (i.e. NEC), laws governing the practice of electrical engineering, contractual relationships, the licensure process for professional engineers are all undertaken in this course.

EE 4800 - Senior Project
Prerequisite: EE 4201 or EE 4701 and Engineering Standing
2-6-4

This course is designed to be the culmination of the undergraduate electrical engineering education. Under the guidance of the professor, students will form small design teams, choose a proposed or ongoing project and research and redesign the project. Working as independent teams with guidance from the lead professor the capstone projects will be completed and the results presented for review to a panel of faculty, students, and others such as staff and Industrial Advisory board members.

Electronic Technology eCore

ETEC 1101 - Electronic Technology in the Educational Environment
Prerequisite: Beginning level skill in Microsoft Word and Microsoft PowerPoint & Exited Learning Support in Reading and English
2-0-2

This course is an introduction to using personal computers to communicate with individuals and organizations and to access, store, and analyze information. Emphasis is on exploring the role of technology in present and future learning experiences. Topics include the digital divide, virtual communities, telecommuting, job search and readiness, e-commerce, globalization, privacy versus security, and intellectual property in cyberspace. Students will use their practical technology skills to create word-processed documents, an electronic presentation, and a web page. (eCore Course – Online – Not accepted at SPSU)

Engineering

ENGR 2214 - Engineering Mechanics – Statics
Prerequisite: PHYS 2211, 2211L (or concurrent enrollment).
3-0-3

Study of force vectors, equilibrium of particles, equilibrium of rigid bodies in two and three dimensions; trusses, friction, centroids and moments of inertia.

ENGR 2710 - Engineering Calculations
Prerequisite: MATH 2254

4-0-4

This course will focus on the fundamentals of linear algebra as applied to electrical, mechanical, and mechatronic engineering applications. Students will be introduced to the fundamentals of state-space theory of linear systems, and to apply the theory to the modeling, analysis, and design of real-world systems. The student should be able to complete calculations by hand for small problems, or by using Matlab for larger problems.

ENGR 3122 - Dynamics
Prerequisite: ENGR 2214, MATH 2254
3-0-3

A study of the mechanics of particles and rigid bodies. Topics covered include: kinematics and kinetics of particles; work and kinetic energy; impulse and momentum; rigid body motions; relative motion; and moving coordinate systems.

ENGR 3125 - Machine Dynamics & Vibrations
Prerequisite: CSE 1301E , ENGR 3122 and Engineering Standing
3-0-3

The analysis of motion, velocity, acceleration, and forces in mechanisms and machines. Emphasis is placed on the analytical methods suitable for computerized analysis as well as graphical methods for visualization and preliminary design studies. Also an introduction to vibration theory, including the modeling and analysis of oscillatory phenomena found in linear discrete and continuous mechanical systems.

ENGR 3131 - Strength of Materials
Prerequisite: ENGR 2214 and MATH 2254
3-0-3

The study and mathematical modeling of the mechanical behavior of materials under load. Emphasis will be on the elastic conditions of equilibrium, compatibility and material behavior. Includes study of stress and strain in columns, connectors, beams, eccentrically-loaded members, as well as introduction to statically indeterminate members.

ENGR 3132 - Strength of Materials Lab
Prerequisite: Co-registration or prior completion of ENGR 3131 required.
0-3-1

The study and performance of laboratory testing and analysis techniques used in the determination of the mechanical behavior of materials under load.

ENGR 3305 - Data Collection and Analysis in Engineering
Prerequisite: MATH 2254
3-0-3

This course combines the elements of proper engineering data collection and techniques unique to the field of civil engineering with the numerical analysis techniques needed to properly analyze the data. Using real world examples, students will collect various types of engineering data then analyze the data such that statistically valid conclusions can be achieved. Emphasis will be given to standard engineering practices.

ENGR 3324 - Project Cost Analysis
Prerequisite: MATH 2253 and Engineering Standing
4-0-4

A study of the project cost measurement and analysis techniques unique to the engineering profession. Cost analysis procedures and their relationship with cost estimation methodologies are examined. Emphasis is placed on techniques for economy studies of multiple alternatives, uncertainties in forecasts, increment costs, taxes, and retirement and replacement of highways, transportation systems, bridges and publics works facilities. Current economic issues are also discussed.

ENGR 3343 - Fluid Mechanics
Prerequisite: ENGR 2214 and Engineering Standing
Corequisite: MATH 2306
3-0-3

A study of the fundamentals of fluid statics and dynamics including hydrostatic forces on submerged plates, continuity of fluid flow and fluid flow principles. Applications of turbulent and laminar flow in conduits are emphasized. The systems approach is practiced in analyzing the application of flow measuring devices, piping, pumps and turbines.

ENGR 3345 - Fluid Mechanics Laboratory
Prerequisite: Engineering Standing
Corequisite: ENGR 3343, TCOM 2010
0-3-1

The laboratory reinforces the principles of fluid mechanics, studied in ENGR 3343, as they apply to hydraulic and pneumatic power, and fluid flow. Developing experimental data into effective laboratory reports is emphasized.

ENGR 4402 - Engineering Ethics
Prerequisite: Engineering Standing
1-0-1

This course looks at the practice of engineering in the context of ethics and ethical theory. Issues of safety, liability, professional responsibility, legal obligations are considered in the context of case studies. Particular emphasis is given to the application of the Professional Engineering Code of Ethics published by the National Society of Professional Engineers. Students will consider the resolution of ethical dilemmas through the development and evaluation of various courses of action related to specific case studies.

Engineering Design Graphics

EDG 1210 - Survey of Engineering Graphics
2-0-2

This course introduces the students to a broad range of engineering graphics topics. Freehand sketching, and computer-aided design (CAD) assignments cover theory and application in such areas as fundamentals of engineering graphics, drafting technique, lettering, orthographic projection, sectional views, pictorial drawings, dimensioning, and industry practices.

EDG 1211 - Engineering Graphics I
3-0-3

An introduction to engineering graphics in mechanical engineering and manufacturing with an emphasis on using computer-aided design (CAD) to produce finished engineering drawings

according to industry and ANSI standards. Topics include fundamentals of engineering graphics, orthographic projection, sectional views, pictorial drawings, dimensioning, industry practices , file management, geometric construction, basic 3D coordinate geometry, surface models, parametric solid modeling, and drawing composition.

EDG 1212 - Engineering Graphics II
Prerequisite: EDG 1211
4-0-4

A continuation of Engineering Graphics I, covering advanced concepts of 3D geometry, parametric solid modeling, boundary representation of solids, databases for manufacturing and inspection, an introduction to geometric dimensioning and tolerancing according to the American National Standards Institute.

EDG 2160 - Civil Graphics and Computer Aided Drafting
0-6-3

An introduction to graphic principles and practices in civil engineering technology. This course includes the development of the basic drafting skills needed to produce civil engineering plans and graphical presentations. The elements of descriptive geometry are addressed. A major component of the course is an introduction to the fundamentals of computer-aided drafting and design (CADD).

EDG 3112 - Advanced Engineering Graphics
Prerequisite: EDG 1212
3-0-3

Advanced 3D CAD features and solid modeling techniques are covered including patterning, configurations, library features, sketch blocks, assemblies of parts, multi-body parts, and 3D printing.

EDG 4111 - Surface Modeling
Prerequisite: EDG 1212
3-0-3

This course covers surface modeling in 3D CAD, combining surface modeling, solid modeling and creating master models. The student is introduced to complex solid modeling, free form surface modeling and surface analysis. Splines, curves and three-dimensional sketches are used in conjunction with surfacing techniques to create shapes common to the automotive or aircraft industry. The shapes are analyzed for surface continuity to optimize designs.

EDG 4222 - CAD Customization and Standards
Prerequisite: TCOM 2010 and EDG 3112
3-0-3

This course covers topics in customizing CAD software and creating company standards. Topics include identifying company requirements, customizing the user interface, and writing company standards for the use of the software.

EDG 4224 - Engineering Design Graphics for Custom Manufacturing
Prerequisite: MET 1321 , MET 2322 and EDG 1212 all three are prerequisites with a "D" or better required in each.
2-2-3

Advanced 3D CAD features are covered including: sheet metal, weldments, and surface modeling.

Students will design and fabricate various metallic parts using an English Wheel, 3-Axis Bead Roller, and Shrinker/Stretcher machines.

Engineering Technology

ENGT 2124 - Statics with Applications
Prerequisite: PHYS 2211 or PHYS 1111 and MATH 2253
3-0-3

2D and 3D forces and moments acting on components, machine parts, frames, and structures are analyzed. Static rigid body force systems in equilibrium, including friction applications are included. Distributed load calculations using centroids and centers of gravity located by composite and CAD methods are practiced. An introduction to calculating the moments of inertia of machines and structures is also included. Real 2D and 3D design applications are emphasized. Assumptions considering safety, economics, quality and function are discussed. Not equivalent to ENGR 2214

ENGT 3124 - Strength of Materials with Applications
Prerequisite: ENGT 2124
Corequisite: ENGT 3124L
3-0-3

A study of stress and strain of deformable bodies in tension, compression, bending, and torsion. Topics include: axial stress and strain, thermal stress and strain, statically indeterminate systems, torsional stress and strain, power transmission in shafts, bending stresses in beams, beam deflections, combined stresses, elastic buckling in columns, and finite element analysis methods. ENGT 3124 and ENGT 3124L should be taken concurrently, but if a student has credit for one, the other can be taken alone. Not equivalent to ENGR 3131.

ENGT 3124L - Strength of Materials Lab
Corequisite: ENGT 3124
0-3-1

A study of stress and strain of deformable bodies in tension, compression, bending, and torsion. Topics include: axial stress and strain, thermal stress and strain, statically indeterminate systems, torsional stress and strain, power transmission in shafts, bending stresses in beams, beam deflections, combined stresses, elastic buckling in columns, and finite element analysis methods. ENGT 3124 and ENGT 3124L should be taken concurrently, but if a student has credit for one, the other can be taken alone. Not equivalent to ENGR 3131 .

English

ENGL 1000 - Writing Skills for International Students
Prerequisite: Departmental Approval
3-0-3

This course focuses on the language, organization and content of academic writing. Students will participate in process writing through the analysis of various rhetorical contexts. Emphasis will be given on building an academic vocabulary to enhance fluency.

ENGL 1101 - English Composition I
3-0-3

A composition course focusing on skills required for effective writing in a variety of contexts, with emphasis on exposition, analysis, and argumentation, and also including introductory use of a variety of research skills. Includes Regents' Essay practice and work in the ATTIC, as required. Final grade of "C" or better necessary to receive course credit. Special sections of the course may be offered that focus on the needs of those international students for whom English is a second language. Such sections will include a required lab hour in the ATTIC, but they will remain three-credit-hour courses. Also offered as an (eCoreonline) class.

ENGL 1102 - English Composition II
Prerequisite: "C" or better in ENGL 1101 Note: Some sections of ENGL 1102 offer special topics for writing.
3-0-3

A composition course that develops writing skills beyond the levels of proficiency required by ENGL 1101, emphasizing interpretation and evaluation, and that incorporates a variety of more advanced research methods. Includes Regents' Essay practice and work in the ATTIC, as required. Special sections dealing with a focused topic may be offered for international students for whom English is a second language. Such sections will include a required lab hour in ATTIC, but they will remain three-credit-hour courses. Also offered as an eCore (online) class. This course must be passed with a C or better.

ENGL 2030 - Research in Professional and Critical Writing
Prerequisite: ENGL 1102
3-0-3

This course provides an introduction to the research methods used by professional writers and by scholars working in literary studies, media studies, and cultural studies. Students explore the relationship between theory and research and learn how to approach writing from a variety of critical perspectives. Students will become familiar with a number of text-based and qualitative research methods. Students also learn digital research methods and apply them to a range of genres.

ENGL 2111 - Early World Literature
Prerequisite: ENGL 1102
3-0-3

A survey of important works of world literature from ancient times through the mid-seventeenth century. The course includes a variety of literary forms such as poetry, drama, nonfiction, short stories, and novels. The course presents literature as a reflection of culture and the history of ideas. Also offered as an eCore(online) class.

ENGL 2112 - World Literature Mid-1600s to Present
Prerequisite: ENGL 1102
3-0-3

A survey of important works of world literature from the mid-seventeenth century to the present. The course includes a variety of literary forms such as poetry, drama, nonfiction, short stories, and novels. The course presents literature as a reflection of culture and the history of ideas. Also offered as an eCore (online) class.

ENGL 2120 - British Literature Early to Present
Prerequisite: ENGL 1102
3-0-3

A survey of important works of British literature. Includes a variety of literary forms such as poetry,

drama, nonfiction, short stories, and novels. The course presents literature as a reflection of culture and the history of ideas.

ENGL 2121 - Early British Literature
Prerequisite: ENGL 1102
3-0-3

A survey of important works of British literature from the Old English period through the neoclassical age. The course includes a variety of literary forms such as poetry, drama, nonfiction, short stories, and novels. The course presents literature as a reflection of culture and the history of ideas.

ENGL 2122 - British Literature Late 1700s to Present
Prerequisite: ENGL 1102
3-0-3

A survey of important works of British literature from the Romantic era to the present. The course includes a variety of literary forms such as poetry, drama, nonfiction, short stories, and novels. The course presents literature as a reflection of culture and the history of ideas.

ENGL 2130 - American Literature Early to Present
Prerequisite: ENGL 1102
3-0-3

A survey of important works of American Literature. Includes a variety of literary forms such as poetry, drama, nonfiction, short stories, and novels. The course presents literature as a reflection of culture and the history of ideas.

ENGL 2131 - Early American Literature
Prerequisite: ENGL 1102
3-0-3

A survey of American literature from the pre-colonial period to the mid nineteenth century. The course includes a variety of literary forms such as poetry, drama, nonfiction, short stories, and novels. The course presents literature as a reflection of culture and the history of ideas. Also offered as an eCore (online) class.

ENGL 2132 - American Literature Mid 1800s to Present
Prerequisite: ENGL 1102
3-0-3

A survey of American literature from the mid nineteenth century to the present. The course includes a variety of literary forms such as poetry, drama, nonfiction, short stories, and novels. The course presents literature as a reflection of culture and the history of ideas. Also offered as an eCore (online) class.

ENGL 2141 - Early Western Literature
Prerequisite: ENGL 1102
3-0-3

A survey of literature of the Western world from the Sumerians through the Renaissance. The course includes drama, poetry, prose fiction, and nonfiction. It emphasizes literature as an art and as a reflection of the history of ideas.

ENGL 2142 - Western Literature 1600s to Present
Prerequisite: ENGL 1102
3-0-3

A survey of literature of the Western world from about 1600 to the present. The course includes drama, poetry, prose fiction, and nonfiction. It emphasizes literature as an art and as a reflection of the history of ideas.

ENGL 2300 - African-American Literature and Culture
Prerequisite: ENGL 1102 Note: This class can be used in place of ES 1100 Ethnic Studies to satisfy the requirement in Area E, Group 4 of the core curriculum
3-0-3

An introduction to African-American literature in the context of a variety of cultural and historical perspectives. The course includes a variety of activities that draw upon literature, film, music, and live cultural experiences.

ENGL 2500 - Language and Meaning
Prerequisite: ENGL 1102
3-0-3

This course introduces students to the ways in which language, as a social, cultural, and cognitive process, aides in meaning-making. Students will consider what makes a language a language, and how that language is communicated (verbally, textually, visually, symbolically, etc.). This course will also introduce a range of theoretical ideas that underpin the study of writing and new media. It examines how language in its many genres both expresses and produces individual and collective ideas about the world as we find it.

ENGL 3001 - Written Communication for International Students
Prerequisite: ENGL 1101 and Departmental approval
3-0-3

Designed for international students enrolled in ETCMA degree programs, this class addresses the specific needs of non-native speakers in technical and professional communication to allow them to develop the written communication skills to become effective communicators. This class enhances academic and professional writing skills through project-based activities. Students will develop effective research skills and examine the multiple modes used in writing reports, proposals, and problem-solution essays. Students will develop a sense of tone as well as audience awareness in written communication.

ENGL 3010 - Science Writing
Prerequisite: ENGL 1102
3-0-3

Examination of the types of writing produced in various scientific professions. Depending on the semester, possible topics may include one or more of the following: environmental writing, public policy documents, and other scientific documents. Cross-listed as TCOM 3010

ENGL 3015 - Environmental Writing
Prerequisite: ENGL 1102
3-0-3

Close study of global and more localized environmental issues, including air, water, soil, biotic communities, and impact on and by humans. Students will read works on the relationship between technology, human population, and the environment and will write essays, give an oral report, and complete a research project on environmental topics. Cross-listed as TCOM 3015

ENGL 3020 - Proposal Writing
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or concurrently
3-0-3

Theory and practice of writing proposals for business, industry, and non-profit organizations, with emphasis on in-house planning and external grant-seeking proposals. Course covers persuasion theory and strategies while leading students step-by-step through the proposal development process. Students develop skills in gathering and evaluating information, analyzing audiences, collaborating with peers and clients, building persuasive arguments, writing clearly and cogently, and designing visually effective documents. Cross-listed as TCOM 3020

ENGL 3025 - Creative Writing Workshop
Prerequisite: ENGL 1102
3-0-3

In this introductory creative writing course, students will study and work with multiple genres such as poetry, short fiction, and creative non-fiction. The workshop approach will allow students the opportunity to make use of practical writing strategies and peer review. Students will create original compositions for multiple genres.

ENGL 3030 - English Grammar for Professional Writing
Prerequisite: ENGL 1102
3-0-3

The syntax of modern English grammar and the study of levels of correctness in Contemporary Standard English for effective writing.

ENGL 3035 - Problems in Language
Prerequisite: ENGL 1102
3-0-3

Is there a language instinct? Is language a window into human nature? Does language shape thought? Is all of language a metaphor? Are there any linguistic universals? What are the cognitive differences between reading and writing? And why do some people fail to acquire language or lose their language faculty? These are just a few of the many questions that will be examined as we study how language gives rise to space, time, causation, number, agency, sex, and status. During this process, we will analyze the different ways that people learn and use language and understand how these differences surface in theory and practice.

ENGL 3040 - Article and Essay Workshop
Prerequisite: ENGL 1102
3-0-3

This workshop style class involves students in the study of writing of nonfiction prose with an emphasis on the forms of the feature articles and the personal essay. The course emphasizes the processes of writing from invention through drafting towards the generation of final projects appropriate for publication in newspapers, magazines, blogs, and other formats. This advanced writing course combines theory and practice to emphasize narrative and rhetorical techniques towards the craft of writing for public audiences through publication opportunities.

ENGL 3045 - New Media Writing
Prerequisite: ENGL 1102
3-0-3

This course introduces students to the theories and practices of writing for new media including audio/visual standalones/multi-media products, and collaborative/interactive media. Course will focus on understanding communication objectives and meeting audience needs through the development of appropriate strategies/concepts. Script development and treatments; writing for linear and non-linear interactive media; working with dialogue, narrative, character, and form are included in the curriculum. Students will create various new media products to demonstrate their competencies.

ENGL 3050 - Journalism
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or concurrently
3-0-3

Study of technical and scientific reporting, including mass media theory. Emphasis on making technical information understood by a general audience. Students practice many in-house and external forms of writing such as news releases, feature articles, bulletins, brochures, and pamphlets. Cross-listed as COMM 3050

ENGL 3100 - Rhetoric: History, Theory, and Practice
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or concurrently
3-0-3

Introduction to rhetoric as the relationship between thought and expression. Examines connections between rhetoric and writing, between a public act and a personal thinking process, by exploring classical and contemporary accounts of rhetorical history and theory. Students apply theory to their own writing as they explore the relationship between writers, readers, and subjects and the range of options they have available to them as communicators. Cross-listed as COMM 3100

ENGL 3180 - Film as Literature
Prerequisite: Any 2000-level literature course
3-0-3

This course will explore film as a contemporary literary expression. Students will consider the historical development of film as a distinct genre and its relationship to the literary forms of narrative, plot, setting, and character.

ENGL 4010 - Publishing for New Media
Prerequisite: ENGL 1102
3-0-3

In this course, students will explore contrasting models for planning, design, and development of online publication. Students will learn about editorial practice and management as it concerns traditional literary and artistic materials as well as electronic literature and digitalized art in order to work with materials ranging from creative and report writing to drawings, graphic art, electronic literature, multi-media documents, and digital art. Students will take a lead role in soliciting, selecting, and editing material for SPSU's electronic literary and media arts magazine.

ENGL 4110 - Writing in Collaborative Environments
Prerequisite: TCOM 2020
3-0-3

This course focuses on basic concepts from small group communication so that students can write and design professional, collaborative materials in integrative work teams in both face-to-face and electronic spaces. The course will also utilize experiential, collaborative, community-based team projects grounded in real-world contexts.

ENGL 4170 - Media and Narrative
Prerequisite: Any 2000-level literature course
3-0-3

Students will explore the relationship between the form and content of narration. The course will look at a range of media within a historical perspective including (but not limited to): newspapers, novels, film, radio, television, and various digital media. Students will explore how media theory affects literary studies, and vice versa.

ENGL 4800 - Project Portfolio
Prerequisite: TCOM 4030; Senior standing; completion of 24 hours of TCOM courses.
3-0-3

This course examines portfolios as professional tools for technical communicators. The course includes portfolio and writing theory along with a collaborative workshop environment. Students develop a professional portfolio of sample documents based on course project, internship experiences, and/or work history. In addition, students write a reflective paper examining their growth and maturity as technical communicators. Interviewing techniques, resume writing, and the job search process are included in the course. Cross-listed as TCOM 4800

ENGL 490X - Special Topics
Prerequisite: Consent of the Department Chair
1 to 3

Special topics in literature, professional writing, and professional communication. Offered by the department at its discretion.

Environmental Science

ENVS 2200K - Geology
Prerequisite: MATH 1111
3-3-4

Plate tectonics, composition of continents and mechanisms of mountain building. Heat flow, magnetism, gravity, rock deformation, earthquakes and the earth's interior. Surface processes including weathering, erosion, transport and deposition. Landforms, rivers, groundwater, glaciers, ocean processes, and volcanoes. Minerals and rocks. Application of geology to land-use, groundwater, mineral and fossil fuel exploration.

ENVS 2202 - Environmental Science (ECORE)
3-0-3

This course is an interdisciplinary course integrating principles from biology, chemistry, ecology, geology, and non-science disciplines as related to the interactions of humans and their environment. Issues of local, regional, and global concern will be used to help students explain scientific concepts and analyze practical solutions to complex environmental problems. Emphasis is placed on the study of ecosystems, human population growth, energy, pollution, and other environmental issues and important environmental regulations. (eCoreCourse – Online – No lab required – Does not satisfy Area D Science at SPSU – Not equivalent to ENVS 2202K – Accepted for STS 2400)

ENVS 2202K - Introduction to Environmental Science
3-3-4

Examination of contemporary environmental issues related to Earth's natural systems, human population dynamics, natural resources, environmental quality, global changes, and environmental values in society. Scientific principles and data needed for gaining an understanding of environmental challenges on local, regional, and global scales will be emphasized.

ENVS 3000 - Environmental Science Seminar
Prerequisite: Junior or Senior Standing
1-0-1

This seminar will explore current topics in environmental science, regulation, and policy. Faculty and outside speakers from government and private industry will give presentations and lead discussions. Students will be expected to attend all lectures and participate.

ENVS 3100K - Soil & Water Science
Prerequisite: CHEM 1211 and CHEM 1211L, CHEM 1212 and CHEM 1212L
3-3-4

This course will provide an overview of soil and water science including study of the physical, chemical and biological properties of each and how these properties relate to soil health and water quality. The class will consider human activities that impact soil and water resources, the assessment of those impacts, and management approaches towards them. Laboratory exercises will involve the application of techniques for monitoring soil and water quality and methods for remediation.

ENVS 3150K - Environmental Toxicology
Prerequisite: BIOL 2108, BIOL 2108L , CHEM 1211, CHEM 1211L
3-3-4

Environmental toxicology is the study of nature, properties, effects and detection of toxic substances in the environment and in any environmentally exposed species, including humans. This course will provide a general understanding of toxicology related to the environment including dose-response relationships, absorption toxicants, distribution of storage toxicants, biotransformation and elimination of toxicants, target organ toxicity, teratogenesism, mutegenesis, cardinogenisis and risk management.

ENVS 3250 - Natural Resource Management
Prerequisite: ENVS 2202K
3-0-3

Study and analysis of earth's natural resources and the role of human population in their use, sustainable development, and exploitation. Topics typically include the status and trends of resources such as topsoil degradation, agriculture, forests, water,energy, and wildlife.

ENVS 3350 - Oceanography
Prerequisite: CHEM 1212, CHEM 1212L , BIOL 2108, BIOL 2108L
3-0-3

This course will provide an overview of the geological, chemical, physical and biological features and processes that occur in the world's oceans. Specific topics covered will include global plate tectonics, marine provinces, marine sediments, properties of ocean water, air-sea interactions, ocean circulation, waves, tides, coastal and shore habitats, biological productivity, pelagic and benthic marine organisms, marine pollution and the exploitation of marine resources.

ENVS 3450 - Conservation Biology
Prerequisite: BIOL 2108, BIOL 2108L
3-0-3

This course will cover the fundamental principles of conservation biology. Topics will include the history and development of the conservation movement, an examination of human impacts on plants and wildlife, interaction of conservation and society, and the management and conservation of endangered species. Class exercises will cover quantitative techniques used to evaluate and predict the status of plant and animal populations and ecological methods for monitoring and maintaining biodiversity in ecosystems.

ENVS 4000K - Wetlands and Mitigation
Prerequisite: BIOL 2107, BIOL 2107L , ENVS 3100K
3-3-4

This course covers wetlands as components of natural landscapes including biogeochemistry, hydrology, geomorphology, soils, and classification. We will consider soil and hydrologic factors important to wetland delineation and jurisdictional determination. Mitigations of impacts on wetlands with emphasis in restoration and creation will also be emphasized.

ENVS 4120 - Senior Project
Prerequisite: Senior Standing
3-0-3

Students will conduct a research project in the Environmental Sciences under the direction of a professor. Student will be required to submit mid-term (progress) and final papers and give an oral presentation to their department at the end of the semester.

ENVS 4300 - Environmental Ethics
Prerequisite: STS 2400
3-0-3

This course is designed to extend the traditional boundaries of the ethical relationships between humans to the nonhuman world in the natural environment. Philosophical and social issues have surfaced in the twenty-first century emerging as environmental ethical dilemmas demanding resolution. Case studies and a variety of interdisciplinary literature pieces are incorporated to consider the impact of the ethical dilemmas and to evaluate their social influences.

ENVS 4500 - Environmental Science Internship
Prerequisite: Senior Standing
3-0-3

Students will gain practical experience and training in Environmental Science by working on projects with governmental agencies or companies in private industry. Availability of internships will vary from semester to semester.

ENVS 490X - Special Topics in Environmental Science
Prerequisite: ENVS 2202K & Junior Standing (or permission of department)
1-0-1

Special Topics courses cover advanced topics in Environmental Sciences. Topics to be covered and number of credits offered will be determined by the instructor.

Ethnic Studies

ES 1100 - Ethnic Studies

3-0-3

An interdisciplinary course that introduces students to the culture and civilization (history, economy, art, architecture, etc.), literature, and religion of various ethnic groups. Instructor's choice will determine which ethnic group is the focus of the class (e.g. from Asian, African-American, Hispanic, or other areas).

ES 2100 - Ethnic Literature and Cultures
Prerequisite: ENGL 1102
3-0-3

An introduction to an ethnic literature with an emphasis on a variety of cultural and historical perspectives. This course includes a variety of activities that draw upon literature, film, music, and live cultural experiences. Instructor's choice will determine which ethnic group is the focus for the class (e.g., from African, Asian, African-American, Hispanic, other Latino, or European areas; taught in English translation).

French

FREN 1001 - Elementary French I
3-0-3

Introduction to listening, speaking, reading, and writing in French and to the culture of French speaking regions. Not open to native speakers of French. Does not meet C-2 Core requirement.

FREN 1002 - Elementary French II
3-0-3

Continued listening, speaking, reading, and writing in French with further study of the culture of French speaking regions. For those students who have completed FREN 1001 or have had one year of French in high school. Not open to native speakers of French.

FREN 2001 - Intermediate French I
Prerequisite: FREN 1002 or equivalent
3-0-3

A continuation of skills development of comprehension, speaking, reading of general and technical texts, writing, grammar and an introduction to Francophone cultures. Not open to native speakers of French.

FREN 2002 - Intermediate French II
Prerequisite: FREN 2001 or equivalent
3-0-3

A continuation of FREN 2001. Not open to native speakers of French.

Geography

GEOG 1101 - Introduction to Human Geography
3-0-3

A survey of global patterns of resources, population, culture and economic systems. Emphasis is placed upon the factors contributing to these patterns and the distinctions between the technologically advanced and less advanced regions of the world. Includes cultural, political, urban, and economic geography.

GEOG 3101 - World Regional Geography
Prerequisite: GEOG 1101 or consent of the department head.
3-0-3

Examines the geography of the world and its impact on population, urbanization, trade resources, and development as an ongoing framework for analysis and global perspective.

GEOG 4101 - Geographic Information Systems
Prerequisite: GEOG 1101
3-0-3

This course introduces students to the fundamentals and basic principles of geographic and land information systems and their use in spatial analysis and information management. Particular emphasis will be placed upon their potential use in conducting political science research and analysis.

Geosciences eCore

GEOL 1101K - Introduction to Geosciences
Prerequisite: MATH 1111
4-0-4

Plate techtonics, composition of continents and mechanisms of mountain building. Heat flow, magnetism, gravity, rock deformation, earthquakes and the earth's interior. Surface processes including weathering, erosion, transport and deposition. Landforms, rivers, groundwater, glaciers, ocean processes, and volcanoes. Minerals and Rocks. Application of geology to land-use, groundwater, mineral and fossil fuel exploration.   (eCore Course – Online – Lab is included)

German

GRMN 1001 - Elementary German I
3-0-3

An introduction to the German language and the culture of the German-speaking world. Beginning of a survey of basic German grammar and the development of the four language skills of listening, speaking, reading, and writing German. Some aspects of everyday life in the German-speaking world will also be introduced. Not open to native speakers of German. Does not meet C-2 Core requirement.

GRMN 1002 - Elementary German II
3-0-3

The second part of an introduction to German language and the German-speaking world. Completion of the survey of Basic German grammar and further development of the four language skills of listening, speaking, reading, and writing German. Aspects of everyday life in the German-

speaking world will also be introduced. For those students who have completed GRMN 1001 or have had one year of German in high school. Not open to native speakers of German.

GRMN 2001 - Intermediate German I
Prerequisite: GRMN 1002 or equivalent
3-0-3

A continuation of skills development of comprehension, speaking, reading of general and technical texts, writing, grammar and an introduction to Germanic cultures. Not open to native speakers of German.

GRMN 2002 - Intermediate German II
Prerequisite: GRMN 2001 or equivalent
3-0-3

A continuation of GRMN 2001. Not open to native speakers of German.

History

HIST 1111 - Survey of World Civilization pre 1500
3-0-3

A survey of the cultural, political, economic, intellectual, social, and scientific development of early world civilizations from prehistoric times to the Age of Exploration, ca. 1500. Also offered as an eCore (online) class.

HIST 1112 - Survey of World Civilization post 1500
3-0-3

A survey of the cultural, political, economic, intellectual, social, and scientific development of civilizations from the Age of Exploration to the present.

HIST 2111 - United States History to 1877
3-0-3

United States history from the colonial period through Reconstruction. Emphasis on the interpretation of American institutions and ideas. Satisfies U.S. and Georgia history and constitution requirement. Also offered as an eCore (online) class.

HIST 2112 - United States History since 1877
3-0-3

The rise of the United States as in industrial power from the late 19th century to the present. Special emphasis on change and reform during this period. Satisfies U.S. and Georgia history and constitution requirement.

HIST 2903 - Special Topics in History
1-3 Credits

Special topics course offered by the department on a demand basis. May be repeated for credit. One to three credit hours.

HIST 2911 - U.S. and Georgia Constitution and History
1-0-1

A one-hour course designed to allow students with transfer credit for American history or American government from outside the University System of Georgia to meet the U.S. and Georgia history and constitution requirement. May not be taken as an elective. Graded on pass / fail basis.

HIST 3200 - History of Science Survey
Prerequisite: Junior standing or consent of the department chair.
3-0-3

Survey of developments in physical, biological, and human sciences and their connection to western culture from the sixteenth century to the present.

HIST 3250 - History of American Technology
Prerequisite: Junior standing or consent of the department chair.
3-0-3

Survey of the development of technology and its impact on American society. Topics will include technology transfer and American innovation, the organization and mechanization of industrial production, and the technologies of cities, households, transportation, communication, and leisure.

HIST 3260 - History of American Science and Medicine
Prerequisite: Junior standing or consent of the department chair.
3-0-3

Survey of the development of American science and medicine and their impact on American society. Topics will include the development of various fields of science, he relationship between science and government, the relationship between science and medicine, and the development of medical knowledge and practice.

HIST 3301 - Diplomatic and Military History since 1815
Prerequisite: HIST 1112
3-0-3

Students will discuss the period of unprecedented stability in Europe that followed Napoleon's defeat at Waterloo, demonstrate an understanding of the Age of Imperialism, with its transformative effects on African and Asian societies. The course will also cover the contemporaneous wars of independence in Latin America, and the growing interdependence between that region and the United States. In the twentieth century, the course will discuss the two World Wars, the Cold War, and the growing importance of foreign policy relationships in the Middle East.

HIST 3401 - Modern Social and Cultural History Twentieth Century
Prerequisite: HIST 1112
3-0-3

Surveys major social and cultural changes of the twentieth century, their impact on particular nations, and their effects on interactions between nations. Topics covered may include, but are not limited to: art, music, literature, sports, religion, science, family structure, childhood and youth, gender roles, and attitudes toward race. The course emphasizes understanding of large-scale patterns of change, and types of reactions to it.

HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World

Prerequisite: HIST 2111
3-0-3

Students will exhibit an understanding of the indigenous inhabitants of the Americas, and discuss the period of interaction with Europeans and their descendents (British, Spanish, Portuguese, French, and Dutch) that accompanied and followed the Age of Exploration.

HIST 3601 - History of the Pacific Rim
Prerequisite: HIST 1112
3-0-3

An exploration of the conjoined and interdependent nature of the economic, political, religious, social, and cultural traditions of the nations and the regions bordering the Pacific Ocean.

HIST 3801 - Contemporary World History since 1945
3-0-3

A topical survey of world historical developments since the end of the Second World War. This course will deal with the birth and death of the Cold War, decolonization, north/south rivalry, ethnic and cultural conflict, nuclear proliferation, trends in international trade, technological transfer and development, the rise of the Pacific Rim, conflict in the Middle East, and international relations since the end of the Cold War.

HIST 3901 - Special Topics
Prerequisite: Consent of the department chair.
1-0-1

Special topics in American or world history. Offered by the department on a demand basis.

HIST 3902 - Special Topics
Prerequisite: Consent of the department chair.
2-0-2

Special topics in American or world history. Offered by the department on a demand basis.

HIST 3903 - Special Topics in History
1-3 Credit Hours

Special Topics in History 1-3 credit hours. Special topics course offered by the department on a demand basis. May be repeated for credit.

HIST 4901 - Special Topics in the History of Science and Technology
Prerequisite: Consent of the department chair.
1-0-1

Special Topics in the History of Science and Technology. Offered by the department on a demand basis. HNRS (Honors) Courses.

HIST 4902 - Special Topics in the History of Science and Technology
Prerequisite: Consent of the department chair.
2-0-2

Special Topics in the History of Science and Technology. Offered by the department on a demand basis. HNRS (Honors) Courses.

HIST 4903 - Special Topics in History
1-3 Credit Hours

Special topics course offered by the department on a demand basis. 1 to 3 credit hours. Maybe repeated for credit.

Honors

HNRS 2001 - Introduction to Honors Research
1-0-1

This course will introduce Honors students to primary and/or secondary research as it is conducted within a disciplinary field. Students will work one-on-one with a professor within their major field or within a closely related major field in order to learn methods of research as they offer assistance to a professor who is working on a research project. The class will be graded on a "Satisfactory" or "Unsatisfactory" basis. Course may be repeated with a proposal that shows new areas of research or how current research will be extended.

HNRS 3002 - Honors Research
Prerequisite: Faculty should determine if the student has the background necessary for the research.
2-0-2

Students who take this research option should have completed most of their core. This course asks students to assist a professor with his/her research. Students will work one-on-one within their major field or within a closely related field with primary and secondary research for a research project being conducted by the professor. Both the student and the professor will present their findings (whether ongoing or complete) to the campus community at the end of the semester. The class will be graded on a "Satisfactory" or "Unsatisfactory" basis. This course may be repeated with a proposal that shows new areas of research or how current research will be extended.

HNRS 3102 - Honors Peer Mentoring
Prerequisite: Students should be in their third or fourth year of study when possible.
0 or 2 (can be taken for academic or for service credit)

This class is intended to help students develop mentoring and leadership skills within their major field, a field of interest or within a service program (Student Affairs, Housing, the ATTIC, and so on) at SPSU. Students can work with a professor, a department chair, a program director, or an administrator in Academic Affairs or in Student Services in roles that ask them to assist a student or a group of students. The class teaches students interpersonal skills as well as a variety of teaching methods and study skill methods. All skills taught will be used to assist students.

HNRS 3203 - Honors Teaching Assistance
Prerequisite: Students need to have taken the class for which they will assist, ideally with the instructor they will assist. Students should have earned at least a 'B' in the class.
0 or 3 (can be taken for academic or for service credit)

This class is intended to help students develop teaching and leadership skills within their major field or a field of interest. Students will assist a professor in teaching duties. The class teaches students how to disseminate ideas and how to assess learning. It teaches communication skills since teaching assistants will work one-on-one, in small groups, and full class with students taking the course. Industrial Engineering Technology

HNRS 3301 - Honors Interdisciplinary Seminar
Prerequisite: It is recommended that students have completed most of their course work in A - F of the core and meet guidelines of individual instructors teaching the class.
3-0-3

This interdisciplinary seminar enables Honors students to fulfill a portion of their upper-division Honors requirement by exploring the ways in which knowledge of their major fields converges and intersects with other fields. This project-based course will allow Honors students to work in teams with students from other disciplines. This course may be repeated when the subject of the seminar is different from previous interdisciplinary seminars that the student has taken.

HNRS 4400 - Honors Thesis
Prerequisite: Honors students should take this class in their senior year after they have completed most of their curriculum for their major field as well as for the honors program.
3-0-3

This course enables Honors students to fulfill the capstone experience of their upper-division honors requirement by completing and presenting a thesis paper and presentation.

Industrial Engineering Technology

IET 1000 - Orientation
1-0-1

This is an introductory course for Industrial Engineering Technology majors. The course covers the curriculum and how IET is used in industry applications.

IET 2227 - Introduction to Statistics
Prerequisite: MATH 1113
3-0-3

As a study of descriptive and inferential statistics and applied probability, the course includes measures of central tendency and variability, statistical sampling and estimation, probability distributions, introduction to hypothesis testing and non-parametric statistics. Industrial applications rather than theoretical developments are emphasized. Computer based solution techniques are used when appropriate. This is the first of a two-course sequence.

IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems
3-3-4

As an introduction to industrial systems and processes, this course will explore the basic production processes from the viewpoint of systems and design. The role and responsibilities of a graduate will be explored as well as the principles related to human, quality, and organizational, legal and ethical aspects of professional practice. The design and operation of production processes are studied as they relate to the areas in manufacturing, distribution and service industries.

IET 2449 - Logistics and Supply Chain Management
3-0-3

This course offers an analysis of decision making in the current logistics environment and the tools needed for finding solutions to problems relating to purchasing, inventory, transportation, and warehouse management.

IET 3320 - Advanced Logistics
Prerequisite: IET 2449
3-0-3

This course will expand on the topics covered in IET 2449, leading students to a deeper understanding of logistics and supply chain systems. Special emphasis will be given to current trends in the field such as global logistics, reverse logistics, nontraditional supply chains and risk assessment/disaster recovery. Each student will also research in more depth a single topic that interest them.

IET 3322 - Work Measurement and Ergonomics
3-3-4

This course will focus on work design and ergonomics in manufacturing. Topics will include work methods and production processes to improve operator effectiveness and reduce production costs. Techniques studied include operation analysis, motion study, work sampling, time study, line balancing and ergonomic applications.

IET 3339 - Statistical Quality Control
Prerequisite: IET 2227 or MATH 2260
3-0-3

A study of the fundamentals of statistical quality control is provided. Topics include statistical process control with emphasis on applications and techniques including control charts for variables and attributes, and process capability. Other topics include scientific sampling fundamentals, acceptance sampling by attributes and variables, and reliability.

IET 3356 - Quality Concepts and Systems Design
Prerequisite: IET 2227 or MATH 2260
3-0-3

Students in this course will learn and apply quality systems principles, methodology, and standards. Students will analyze the decision making process in quality, and evaluate quality systems for compliance with standards and performance of the organization. Student teams will analyze and propose a solution for a real world quality problem.

IET 3403 - Advanced Statistics with Application
Prerequisite: IET 2227 or MATH 2260
3-0-3

This second of a two-course sequence will review of basic statistics, estimation, confidence intervals and hypothesis testing. Techniques for gathering, analyzing, and presenting technical and engineering data are presented. Topics include chi-squared contingency tables and goodness-of-fit tests, one- and two-way ANOVA, regression analysis, and design of experiment. Computer-based solution techniques are used where appropriate.

IET 3407 - Six Sigma and Lean Manufacturing
3-0-3

A study of current trends in quality as it relates to Six Sigma, Black Belt and lean on manufacturing

IET 3410 - Principles of Team Dynamics
3-0-3

Students will learn the skills and techniques to succeed as a team member in the workplace. Topics include leadership and communication skills, social influences, decision making, problem solving techniques, and team development.

IET 3424 - Engineering Economy
Prerequisite: MATH 1113
3-0-3

Students will make engineering and management decisions using financial analysis tools such as equivalent cost, present worth, internal rates of return, and benefit to cost ratios.

IET 3433 - Product and Process Costing
Prerequisite: ACCT 2101
3-0-3

This course explores cost measurement related to manufacturing and non-manufacturing sectors through cost measurement and control in job order, process, standard and variable costing systems. Content includes the recording and control of material, labor and overhead costs, absorption and direct costing, budgeting, and cost volume profit and analysis.

IET 3501 - Service Systems Engineering
3-0-3

An overview of the major service industries in the United States, including Health Care, Distribution, Banking, and Retail will emphasize the engineers' role in these industries. Case studies will be used to study the rising prominence of the service sector in the American economy and the growing role of the engineer.

IET 3511 - Sustainability Engineering
3-0-3

Students will apply engineering skills to address ethical, ecological, economic, and social environmental issues. Students will explore the effects of human population on energy use, the quality of air and water, and the use of global resources for sustainability.

IET 3620 - Warehousing Systems
3-0-3

This course explores various methods and systems dealing with warehousing systems including such areas as management systems, operations, storage and handling strategies, work flow, automation, transportation modes and performance benchmarking.

IET 4111 - Design of Experiments
Prerequisite: IET 3356
3-0-3

A study for Design of Experiments, its application and programs that support it. Software will be used for solutions.

IET 4121 - Advanced Topics in Quality Assurance
Prerequisite: IET 3356
3-0-3

Current trends in Quality will be examined.

IET 4354 - Principles of Transportation
3-0-3

This course provides a study of general economic characteristics and government regulation of rail, motor, water, air, and pipeline carriers. The different forms of transportation are analyzed in terms of service rendered, costs, transit time, reliability, capability, accessibility, security, and traceability. Labor relations and currents issues in national transportation policy will also be discussed.

IET 4375 - Engineering Sales Law
3-0-3

This course offers a study of general law of property and bailments, sales and product liability, and patents, copyrights, and trademarks.

IET 4405 - Operations Research - Concepts, Models and Methods
Prerequisite: IET 2227 or MATH 2260
3-0-3

This course will introduce the students to quantitative techniques used in the solution of industrial operations problems. Topics include linear programming, assignment and transportation techniques, queuing therory, decision analysis and computer simulation.

IET 4422 - Facilities Design, Plant Layout, and Materials Handling
Prerequisite: IET 3322, IET 3433, EDG 1210
2-4-4

Principles and practices in layout and material handling for industrial/service facilities planning are studied. A group project requires students to integrate product, process and functional design of a facility. Cost analysis for facility planning and operation is also utilized in the project.

IET 4427 - Methods-Time-Measurement
3-0-3

MTM- I is a predetermined time system which is used to establish labor standards on manual operations (machine operators, assembly operators, clerical operators, etc.). Emphasis is on the definitions and application rules of MTM-1. This course meets the MTM Association's prescribed format for MTM-1 Blue Card Certification. There is a lab fee for this course which covers the cost of the official MTM-1 textbook and registration as an MTM-1 Applicator for an initial three-year period.

IET 4435 - Fundamentals of Engineering Sales
3-0-3

This course examines the basic fundamentals of personal selling in the context of selling industrial or technical products. Current readings and up-to-date selling techniques will also be examined.

IET 4447 - Industrial Sales Development & Control
3-0-3

This course offers a study of the planning of purchasing and materials activities. Topics covered will include specification and standardization, vendor evaluation, receiving and storage, pricing, reciprocity, negotiation, legal aspects, and computer based purchasing. Just-in-time (JIT) ordering, bar code labeling, and electronic data interchange (EDI) will also be examined.

IET 4451 - Systems Simulation
Prerequisite: IET 4405
2-3-3

This is an in-depth study of simulation as applied to manufacturing, inventory and distribution systems. Topics will include basic simulation and system modeling techniques, random sampling procedures, production modeling, inventory modeling and system evaluation. Emphasis will be upon hands-on simulation of various operations using ARENA, a PC-based graphical simulation program.

IET 4460 - Warehouse Operations
3-0-3

This course gives an in-depth approach to the proper ways to organize and operate a warehouse. Topics include warehousing, principles, site selection, facility design, facility size, JIT, automation, and advanced warehouse technology.

IET 4475 - Senior Project
Prerequisite: IET 4422
1-4-3

This course focuses on the student completing a project that is a comprehensive application of the subject matter in the IET curriculum. A large-scale feasibility study is to be performed to emphasize the interrelated topics of logistical and production processes for a fictitious company. The course requires a formal written report and a defended oral presentation before industrial and academic experts.

IET 4478 - Senior Internship
Prerequisite: IET 3403 and IET 4422
1-4-3

The course focuses on the student's completing a project at an existing business under the joint supervision of the Southern PolyTech faculty and practicing professionals. The course requires a formal written report and a defended oral presentation.

IET 4500 - Technical Sciences Survey
Prerequisite: PHYS 1112 or PHYS 2212
4-0-4

The course provides a survey of engineering technical courses. Topics discussed will include mechanics of solids/fluids, material science, electrical principles and thermodynamics.

IET 4555 - Auditing and Assurance
3-0-3

A systems approach to control and operation of the industrial logistics network is studied. The use of an integrated information system will be emphasized. Interdependencies of the enterprise units will be investigated including order processing, production scheduling, inventory control, shipping and their related transactions.

IET 4810 - Ethics and Safety
1-0-1

Students are provided information pertaining to ethics and safety regulations applicable to the

textile industry.

IET 490X - Special Topics
Prerequisite: Department Chair Approval
1 to 5

Special problems selected by the department. Offered on a demand basis.

Information Technology

IT 1113 - Programming Principles
Prerequisite: MATH 1113 or concurrent
3-0-3

This course covers the fundamentals of computer programming and the use of a computer for performing calculations and using data files. Concepts of counters, accumulators, decision-making, looping, subroutines, arrays, files and string processing are covered. A programming language such as Visual Basic is used for laboratory assignments.

IT 1324 - Advanced Programming Principles
Prerequisite: CSE 1301
3-2-4

This course introduces contemporary programming concepts of object-oriented data structure and abstractions, object-oriented data access techniques such as searching, sorting, and iterations. Problem solving in object-orientation is emphasized.

IT 3123 - Hardware/Software Concepts
Prerequisite: IT 1324 or CSE 1302
Corequisite: MATH 2345 or CSE 2300
3-0-3

This course examines various hardware and software components and how they work together in a modern computing environment. Topics include an overview of computer organization and architecture, machine language and modern language.

IT 3203 - Introduction to Web Development
Prerequisite: IT 1324 or CSE 1302
3-0-3

This introduction course covers applications for the world wide web. Topics include current languages (such as HTML and JavaScript), basic web protocols, and human-computer interfaces for the web.

IT 3223 - Software Acquisition and Project Management
Prerequisite: CSE 3153 or CS 3153
3-0-3

The course provides a high level introduction to two areas that are crucial to the IT profession, namely project management and software acquisition. It introduces students to the phases both in the project management and software acquisition and implementation process. Since requirements are crucial to both activities, the course will provide students with an in-depth introduction to requirements engineering. The course will also introduce students to a widely used project

management information system.

IT 3423 - Operating Systems Concepts & Administration
Prerequisite: IT 3123
3-0-3

This course is an introduction to basic operating system principles. Topics include memory management, peripheral device management, file system management and process management. Different types of operating systems and their administrations are studied. Projects are carried out with simulations.

IT 3503 - Foundations of Health Information Technology
Prerequisite: IT 3123
3-0-3

This course introduces students to the field of health information technology (HIT). Students will become familiar with the content, use,and structure of the health care data and medical records, health information management, and fundamentals of health information systems. Students will also become familiar with the health care delivery systems in the U.S. and IT organizations and resources.

IT 3653 - Client Server System Administration
Prerequisite: CS 3153 or CSE 3153 and IT 3123
3-0-3

This course covers the concepts of client server systems. Topics include aligning client server systems with business; client server methodologies; infrastructure; end users; communication tools; architectures; security; privacy; web development for client servers systems.

IT 3883 - Advanced Applications Development
Prerequisite: IT 1324 or CSE 1302
3-0-3

This course will allow the student to learn a second programming language and application development. Topics include review of language fundamentals, features of the programming language and development environment, and software development processes. This course will include course projects for hands-on experience with processes and tools.

IT 4123 - Electronic Commerce
Prerequisite: CSE 3153 and IT 3203
3-0-3

This course will examine the aspects of electronic commerce. Topics include internet development, EDS, security, network connectivity and privacy. Basic business practices using electronic commerce will also be covered.

IT 4153 - Advanced Database
Prerequisite: CS 3153 or CSE 3153
3-0-3

This course will study how databases are used with programming applications. Topics include advanced PL/SQL (or similar database programming language), database transaction, database security, database maintenance, and distributed and web databases.

IT 4203 - Advanced Web Development
Prerequisite: IT 3203
3-0-3

This course covers more advanced topics on web server site design and development including server pages, programming, database integrations, and web server systems and security administrations.

IT 4213 - Mobile Web Development
Prerequisite: IT 3203 and CSE 3203
3-0-3

This course introduces the concepts, practices and technologies to design, develop, and manage cross-platform web sites and applications running on modern mobile devices.

IT 4323 - Data Communications & Networks
Prerequisite: IT 3123
3-0-3

Fundamental concepts of computer networking. Topics include properties of signals and media, information encoding, error detection and recovery, LANs, backbones, WANs, network topologies, routing, Internet protocols, and security issues. The focus is on general concepts together with their application to support the business enterprise.

IT 4333 - Network Configuration & Administration
Prerequisite: IT 4323
3-0-3

This course continues the study of networks. Topics include design and implementation of networks including synchronization, scheduling, exception and deadlock resolution, client server and web based collaborative systems. Network security will also be covered. Cost estimates and speed are examined from a management perspective.

IT 4423 - Unix/Linux
Prerequisite: IT 3423
3-0-3

A study of UNIX/Linux operating systems, including multi-user concepts, UNIX/Linux commands, and shell scripting.

IT 4513 - Electronic Health Record Systems
Prerequisite: IT 3503
3-0-3

This course provides an overview of the importance of key technical aspects of electronic health records, the overall architecture, features and functions of major EHR systems.

IT 4523 - Clinical Processes and Workflows: Analysis and Redesign
Prereq/Corequisite: IT 3503
3-0-3

This course provides an essential and important knowledge base of the medical aspect of HIT.

IT 4533 - Health Information Security and Privacy

Prerequisite: IT 3503
3-0-3

This course covers key technical aspects of electronic health records, the overall architecture, features and functions of major EHR systems.

IT 4673 - Virtual IT Systems
Prerequisite: IT 3423, IT 4323, CSE 3153
3-0-3

This course explores the design, implementation and use of virtualization, including desktop and server aspects such as deployment, clustering, storage and security. A high level overview of the various certifications available will be discussed. A project will be completed as part of the course.

IT 4683 - Management of Information Technology and Human Computer Interaction
Prerequisite: CS 3153 or CSE 3153
3-0-3

A study of the information needs in managing a formal organization and the information technology systems required to meet those needs within the planning, control, designing, operating, evaluating and decision-making processes. User acceptance of IT applications that crucially depend on the HCI component will be covered.

IT 4713 - Business Intelligence Systems
Prerequisite: CSE 3153
3-0-3

This course introduces the concepts, practices, systems and technologies of business intelligence, which supports enterprise level data management, analysis, reporting, and decision making.

IT 4723 - IT Policy and Law
Prerequisite: IT 3223 or IT 3224 and IT 3123
3-0-3

This course covers current issues in IT including the law, ethics and social values. Topics include copyright, patents, trademarks, trade secrets, computer ethics, computer crime, computer abuse, cultural impact, web issues, information warfare and current legislation.

IT 4823 - Information Security Administration & Privacy
Prerequisite: (CS 3153 or CSE 3153), and (MATH 2345 or CSE 2300), and (IT 3123 or CS 3224)
3-0-3

The student develops knowledge of the principles of information assurance at the policy, procedural, and technical levels to prepare the student for a role as a business decision-maker. Real-world examples from the text and current events will be used to demonstrate the applicability of the techniques of information assurance.

IT 4833 - Wireless Security
Prerequisite: IT 4823 or CS 3243
3-0-3

This course covers methods and techniques to secure wireless networks against threats and attacks. Topics include: Encrypt wireless traffic for privacy and authenticity, implement WPA and the 802.lli security standards to protect Wi-Fi networks, wireless network intrusion detection and prevention, and security trouble-shooting WLANs.

IT 4843 - Ethical Hacking for Effective Defense
Prerequisite: IT 4323 or ECET 3400 or CS 4263
3-0-3

This course focuses on detection of network and system vulnerabilities by taking an attacker-like approach to system, network, and data access. Topics include network attacks and defenses, Operating system and application vulnerabilities, social engineering attacks, and malware. Ethical, legal implications of network attacks are also discussed.

IT 4853 - Computer Forensics
Prerequisite: IT 4823 or CS 3243
3-0-3

This course studies techniques and tools in computing investigation, digital evidence collection, recovery, and analysis. Topics include: Legal issues relating to digital evidence, recover deleted files and discover hidden information, reconstruct user activity from e-mail, temporary Internet files and cached data, assess the integrity of system memory and process architecture to reveal malicious code.

IT 4903 - Special Topics in Information Technology
Prerequisite: Junior or Senior standing
3-0-3

Special topics selected by the Department Chair. Offered on a demand basis.

IT 4983 - IT Capstone
Prerequisite: Senior standing which includes 40 hours of IT credits.
3-0-3

Students work in teams to develop a real-world IT application integrating the knowledge acquired in preceding IT courses. Components that are emphasized include innovative design, effective documentation, good project management, leadership and communication skills. The final result will be a solution for a typical IT application such as networking or Web applications evaluated by faculty members and/or Industrial Advisory Board members.

International Studies

IS 1000 - International Studies Orientation
1-0-1

This course examines the methodologies appropriate to the International Studies major, helping to prepare students for upper-division course work in the major. In addition, students will be introduced to the career opportunities in International Studies; familiarized with college and departmental policies, curriculum, an facilities; and introduced to the departmental faculty.

IS 2903 - Special Topics in International Studies
Special topics course offered by the department on a demand basis. 1 to 3 credit hours. May be repeated for credit.
Prerequisite: Proficiency in second language or consent of the department head.
3-0-3

Globalization has brought diverse peoples and cultures into contact with each other leading to increased global interdependence, inequalities, and conflict. Based on a critical global approach, this course introduces a dynamic understanding of culture in the context of globalization through a comparative analysis of culture at multiple levels - micro (personal), meso (group), and macro (geopolitical), illustrated by case studies from diverse regions of the world.

IS 3600 - Comparative Culture
Prerequisite: Proficiency in second language or consent of the department head.
3-0-3

Globalization has brought diverse peoples and cultures into contact with each other leading to increased global interdependence, inequalities, and conflict. Based on a critical global approach, this course introduces a dynamic understanding of culture in the context of globalization through a comparative analysis of culture at multiple levels - micro (personal), meso (group), and macro (geopolitical), illustrated by case studies from diverse regions of the world.

IS 4000 - Regional Studies - General
3-0-3

Focuses on the political, economic, and social forces within a particular region or regions of the world to be designated by the instructor. A significant study abroad experience (e.g. a semester or more) may substitute for this course with the Social and International Studies department approval.

IS 4001 - Regional Studies/Latin America
3-0-3

Focuses on the political, economic, and social forces within Latin America.

IS 4002 - Regional Studies/Asia:China
3-0-3

Focuses on the political, economic, and social forces within China.

IS 4003 - Regional Studies/Asia:Japan
3-0-3

Focuses on the political, economic, and social forces within Japan.

IS 4004 - Regional Studies/Middle East
3-0-3

Focuses on the political, economic, and social forces within the Middle East.

IS 4005 - Regional Studies/Russia/Eastern Europe
3-0-3

Focuses on the political, economic, and social forces within Russia and/or Eastern Europe.

IS 4006 - Regional Studies/Western Europe
3-0-3

Focuses on the political, economic, and social forces within Western Europe.

IS 4007 - Regional Studies/Africa
3-0-3

Focuses on the political, economic, and social forces within Africa.

IS 4600 - International Studies Internship
Prerequisite: Junior status
3-0-3

Student may choose to undertake an approved internship for academic credit with a trans-national corporation, government agency, or non-governmental organization; students' internship responsibilities should be primarily international in nature, i.e., those that would allow students to bring their language or cross-cultural skills or their language or cross-cultural skills or their program-related knowledge to bear on assignments completed in a business, governmental, or organization setting.

IS 4800 - International Studies Capstone
Prerequisite: STS 2400 and completion of international studies upper division core and senior status OR permission of the instructor.
3-0-3

This seminar course serves as the capstone course for the student majoring in International Studies. Students will research and complete a self -directed project in which they will integrate the interdisciplinary aspects of their program, while demonstrating their grasp of technology issues within the international context, as well as their mastery over their specific area of specialization.

IS 4903 - Special Topics in International Studies
1-3 Credit Hours
Special topics course offered by the department on a demand basis. May be repeated for credit.

Materials Science

MSCI 3101K - Introduction to Material Science
Prerequisite: CHEM 1212, CHEM 1212L , PHYS 2212, PHYS 2212L
3-3-4

Fundamental principles of structure and properties of materials utilized in the practice of engineering. Properties of materials are related to atomic, molecular, crystalline structure. Metals, ceramics, multiphase systems, and polymeric materials. Relationships between structure and electrical, mechanical, thermal, chemical properties.

Mathematics

MATH 1101 - Introduction to Mathematical Modeling
3-0-3

This course is an introduction to mathematical modeling using graphical, numerical, symbolic, and verbal techniques to describe and explore real-world data and phenomena. Emphasis is on the use of elementary functions to investigate and analyze applied problems and questions, supported by the use of appropriate technology, and on effective communications of quantitative concepts and

results. (eCore Course - Online)

MATH 1111 - College Algebra
Prerequisite: Placement by the Mathematics Assessment Test
3-0-3

A functional approach to algebra which incorporates the use of appropriate technology. Review of symbolic manipulation and solutions of equations and inequalities. Linear, quadratic, polynomial, exponential, and logarithmic functions, graphs and applications. A grade of C or better is required for course credit. Also offered as an eCore (online) class.

MATH 1113 - Pre-calculus
Prerequisite: A grade of "C" or higher in MATH 1111 or Placement by the Mathematics Assessment Test
4-0-4

Rational and transcendental functions and graphs. Triangle and analytic trigonometry including identities, equations, and applications. Law of Sines, Law of Cosines, applications of trigonometry to vectors and complex numbers. Systems of equations using matrices. A grade of C or better is required for course credit. Also offered as an eCore (online) class (3-0-3).

MATH 1401 - Intro to Statistics
Prerequisite: A grade of C or higher in MATH 1101, MATH 1111, or MATH 1113, or approved equivalent
3-0-3

A course in basic statistics. Topics include descriptive statistics, probability, distributions, hypothesis testing, inferences, correlation, and regression. (eCore Course - Online) This course is equivalent to MATH 2260.

MATH 1501 - Calculus I
Prerequisite: A grade of C or higher in MATH 1113 or approved equivalent
4-0-4

Topics to include functions, limits, continuity, the derivative, antidifferentiation, the definite integral, and applications. (eCore Course - Online) This course is equivalent to MATH 2253.

MATH 2240 - Survey of Calculus
Prerequisite: A grade of "C" or better in MATH 1113 or Placement by the Mathematics Assessment Test
3-0-3

Derivatives and integrals of polynomial, rational, logarithmic and exponential functions. Variable rate of change, amount of accumulated change, and graphing. Applications to problems in business, management, and economics are emphasized, with some attention to problems in the social sciences. No student may receive credit for both MATH 2240 and MATH 2253.

MATH 2253 - Calculus I
Prerequisite: A grade of "C" or higher in MATH 1113 or Placement by the Mathematics Assessment Test
4-0-4

A first course in Calculus. Limits, derivatives and integrals of algebraic and trigonometric functions, tangent lines, instantaneous rate of change, maxima, minima and graphing, related rates, linear motion. Also included: definite integrals, area between curves, moments, work, and volumes of

rotation. No student may receive credit for both MATH 2240 and MATH 2253. This course is also taught as an eCore (online) course as MATH 1501.

MATH 2254 - Calculus II
Prerequisite: MATH 2253
4-0-4

A continuation of MATH 2253. Topics include differentiation and integration of transcendental functions, integration techniques, indeterminate forms, infinite sequences and series, Taylor and Maclaurin series, parametric equations, L'Hopital's Rule, improper integrals, and polar coordinates.

MATH 2255 - Calculus III
Prerequisite: MATH 2254
4-0-4

Topics include: vectors in two and three dimensions, dot and cross product, lines and planes in space, cylindrical and spherical coordinates, vector functions, tangents and normals, velocity and acceleration, arclength and curvature, functions of several variables, partial derivatives, chain rules, directional derivatives and gradients, tangent planes and extrema, multiple integrals in rectangular, polar, cylindrical, and spherical coordinates.

MATH 2260 - Introduction to Probability and Statistics
Prerequisite: A grade of C or higher in MATH 1111
3-0-3

Topics include expectation, independent and conditional probability, combinations and permutations, organization and analysis of data, standard probability distributions, and hypothesis testing. The emphasis is on the applications and methods with applicability in technical and managerial fields. This course is also taught as an eCore (online) course as MATH 1401.

MATH 2306 - Ordinary Differential Equations
Prerequisite: MATH 2254
3-0-3

Methods of solving ordinary differential equations of first and higher order. Systems of linear differential equations and solutions using the Laplace transform. Fourier series. Mechanical and electrical engineering applications are included.

MATH 2335 - Numerical Methods I
Prerequisite: MATH 2254, knowledge of a higher level programming language
3-0-3

Methods of numerical computation. Error analysis, solutions of equations, interpolation, quadrature, and linear systems. The course emphasizes the effective application of numerical approximation techniques in the solution of problems frequently encountered in engineering and science.

MATH 2345 - Discrete Mathematics
Prerequisite: A grade of C or higher in MATH 1113
3-0-3

An introduction to the fundamentals of discrete mathematics. Topics include sets, formal logic, methods of proof, counting, relations, functions, graphs and trees, and finite state automata.

MATH 290X - Special Topics

1 to 5

Special topics in mathematics. Either a course taught on a onetime basis or a pre-arranged project conducted by specific written arrangement with an individual instructor.

MATH 3261 - Statistical Methods
Prerequisite: MATH 2253
3-0-3

This course is designed to introduce the student to inferential statistics. Topics include: Central Limit Theorem, sampling distributions, statistical tests/confidence intervals for means and proportions, inferences for correlation and regression, multiple regression, Chi Square: tests of independence and goodness of fit test, testing and estimating a single variance or standard deviation (ANOVA). Appropriate technology may at times be used to complement the learning process

MATH 3268 - Probability Theory
Prerequisite: MATH 2254
3-0-3

Axioms of probability, counting techniques, discrete and continuous univariate and multivariate random variables, expectation, Markov Inequality, moment generating functions, and applications of probability to statistical decisions.

MATH 3310 - Introduction to Advanced Mathematics
Prerequisite: A grade of "C" or higher in MATH 2345
3-0-3

This course is designed to provide a transition to higher level mathematics through a hands -on introduction to creative problem solving, formal mathematical concepts, and proofs. Topics include logic, proofs, induction, formal systems, and set theory.

MATH 3312 - Linear Algebra
Prerequisite: MATH 2254
4-0-4

An axiomatic treatment of real vector spaces, including computational and theoretical basics. Topics include bases, subspaces, linear transformations, matrix operations, diagonalization, inner product spaces, and eigenvalues.

MATH 3320 - Introductory Real Analysis I
Prerequisite: MATH 2254 and, MATH 3310 or permission of the instructor
4-0-4

The structure of the real number system line from a topological and analytical point of view. Topics include the continuous nature of the real line, open and closed sets, sequences and formal convergence, compactness, topics related to functions of a real variable.

MATH 3321 - Introductory Real Analysis II
Prerequisite: MATH 3320
4-0-4

A continuation of MATH 3320. Topics include continuity, uniform continuity, formal definitions of the derivative and integral, covers, and composite functions.

MATH 3336 - Numerical Methods II

Prerequisite: MATH 2306, MATH 2335
3-0-3

A continuation of MATH 2335. Systems of equations, approximation theory, and differential equations. Understanding the nature and limitations of each method is emphasized.

MATH 3396 - Combinatorics
Prerequisite: MATH 2254 and, MATH 3310 or permission of the instructor
3-0-3

Enumeration and graph theory. Topics in enumeration include combinatorial identities, recurrence relations, and generating functions. Topics in graph theory include Eulerian and Hamiltonian paths and circuits, planarity, and coloring.

MATH 3496 - Number Theory
Prerequisite: MATH 3310 or concurrently or permission of the
Corequisite: instructor
3-0-3

An introductory course. Topics include divisibility, prime number theory, congruences, multiplicative functions, quadratic residues, and applications to cryptology.

MATH 3596 - Topology
Prerequisite: MATH 2254 and, MATH 3310 or permission of the instructor
3-0-3

Topics include set theory, metric spaces, topological spaces, open sets, subspaces, continuity, connectedness, and compactness.

MATH 3696 - Geometry
Prerequisite: A grade of "C" or higher in MATH 2254
3-0-3

It is recommended that students taking this course have successfully completed MATH 2255 or MATH 3312. At a minimum, students should have an avid interest in mathematics, its foundation, and logic. This is a rigorous development of plane geometry starting with Book I of The Elements of Euclid and continuing through the subject as it evolved during the 19th century. Depending on the interest of the instructor and the students, topics may include a deeper study of projective planes, non-Euclidean geometries, early developments in algebraic geometry, or the use of modern algebra and/or analysis in geometry.

MATH 3796 - Symbolic Computation
Prerequisite: MATH 2254
3-0-3

This course is designed to introduce the student to symbolic computation in mathematics using the Computer Algebra Software (CAS) Maple. Topics include: Maple design theory; Maple conditional statements and loops, data structures, functions and procedures; solving problems in the areas of calculus, differential equations, linear algebra, number theory, and vector analysis; graphing two and three dimensional functions and vector fields; and, the RSA public key cryptographic system.

MATH 390X - Special Topics
1 to 5

Special topics in mathematics. Either a course taught on a onetime basis or a pre-arranged project

conducted by specific written arrangement with an individual instructor.

MATH 4406 - Differential Equations II
Prerequisite: MATH 2306
3-0-3

Topics include orthogonal functions, Sturm-Liouville problem, boundary value problems for partial differential equations, the heat equation, wave equation, Laplace equation and power series solutions. Included are Bessel functions, Legendre polynomials, and their applications.

MATH 4407 - Vector Analysis
Prerequisite: MATH 2255
3-0-3

Scalar and vector fields, the del operator, curl, divergence, line integrals, conservative fields and potentials, and surface integrals. The divergence theorem and Stokes' theorem. Applications to electromagnetic fields and to heat and fluid flow.

MATH 4417 - Functions of a Complex Variable
Prerequisite: MATH 2255
3-0-3

An elementary introduction to complex analysis, the complex plane, mappings and analytical functions of a complex variable, continuity, differentiation, and integration, Taylor and Laurent series.

MATH 4440 - Abstract Algebra
Prerequisite: MATH 3310 and MATH 3312
4-0-4

A first course in abstract algebra. Topics include operations, the concept of homomorphism, and a standard approach to groups, rings, and fields.

MATH 4451 - Capstone Mathematics Project
Prerequisite: MATH 2306, MATH 2255
Prereq/Corequisite: MATH 3321, MATH 4440
3-0-3

This capstone course gives students the opportunity to pursue a course of independent study/research. Each student works under the guidance of a faculty member on a project containing significant mathematical content. Written and oral presentations of findings are required.

MATH 490X - Special Topics
1 to 5

Special topics in mathematics. Either a course taught on a onetime basis or a pre-arranged project conducted by specific written arrangement with an individual instructor.

Mechanical Engineering Technology

MET 1000 - Mechanical Engineering Technology Orientation
1-0-1

An introduction to career opportunities in the Mechanical Engineering Technologies; familiarization with college and departmental policies, curriculum, and facilities.

MET 1311 - Manufacturing Processes
3-0-3

An introduction to industrial manufacturing processes used for converting raw materials into finished products. Various processes, machinery, and operations will be examined with emphasis placed on understanding engineering materials and processing parameters that influence design considerations, product quality, and production costs.

MET 1321 - Machining and Welding
Prerequisite: MET 1311 or concurrently
1-3-2

An introduction to the use and operation of selected industrial machinery, various machining operations, selected welding processes and precision measuring instruments. Laboratory projects will emphasize safety and apply selected manufacturing processes, various inspection processes, fixturing and engineering materials.

MET 190X - Special Topics
Prerequisite: Consent of the Department Chair
1 to 5

Special topics selected by the program. Offered on a demand ba

MET 2322 - Metrology and CNC Machining
Prerequisite: EDG 1212 or ENGR 1212 or EDG 1212, MET 1000, MET 1321, or the consent of the instructor.
2-3-3

An introduction to the use and operation of selected Computerized Numerical Control (CNC) machine tools and to Geometric Dimensioning And Tolerancing (GD&T). Laboratory projects will apply selected manufacturing processes, GD&T and CNC programming logic. Emphasis is placed on the following: safety, operational planning, design considerations, bonus tolerance, virtual condition, work holding requirements and manufacturing problems associated with engineering materials.

MET 290X - Special Topics
Prerequisite: Consent of the Department Chair
1 to 5

Special topics selected by the program. Offered on a demand basis.

MET 3101 - Fluid Mechanics Principles & Applications
Prerequisite: ENGR 2214 or ENGT 2124 , and TCOM 2010
3-3-4

The objective of this course is to present fluid mechanics concepts and their applications to practical problems. The main areas are fluid properties, fluid statics, flow in conduits, pump selection and operation, fluid power systems, momentum transfer, external flow, and open channel flow. Principles will be related to industrial applications. Hands-on laboratory exercises will demonstrate principles and applications.

MET 3123 - Dynamics of Machines
Prerequisite: CS 2123 or MET 4501, and ENGR 3122 or MET 3125
3-0-3

The analysis of motion, velocity, acceleration, and forces in mechanisms and machines. Emphasis is placed on the analytical methods suitable for computerized analysis as well as graphical methods for visualization and preliminary design studies. Mechanical vibration isolation is also discussed.

MET 3126 - Engineering Dynamics with Applications
Prerequisite: ENGT 2124 or ENGR 2214, and MATH 2254
3-0-3

A study of the mechanics of particles and rigid bodies, considering practical examples. Topics covered include: kinematics and kinetics of particles; work and kinetic energy; impulse and momentum; rigid body motions; relative motion and moving coordinate systems. Machinery applications will be considered for majority of course materials.

MET 3132 - Engineering Materials
Prerequisite: CHEM 1211, 1211L, and ENGR 3131 or ENGT 3124 (can be taken concurrently)
3-3-4

A study of metals, ceramics, polymers, and composites as related to design. Areas include corrosion, atomic structure, mechanical properties, failure theories, fatigue, creep, cold working, heat treating, alloying, and non-destructive testing. The lab work includes tensile testing, heat treating, impact testing, hardness testing, and corrosion.

MET 3331 - Tool Design
Prerequisite: ENGR 3131 or ENGT 3124
3-0-3

Jigs and fixtures for production machining processes are covered. Specific subjects include methods of gauging work pieces, ease and simplicity of operation, assembly methods, capital evaluation, techniques for locating and holding work pieces, time studies, tool steels, bending allowances, and reverse engineering techniques. The course is design project oriented. Projects include calculations of tooling forces and costs as well as complete production drawings of the tool design.

MET 3332 - Rapid Design and Manufacture
Prerequisite: EDG 1212 , MET 2322 or permission from instructor
2-3-3

Rapid Design and Manufacture is a course focused on bringing products to market as quickly as possible primarily through the use of 3D scanning and additive manufacturing technologies. Product Design, reverse engineering, and rapid tooling are topics covered and applied in this course.

MET 3400 - Thermodynamics and Heat Transfer
Prerequisite: MATH 2253, PHYS 1111, 1111L or PHYS 2211, 2211L, CHEM 1211, 1211L
3-0-3

A study of the fundamental laws of thermodynamics and heat transfer for non-MET students. Properties of ideal gases, mixtures of ideal gases, real substances as related to heat engines, heat pumps, refrigerators, and heat exchangers are covered. Basic applications of thermodynamics in the study of power plants, internal combustion engines, refrigeration systems and air conditioning systems are included. Heat transfer topics are introduced with applications for conduction,

convection, and radiation.

MET 3401 - Thermodynamics I
Prerequisite: MATH 2253, PHYS 1111 or PHYS 2211 or PHYS 1211K
3-0-3

Covers the fundamentals of thermodynamics. Use of steam and gas tables is introduced. Property relations for ideal gases and incompressible liquids are introduced. Applications of the First and Second Laws to closed and open systems are studied. Heat engines, refrigerators, heat pumps, availability and irreversibility are studied.

MET 3402 - Thermodynamics II
Prerequisite: ENGR 3343 or MET 3101, and MET 3401
3-0-3

Continuation of Thermodynamics I with emphasis on applications. Transient flow analysis, combustion, internal and external combustion cycles, gas turbines, compressors, refrigeration and air conditioning processes are studied. Fundamentals of heat transfer are also covered.

MET 3501 - Engineering Computation Using MATLab
Prerequisite: ENGR 3122
3-0-3

This course provides an introduction to computation in the context of engineering problem solving. In this course, the fundamental tenets of computer programming will be placed into the context of Matlab, a user-friendly language for engineers. It employs hands on exercises, examples from the world of engineering, and a variety core tools to increase general proficiency and capability in the computer programming, preparing students to fluidly adapt learned programming concepts to other languages. After teaching the linear, algebra, an introduction to computer programming with Matlab, including flow charts, loops, condition statements, and functions, is given. Basic numerical methods, including numerical integration, differentiation, and root finding are also covered. Emphasis is placed on using Matlab to solve engineering proglems, and using user-defined functions and toolboxes within Matlab to create computer programs and GUI's. A brief introduction to Simulink is also given.

MET 390X - Special Topics
Prerequisite: Consent of the Department Chair
1 to 5

Special topics selected by the program. Offered on a demand basis.

MET 4112 - Computer Aided Engineering & Analysis
Prerequisite: ENGR 3131 or ENGT 3124, MET 3101 or ENGR 3343, and EDG 1212
3-0-3

Introduces the student to advanced geometry creation as the necessary input for engineering design and analysis using modern computer aided engineering tools such as finite element stress analysis (FEA) and computation fluid dynamics CFD. Emphasis is placed on the interdependency of geometry creation and engineering analysis.

MET 4124 - Vibrations and Advanced Dynamics
Prerequisite: MATH 2306, ENGR 3122
3-0-3

Theory of mechanical vibrations with applications to machinery and the kinematics and kinetics of three dimensional motion of rigid bodies are covered. Conventional and computer methods are

used.

MET 4133 - Advanced Engineering Materials
Prerequisite: ENGR 3131 or ENGT 3124, and MET 3132
3-0-3

The course covers polymers, ceramics, composites, and advanced topics in ferrous and non-ferrous metallurgy. Advanced topics in mechanics of materials, including failure theories and analysis of composites are studied. Traditional methods and Finite Element Modeling and Analysis (FEM/FEA) are used.

MET 4141 - Machine Design I
Prerequisite: EDG 1212, ENGR 3122, and MET 3132
4-0-4

The design of machines and machine elements, and cost considerations. The course focuses on power transmission in machines including gears, belts, pulleys, bearings, lubrication, clutches, brakes, chains, power screws, and gear trains. Stress calculations and material selection are discussed. Broad design issues such as safety, ethics, patents, product liability, time value of money, return on investment, and breakeven analysis are covered. Students work in design teams on a major design project.

MET 4142 - Mechanical Systems Design
Prerequisite: MET 4141, EDG 1212, ENGR 3122
3-0-3

Fundamental rules, laws and criteria for using Finite Element Analysis (FEA) in the design of mechanical components and systems for structural integrity, reliability, and economy are covered, including energy methods, finite difference methods and numerical methods. Failure theory from static and variable loading is emphasized. Broad design issues such as design engineering economics, engineering ethics in design and intellectual property are covered. The course includes design projects using FEA.

MET 4341 - Automation Systems and Controls
Prerequisite: ECET 3000 or concurrently; CS 2123, MATH 2306, ENGR 3122
2-3-3

The technology of integrating automation equipment for use in engineering systems is covered. Students design simulations and complete fully-automated projects involving the human-machine interfacing of analog and digital sensors, actuators, motors, machines, flexible automation devices, and other material handling systems. Advanced process control software is used for programing and sensory techniques, as well as automatic open and closed-loop systems, and PID feedback control.

MET 4342 - Numerical Control of Machines
Prerequisite: MET 2322
2-3-3

A course in tooling and programming for Computer Numerical Control (CNC) machines. The course includes G-Code, conversational, and Computer Aided Manufacturing (CAM) programming languages and systems. Considerable emphasis on the integration of NC planning and programming into automated manufacturing systems. Topics in communications and computer networking for Direct Numerical Control (DNC) are discussed.

MET 4351 - Manufacturing System Design Project
Prerequisite: MET 4332, MET 4342 or consent of the department head

0-9-3

The Manufacturing Design Project is the capstone course for the Manufacturing Concentration in MET. Projects are assigned based on interest, equipment and software availability, and the specific background of the student. Projects require planning, proposal presentation, scheduling, engineering, implementation, and written and oral presentations of project results. Students are encouraged to "design and build" and utilize concepts learned from the courses completed in the MET Manufacturing Concentration. Presentation and report writing skills are practiced.

MET 4401 - Heat Transfer
Prerequisite: MET 3401
3-0-3

This course encompasses the study of Steady-State Conduction (One Dimensional, Multiple Dimensions), Principles of Convection (Forced Convection, Natural Convection), Condensation and Boiling, Radiation Heat Transfer and Heat Exchangers.

MET 4411 - Refrigeration
Prerequisite: MET 3402 or concurrently
3-0-3

The theory and applications of commercial refrigeration systems are studied. The thermodynamic analysis of the refrigeration cycle, load calculations and selection of components for refrigeration systems are covered.

MET 4412 - Air Conditioning
Prerequisite: MET 3402 or concurrently, ENGR 3343 or MET 3101
3-0-3

The basic principles of residential and commercial air conditioning systems are introduced including the calculation of cooling and heating loads, and psychrometric processes. The student is exposed to relevant topics in heating, ventilating and air conditioning (HVAC) such as equipment selection, duct design, piping design, indoor air quality, energy code, HVAC systems, energy conservation options, automatic controls, and testing, adjusting and balancing (TAB) of air conditioning systems.

MET 4421 - Instruments and Controls
Prerequisite: ECET 3000 or concurrently; CS 2123, MATH 2306, ENGR 3131 or MET 3101
3-3-4

This course covers the principles of engineering experimentation and process control. Students are instructed in current methods of data gathering, data regression, graphical analysis, result compilation, and report writing. Data gathering will include both manual techniques and computer data acquisition systems. An understanding of sensor selection, interfacing, and implementation is provided through lecture and laboratory assignments. The fundamentals of uncertainty analysis along with the application of dimensional analysis and similitude are covered. Programmable Logic Controllers (PLC's) are used to introduce students to process control. Laboratory exercises illustrating the use of instrumentation for performance evaluation and control of mechanical systems are conducted.

MET 4431 - Plant and Power Applications
Prerequisite: MET 3402 or concurrently
3-0-3

A study of the applications of fluid mechanics, thermodynamics and heat transfer to industrial process plants. Fundamentals of piping design, selection of fans, heat exchangers and other components commonly used in industrial processes are covered.

MET 480X - Special Projects
Prerequisite: Consent of the Department Chair
1 to 5

Independent study on topics of mutual interest to faculty and students. Assignments depend upon the specific background of the student, equipment availability, software availability, etc. Projects require a proposal presentation, scheduling, implementation and both written and oral presentations of study results.

MET 490X – Special Topics
Prerequisite: Consent of the Department Chair
1 to 5

Special topics selected by the program. Offered on a demand basis.

Mechanical Engineering

ME 1001 - Introduction to Mechanical Engineering
2-0-2

This course is an introduction to Engineering, with a focus on Mechanical Engineering. A strong emphasis will be placed on techniques for undergraduate student success, and preparation for careers in engineering and/or graduate studies. Students will be introduced to engineering faculty and student organizations. SPSU and Mechanical Engineering Program policies and curricula will be discussed.

ME 1311 - MATLAB for Engineers with Applications
Prerequisite: MATH 1113
2-3-3

This course will provide an introduction to fundamental computing principles and programming concepts. Students will use the high-level programming language, MATLAB to develop and implement programs to solve engineering problems. Basic programming concepts covered include: algorithm design, data types, flow control, functions, sorting, plotting, simulation, and numerical methods.

ME 3101 - Materials Science and Engineering
Prerequisite: CHEM 1211, 1211L and PHYS 2211, 2211L
3-0-3

A study of metals, ceramics, polymers, and composites as related to material selection for design and manufacturing. Areas include atomic structure and bonding, crystal structure and defects, mechanical properties and failure, diffusion, dislocation and strengthening, alloying, phase diagrams and transformations/heat treatment, polymers, ceramics and glasses, and composites.

ME 3133 - Composite Mechanics
Prerequisite: ENGR 3131
3-0-3

To provide a broad introduction to the technology and mechanics of advanced composites (polymer, metal and ceramic matrix), with a particular emphasis on mechanical design using fiber reinforced composites. Micromechanics of composites, as well as effective properties such as lamination theory will be introduced. Design considerations, applications and composite fabrication

will also be introduced.

ME 3201 - Product Realization
Prerequisite: ENGR 2214 , and (EDG 1211 or SYE 2100) and Engineering Standing
2-0-2

This course will introduce students to a rigorous design process. From needs assessment to implementation, an emphasis will be placed on the need for a formal process. Case studies will be used extensively, as well as a real-world ME design project.

ME 3410 - Thermodynamics
Prerequisite: ENGR 2214 and Engineering Standing
3-0-3

Fundamentals of Thermodynamics including the concept of energy and the laws governing the transfers and transformations of energy. Emphasis on thermodynamic properties and the first and second law analysis of systems and control volumes. Integration of these concepts into the analysis of basic power cycles is introduced.

ME 3440 - Heat Transfer
Prerequisite: ENGR 3343, ME 3410 and Engineering Standing
3-0-3

Fundamentals and applications of heat transfer including conduction, convection and radiation. Steady state and transient conduction in one and multi dimensions. Forced and free convection with boundary layer theory. Radiation properties and radiative heat transfer among black and non-black bodies. Calculation of heat transfer rates, heating/cooling times and design of heat exchangers.

ME 3501 - Dynamic Systems & Control Theory
Prerequisite: ENGR 3122, MATH 2306 and Engineering Standing
3-0-3

Introduction to a unified approach to lumped-element modeling and analysis of mechanical, electrical, hydraulic, and multi-energy domain systems. Topics include: graphical and computer modeling; formulation of state-space equations; analysis of linear systems; determination of time and frequency domain response of such systems to transient and periodic inputs; block diagram representation of dynamic systems using Laplace Transform. Feedback control systems, including PID control, root locus, stability analysis, and computer modeling.

ME 3701 - Manufacturing Engineering
Prerequisite: ENGR 3131 , ENGR 3343 , ME 3410 and Engineering Standing
3-0-3

This course introduces the fundamentals and applications of major manufacturing processes, their capabilities, analysis, selection and economics. It establishes the technical knowledge for the selection, designing, and planning of manufacturing processes such as casting, deformation process, material removal process and polymer processes.

ME 3901 - ME Special Topics Course
Prerequisite: Engineering Standing
1-0-1

Special topics offered by the program on a demand basis.

ME 3902 - ME Special Topics Course
Prerequisite: Engineering standing
2-0-2

Special topics offered by the program on a demand basis.

ME 3903 - ME Special Topics Course
Prerequisite: Engineering Standing
3-0-3

Special topics offered by the program on a demand basis.

ME 4141 - Machine Design I
Prerequisite: ENGR 3131 and Engineering Standing
3-0-3

The fundamentals of mechanical engineering design to analyze, design and /or select components which are commonly used in the design of complete mechanical systems for structural integrity, reliability, and cost considerations are detailed. The course focuses on static loading and fatigue failure of mechanical elements, including shafts and rolling-element bearings, bolted and permanent connections, springs, brakes, cylinders, gears and flexible elements.

ME 4201 - Senior Design I
Prerequisite: ME 3201, ME 3440, or ME 4250 and Engineering Standing
1-0-1

Part 1 of a two-course senior design capstone project for mechanical engineering. Students will form teams, define design projects, and write a proposal. Also begin preparation for FE Exam.

ME 4202 - Senior Design II
Prerequisite: ME 4201 and Engineering Standing
2-3-3

Part 2 of a two-course seior design capstone project for mechanical engineering. Synthesis and analysis of an open-ended mechanical engineering design project, including written and oral communication. Students will also be prepared to take the FE exam.

ME 4250 - Computer Aided Engineering
Prerequisite: EDG 1211 , ENGR 3343 , ENGR 3131 and Engineering Standing
3-0-3

This course introduces engineering software tools and techniques for computer modeling and simulation of mechanical components, products and systems. It introduces students to techniques common to various industries including biomedical, aviation, automobile, HVAC, etc. such as meshing and computer simulations based on finite element and computational fluid dynamics (finite volume) analyses.

ME 4403 - Heat Transfer and Thermodynamics Lab
Prerequisite: ME 3410 minimum grade C and ME 3440 minimum grade D and Senior Standing
0-3-1

This is a laboratory course designed to complement the thermodynamics and heat transfer lecture courses. The lab experiments are set up to provide practical experience in thermal sciences area including heat transfer modes, thermodynamics power and refrigeration cycles. Emphasis will also

be placed on thermal measurements, data interpretation and report writing.

ME 4501 - Vibrations & Controls Lab
Prerequisite: ENGR 3125 and ME 3501 can be taken concurrently and Engineering Standing
Corequisite: ENGR 3125
0-3-1

This is a laboratory course designed to complement the vibrations and controls topics also covered in lecture courses. Experimental study of one, two, and more degrees of freedom vibration, including effects of damping, free and forced vibrations, translational and torsional vibrations. Implementation of proportional, integral, and/or derivative control of dynamic systems.

ME 4801 - URME (Undergraduate Research in Mechanical Engineering)
Prerequisite: Consent of faculty member and Engineering Standing
1-0-1

This is a specialized independent study in research determined by the students' needs and interests, in consultation with and under the guidance of an ME faculty member. The student is expected to research 3-hours per week per credit hour of research, and document in a professional notebook.

ME 4802 - URME (Undergraduate Research in Mechanical Engineering)
Prerequisite: Consent of faculty member and Engineering Standing
2-0-2

This is a specialized independent study in research determined by the students' needs and interests, in consultation with and under the guidance of an ME faculty member. The student is expected to research 3-hours per week per credit hour of research, and document in a professional notebook.

ME 4803 - URME (Undergraduate Research in Mechanical Engineering)
Prerequisite: Consent of faculty member and Engineering Standing
3-0-3

This is a specialized independent study in research determined by the students' needs and interests, in consultation with and under the guidance of an ME faculty member. The student is expected to research 3-hours per week per credit hour of research, and document in a professional notebook.

ME 4804 - URME (Undergraduate Research in Mechanical Engineering)
Prerequisite: Consent of faculty member and Engineering Standing
4-0-4

This is a specialized independent study in research determined by the students' needs and interests, in consultation with and under the guidance of an ME faculty member. The student is expected to research 3-hours per week per credit hour of research, and document in a professional notebook.

ME 4901 - ME Special Topics Course
Prerequisite: Engineering Standing
1-0-1

Special topics offered by the program on a demand basis.

ME 4902 - ME Special Topics Course
Prerequisite: Engineering Standing
2-0-2

Special topics offered by the program on a demand basis.

ME 4903 - ME Special Topics Course
Prerequisite: Engineering Standing
3-0-3

Special topics offered by the program on a demand basis.

ME 4904 - ME Special Topics Course
Prerequisite: Engineering Standing
4-0-4

ME Special Topics course on demand basis

Mechatronics Engineering

MTRE 1000 - Introduction to Mechatronics Engineering
1-0-1

An introduction to career opportunities in Mechatronics Engineering; familiarization with college and departmental policies, curriculum, and facilities.

MTRE 2610 - Engineering Algorithms and Visualization
Prerequisite: CSE 1301E and MATH 2253
2-3-3

This course covers the development of algorithms to solve mechatronics related problems, using the tools C++, MATLAB, and Simulink. Object-oriented programming will be covered including classes, inheritance, and operator overloading. Basic numerical methods topics include matrix operations, solving linear systems, and curve fitting. Visualizing data in two and three dimensions with parametric curve plots, histograms, surface plots, and contour plots will be introduced. The laboratory component will focus on assignments relevant to mechatronics including robotics, controls, sensors, pneumatics, etc.

MTRE 3710 - Mechatronics Engineering Fundamentals
Prerequisite: ENGR 2710 or MATH 3312, and (CSE 1301E or CSE 1301C or CSE 1301J) and Engineering Standing
3-3-4

This course will provide basic knowledge, tools and backgrounds for mechatronics design. In particular it will cover the following topics: pneumatic and hydraulic systems; electrical and mechanical actuation systems; embedded systems using C; and mobile robotics: kinematics, sensors, communication, C++ programming, position control, velocity control, and obstacle avoidance.

MTRE 4000 - Advanced Controls
Prerequisite: EE 4201 and Engineering Standing
3-0-3

This course is an advanced study of modern control systems focused on control theories and system applications. It covers the basic theoretical methods and mathematical tools for analysis and design of control systems. Topics that will be included are: state-space variable method, system transfer function, discrete-time systems, z-transforms, digital control, fundamentals of modern control systems, analysis and design techniques such as controllability, observability, Ackerman's formula and pole placement. A brief introduction of various advanced control methodologies will also be covered.

MTRE 4100 - Instruments and Controls
Prerequisite: EE 2501 EE 3401 MATH 2306 and Engineering Standing
3-3-4

Characteristics of instruments used in mechanical systems for determining parameters such as temperature, pressure and flow are studied. The use of these devices in automated systems is covered. Furthermore, the elements of control theory, selection of control modes, and application to mechanical systems are studied. Laboratory exercises illustrating the use of pertinent instrumentation for determining the performance of mechanical equipment are conducted.

MTRE 4200 - Robotics Analysis and Synthesis
Prerequisite: Engineering Standing, MATH 2255 , and EE 4201 or ME 3501
Corequisite: MTRE 3710
3-3-4

This class will mainly introduce the mathematical models, trajectory planning and control of robotic manipulators for engineering students. The following topics will be covered in the course: Rigid Motions and Homogeneous Transformations, Forward and Inverse Kinematics, Velocity Kinematics and Jacobian, Path and Trajectory Planning, Independent Joint Control, and Dynamics of Industrial Robots.

MTRE 4400 - Mechatronics System Design
Prerequisite: MTRE 4000 , MTRE 4100 , ECON 2107 and Engineering Standing
2-6-4

The design of mechanical and electrical devices and systems, and cost considerations are covered. The course focuses on reliability, safety, energy and environmental issues, ethics, patents, product liability, time value of money, return on investment, and breakeven analysis. The design project is a capstone for the Mechatronics Engineering program. Projects are assigned based on interest, equipment and software availability, and the specific background of the student. Projects require planning, proposal presentation, scheduling, engineering, implementation, and written and oral presentations of project results. Students are encouraged to "design and build" and utilize concepts learned from courses throughout the program.

MTRE 4903 - Special Topics in Mechatronics Engineering
3-0-3

Special Topics course Mechatronics

Modern Foreign Languages

MFLA 190X - Special Topics
1 to 3

A course for individualized instruction of modern foreign languages.

MFLA 290X - Special Topics
1 to 3

A course for special study of modern foreign language or literature, above the 1000 level.

Philosophy eCore

PHIL 2010 - Introduction to Philosophy
3-0-3

Introduction to the central issues, questions, and theories of Western Philosophy. Topics covered include logic and critical thinking; religion; knowledge and skepticism; philosophy of mind; freedom and determinism; and ethics. Students are expected to engage in philosophical discussion based on primary and secondary texts. (eCore Course – Online)

Physics

PHYS 3xxx - Introduction to Scanning Electron Microscopy
Prerequisite: PHYS 2212 , (PHYS 2212K), PHYS 1112 , (PHYS 1112K)
1-3-2

An introduction to theory, operation, and practical applications of Scanning Electron Microscopy (SEM), through an integrated series of lectures and laboratory sessions. Students will obtain a working knowledge in sample preparation, basic operating techniques, image formation, Energy Dispersive X-ray Spectroscopy (EDS), and back scattering. This course focuses on students from physics, engineering, engineering technology, material science, chemistry, and biology disciplines. Students are required to write formal lab reports. Cross-listed as ENG 3xxx

PHYS 1111 - Introductory Physics I
Prerequisite: MATH 1113; PHYS 1111L is a Pre or Co-requisite
Corequisite: PHYS 1111L
3-0-3

PHYS 1111 is the first course in a two -semester sequence that includes mechanics, thermodynamics, and waves. Elementary algebra and trigonometry will be used. Registering for PHYS 1111 includes a 1 hour/week recitation. Students registering for PHYS1111 must also register for PHYS 1111L as a co-requisite.

PHYS 1111L - Introductory Physics Laboratory I
Corequisite: PHYS 1111
0-2-1

This laboratory complements the course content in PHYS 1111

PHYS 1112 - Introductory Physics II
Prerequisite: PHYS 1111, PHYS 2211 or PHYS 1211K (eCore); PHYS 1112L is a pre or co-requisite
3-0-3

PHYS 1112 is the second course in a two-semester sequence that includes material from

electromagnetism, optics and modern physics. Elementary algebra and trigonometry will be used. Students registering for PHYS 1112 must also register for PHYS 1112L as a co-requisite

PHYS 1112L - Introductory Physics Laboratory II
Corequisite: PHYS 1112
0-2-1

This laboratoy complements the course content for PHYS 1112

PHYS 1211 - Principles of Physics I
Prerequisite: Completion of Calculus I (MATH 1501 or MATH 2253)
Corequisite: PHYS 2211L
3-0-3

PHYS 2211 is the first course in a two-semester sequence that includes mechanics, thermodynamics, and waves. Elementary differential calculus will be used. Registering for PHYS 2211 includes a 1hour/week recitation. Students registering for PHYS 2211 must also register for PHYS 2211L as a co-requisite.
Also offered as an eCore (online) course as PHYS 1211K with lab included (4-0-4).

PHYS 2211 - Principles of Physics I
Prerequisite: MATH 2253
Corequisite: PHYS 2211L
3-0-3

PHYS 2211 is the first course in the two-semester sequence that includes mechanics, thermodynamics, and waves. Elementary differential calculus will be used. Registering for PHYS 2211 includes a 1 hour/week recitation. Students registering for PHYS 2211 must also register for PHYS 2211L as a co-requisite (3-0-3). This course is also taught as an eCore (online) course as PHYS 1211K.

PHYS 2211L - Principles of Physics Laboratory I
Corequisite: PHYS 2211
0-2-1

The laboratory complements the course content in PHYS 2211 .

PHYS 2212 - Principles of Physics II
Prerequisite: MATH 2254, PHYS 2211
Corequisite: PHYS 2212L
3-0-3

PHYS 2212 is the second course in a two-semester sequence that includes material from electromagnetism, optics and modern physics. Elementary differential calculus will be used. Students registering for PHYS 2212 must also register for PHYS 2212L as a co-requisite.

PHYS 2212L - Principles of Physics Laboratory II
Corequisite: PHYS 2212
0-2-1

The laboratory complements the course content in PHYS 2212 .

PHYS 2213 - Introduction to Thermal and Modern Physics
Prerequisite: MATH 2254, (PHYS 2211/PHYS 2211L or PHYS 1111/PHYS 1111L) and (PHYS

2212/PHYS 2212L or PHYS 1112/PHYS 1112L)
2-0-2

An introductory course that will include fluid physics (density, pressure, Pascal's Principle, Archimedes' Principle) thermal physics (thermal properties of matter, first and second laws of thermodynamics), and modern physics (relativity, quantum theory, atoms, nuclei). Elementary calculus will be used.

PHYS 3210 - Mechanics I
Prerequisite: MATH 2306 and PHYS 2211/PHYS 2211L with a grade of C or better
4-0-4

A survey of Newtonian dynamics of particles and systems of particles, including Lagrange's equations, central force systems, and non-inertial frames.

PHYS 3220 - Electromagnetism I
Prerequisite: MATH 2255 and PHYS 2212/PHYS 2212L with a grade of C or better
3-0-3

A survey of fundamental principles of electricity and magnetism, including electrostatic fields, magnetic fields of steady currents, and time-dependent electromagnetic fields.

PHYS 3230 - Optics
Prerequisite: A grade of C or better in PHYS 2212/PHYS 2212L
3-0-3

Fundamentals and applications of geometric and physical optics.

PHYS 3410 - Electronics Laboratory
Prerequisite: PHYS 2212/PHYS 2212L with a grade of C or better
1-3-2

A study of discrete and integrated circuits that are commonly found in the physics laboratory.

PHYS 3500K - Introduction to Computational Physics
Prerequisite: PHYS 2212, PHYS 2212L with a grade of C or better
2-3-3

An introduction to computational physics problem solving, primarily using Windows-based MathCad. Topics include equation solving, the use of vectors and matrices, 2-D and 3-D graphics, differential equation solving, simple programming, and the analysis and simulation of physical processes. Both numeric and symbolic methods are covered.

PHYS 3710 - Modern Physics
Prerequisite: A grade of C or better in PHYS 2212/PHYS 2212L
4-0-4

An introduction to the concepts and calculations involved in understanding the structure of matter and the world of the quantum. Topics include the Planck theory of radiation, particle/wave duality, Schrodinger equation solutions for simple potentials, and properties of the one-electron atom. Applications of quantum principles to atomic, molecular, and nuclear structure are also considered as time permits.

PHYS 3720L - Modern Physics Laboratory

Prerequisite: PHYS 3710 is a pre or co-requisite
0-3-1

A selection of experiments from Modern Physics that complement the material in PHYS 3710.

PHYS 3730 - Relativity
Prerequisite: A grade of C or better in PHYS 2212/PHYS 2212L
3-0-3

A thorough exposition of the principles of Special Relativity and an introduction to the General Theory of Relativity.

PHYS 390X - Special Topics
Prerequisite: Junior standing
1 to 5

Special topics selected by the department. Offered on a demand basis.

PHYS 4200 - Mechanics II
Prerequisite: PHYS 3210
2-0-2

A survey of the theory of small vibrations, dynamics of rigid bodies, nonlinear osillations, coupled oscillations, and Physics of fluid mechanics.

PHYS 4210 - Quantum Physics
Prerequisite: PHYS 3710 with a grade of C or better
4-0-4

A systematic development of quantum mechanical laws, emphasizing solutions to Schrodinger's equation.

PHYS 4230 - Thermal Physics
Prerequisite: PHYS 2213 and PHYS 2212, PHYS 2212L with a grade of C or better
4-0-4

A study of the principles of thermal equilibrium, physical statistics, irreversible processes, and the approach to equilibrium.

PHYS 4240 - Solid State Physics
Prerequisite: PHYS 3710
3-0-3

Application of quantum mechanics to molecules and solids including such topics as molecular bonding, spectra of diatomic molecules, binding forces and bonding theory in solids, and application to solid state devices.

PHYS 4250 - Quantum Theory of Two-State Systems
Prerequisite: MATH 2254, and PHYS 2212/PHYS 2212L
2-0-2

Application of quantum theory to the behavior of systems that can be described using only two basis states. The primary examples used are photon polarization states and fermion spin states.

PHYS 4410K - Advanced Physics Laboratory
Prerequisite: PHYS 3410 and PHYS 3720L with a grade of C or better
1-3-2

An introduction to instrument control, data acquisition, and data analysis of the type used in research labs. The student will then incorporate these techniques in the design of experiments important to classical and/or contemporary physics. This course will be writing intensive and will require extensive formal reports.

PHYS 4430 - Capstone Physics Project
Prerequisite: Approved petition for graduation.
1-0-1

Students will complete a capstone physics project during the last year on campus. The content and subject of this project will be negotiated between the student and the faculty supervisor of the project.

PHYS 490X - Special Topics
Prerequisite: PHYS 2212, 2212L or PHYS 1112, 1112L
1 to 5

Special topics selected by the department. Offered on a demand basis.

Physics eCore

PHYS 1211K - Principles of Physics I (ECORE)
Prerequisite: MATH 1501 or MATH 2253
4-0-4

An introductory course which will include material from mechanics, thermodynamics and waves. Elementary differential calculus will be used. This course has a laboratory component (included) that requires a lab kit. (eCore Course - Online) This course is equivalent to PHYS 2211 & PHYS 2211L.

Political Science

POLS 1101 - American Government
3-0-3

A study of the structure and function of the federal government from its historical antecedents to its contemporary challenge. Satisfies U.S. and Georgia history and constitution requirement. Also offered as an eCore (online) class.

POLS 2100 - Introduction to Research Methods
Prerequisite: MATH 1111 (or MAT of 24+)
3-0-3

This course provides students with an introduction to basic research design for the social and political sciences with a focus on those methodologies appropriate to hypothesis testing and data analysis in survey research. The course covers topics such as survey design, reliability, and validity, as well as the calculation and proper use of descriptive and inferential statistics. In addition, students will be introduced to various datasets relevant to the study of political science such as the

American National Election Studies, the General Social Survey, and Correlates of War.

POLS 2401 - Global Issues
3-0-3

An introduction to international relations covering such issues as diplomacy, nuclear politics, war, secret intelligence, revolution, international development, debt, and dependence.

POLS 2800 - Research Design
Prerequisite: POLS 2100
3-0-3

This course builds upon the material learned in POLS 2100. Students will learn to design social science research projects creating or using datasets relative to political science under the guidance of the instructor. Students will develop an in-depth understanding of the linear regression model as a tool for hypothesis testing, including assumptions and diagnostics for a full understanding and proper use.

POLS 2903 - Special Topics in Political Science
3-0-3

Special topics in Political Science. Course offered by the department on a demand basis. 1 to 3 hours.

POLS 3001 - Comparative Politics
Prerequisite: POLS 2401
3-0-3

Provides a generalized overview of the political systems and policymaking processes in several important countries. Included are country case studies from both the developed and developing worlds, as well as communist and post-communist realms.

POLS 3009 - Foundations of Public Policy
3-0-3

This course will serve as a general survey of public policy in a cross-national context, beginning with efforts to define public policy through the most modern efforts to explain how public policy is made. A key theme will include a comparative examination of the development of public policy in democratic countries. The course will also provide an overview of the other key concepts/theories, including stages of policy making, punctuated equilibrium, issue networks, institutionalism, symbolism, and theories designed to explain the link between policy alternatives and the problems they are designed to solve.

POLS 3209 - U.S. Constitutional Law
Prerequisite: POLS 3201
3-0-3

This course provides students with an in-depth discussion and case history of the origins, development, and evolution of the U.S. Constitution, focusing in particular upon such themes as the structure and powers of the United States government, as well as civil rights and liberties provisions. The course will include analysis of defining features of the American constitutional system such as the separation of powers, federalism, The Bill of Rights, and judicial review. The influence of U.S. Supreme Court membership and the role of other organized interests in interpreting constitutional rights will be considered.

POLS 3301 - Modern Political Theory
3-0-3

An examination of the most important theorists, political philosophies, and ideologies from the seventeenth century to the present. The course discusses the role and nature of the individual, the relationship between the individual and the group, the characteristics of political authority (its source and its limits), the goals and mechanics of economic organization, as well as the issue of material and economic equality as it relates to individual freedom.

POLS 3401 - Environmental Law and Policy
Prerequisite: Recommended POLS 1101
3-0-3

This course examines the formulation, implementation, and substance of environmental policies within the United States. Topics covered will include air and water pollution, toxic and hazardous substances, public land management, threatened and endangered species, energy, and climate change. Cross-listed as ENVS 3401 Environmental Law & Policy

POLS 3501 - Intellectual Property Issues
3-0-3

A survey of federal patent, trademark, and copyright laws, including the current efforts to harmonize U.S. and foreign intellectual property law in response to the emerging global marketplace.

POLS 3601 - Contemporary World Politics
Prerequisite: POLS 2401
3-0-3

Examines existing world trouble spots through an analysis of their historical backgrounds and the current international system. Students will devise their own policy analyses and recommendations for resolving various conflicts of international interest.

POLS 3701 - Seminar in American Politics
Prerequisite: POLS 1101
3-0-3

This upper-level course focuses upon one of the following – the American Presidency, the U.S. Congress, or the judicial branchand provides an in-depth study of one of these major branches in the federal government. The course begins by considering the origins of the branch, examining thereafter the various forces that have served to mold it over time.

POLS 3801 - Political Behavior
Prerequisite: POLS 1101 and SIS 2100
3-0-3

This course provides an examination of institutional, social, and psychological influences on mass political behavior, political sophistication, political participation, voter choice, partisanship, ideology, and values. Students will be required to conduct research of voting and political behavior using statistical analysis.

POLS 3903 - Special Topics in Political Science
1-3 Credit Hours

Special topics course offered by the department on a demand basis - 1 to 3 hours. May be

repeated for credit.

POLS 4009 - Comparative Public Policy Analysis
Prerequisite: POLS 3009
3-0-3

The course will provide students with tools to evaluate and compare policy alternatives designed to solve policy problems in a comparative context. Students will be introduced to cost-benefit analysis in a policymaking environment, rational choice and decision theory, public choice, collective action, and equity, and privatization. The course will utilize specific case studies that consider many policy issues, as well as many different countries.

POLS 4063 - Political Issues in Electronic Government
Prerequisite: POLS 3701
3-0-3

This course examines a variety of issues, e.g., identity, security, privacy issues, citizen participation, constitutional rights, etc, in electronic government using a comparative international perspective.

POLS 4100 - Applied Methodology
Prerequisite: POLS 2800
3-0-3

This course builds upon the material learned in POLS 3100 and explores model building and the use of appropriate statistical research models. Students will also learn to utilize simple categorical models to conduct an analysis of an actual social science dataset of the student's choosing.

POLS 4101 - Political Economy of Post-Communist Transformation
Prerequisite: POLS 2401
3-0-3

This course examines the political and economic processes of reform in a variety of post-socialist societies. A significant portion of the course will involve a discussion of the impediments to reform in either domain, as well as the significant barriers to economic competition in the world marketplace.

POLS 4201 - International Relations in the Americas
Prerequisite: POLS 2401
3-0-3

This course examines the relations among the countries of the Americas. It will explore the development of relations in the context of United States regional hegemony. The course will also examine current issues relevant to the region such as trade, drug trafficking, and migration.

POLS 4301 - International Political Economy
Prerequisite: POLS 2401
3-0-3

Discusses the major international governmental and non-governmental organizations that are involved in global trade, finance and development. Besides introducing the student to various theoretical frameworks in international political economy, the course examines the interrelationships among political, economic and social forces through the use specific case studies.

POLS 4801 - Capstone: Political Science Practicum
Prerequisite: POLS 4100
3-0-3

The capstone course in the political science major requires students to develop a self-directed research project that will incorporate and integrate a significant body of theoretical and practical knowledge gleaned from prior coursework to date and to utilize empirical data-gathering techniques and statistical analysis in a convincing and methodologically valid manner.

POLS 4903 - Special Topics in Political Science
1-3 Credit Hours

Special Topics in Political Science. Course offered by the department on a demand basis. 1 to 3 hours May be repeated for credit.

Psychology

PSYC 1000 - Orientation to Psychology
1-2-2

This course provides psychology majors with an overall introduction to the field of psychology, career opportunities in psychology, familiarization with university and departmental policies and curriculum.

PSYC 1101 - Introduction to General Psychology
3-0-3

An introduction to the methods, theories, and research findings in psychology. The course examines the influence of biological, cognitive, and social factors on behavior. Also offered as an eCore (online) class.

PSYC 2011 - Cognitive Psychology
Prerequisite: PSYC 1101
3-0-3

An introduction ot human mental processes. Attention, perception, problem solving, pattern recognition, imagery, memory retention, language comprehension, and knowledge acquisition are examined as fundamental processes of cognition.

PSYC 2100 - Basic Quantitative Research Methods for Psychology
Prerequisite: MATH 1111 (or MAT of 24+), PSYC 1101 and IET 2227
3-0-3

This course will provide students with an introduction to basic psychological methodologies used in experimental and correlation research and the statistics used to determine significance. This course will cover research design, descriptive statistics, and parametric and non-parametric statistical tests.

PSYC 2270 - Engineering Psychology
Prerequisite: PSYC 1101
3-0-3

Survey of the applied areas of psychology which has proven useful in the design of equipment for

human use and in the design of man-machine systems. This course is offered at a beginning or survey level and is conducted as a lecture course with a current text book for readings. The content is basically psychological, but the emphasis is on how psychological knowledge can be applied in the design or organization of machines, equipment or systems intended for human use. Examples are drawn from a wide range of areas.

PSYC 2271 - Clinical and Counseling Psychology
Prerequisite: PSYC 1101
3-0-3

This course presents the central concepts and methods of Clinical and Counseling Psychology. It is intended to provide an overview of the processes of psychological assessment and intervention as well as the current scope of clinical practice.

PSYC 2273 - Foresic Psychology
Prerequisite: PSYC 1101
3-0-3

The purpose of this course is to provide the student with an overview of (a) the theories that support the utilization of psychology in the criminal justice system and (b) how those theories and psychological research are applied in law enforcement, the courts, and in corrections. Although the focus in the course is primarily on the United States, some attention is devoted to an international view of forensic psychology.

PSYC 2401 - Psychology of Diversity
3-0-3

Cross-cultural psychology, including an examination of issues such as conformity, leadership, attribution of styles as they vary across different cultures, with consideration of their implications for the emerging world. Topics related to gender will also be included in this lecture based course.

PSYC 2903 - Special Topics in Political Science
1-3 Credit Hours

Special topics in Psychology. Course offered by the department on a demand basis. 1 to 3 hours

PSYC 3000 - Junior Seminar
Prerequisite: PSYC 1101 and Junior Standing
3-0-3

This course is designed to be a seminar for junior psychology majors and minors. It is the intent of this course to bring together majors and minors to: 1) enhance their APA writing skills; and 2) to learn about the process for accessing information about, and applying for, graduate school and/employment.

PSYC 3010 - Educational Psychology
3-0-3

This course is designed to examine the application psychological concepts, principles, theories, and methodologies to issues of teaching and learning in school.

PSYC 3015 - Theories of Personality
3-0-3

This course is an overview of the various classes of personality theory: psychosocial conflict

theories, social learning theorists, intrapsychic conflict theory, cognitive and self theories, and role theory.

PSYC 3020 - Physiological Psychology
Prerequisite: PSYC 1101
3-0-3

This course will serve as an introduction to the biological basis of behavior. The course will begin by providing a basic understanding of the function of the nervous system. With this knowledge in hand, the physiological basis of behaviors such as hunger, thirst, sex, aggression, sleep learning and memory will be explored.

PSYC 3031 - Experimental Psychology
Prerequisite: IET 2227, PSYC 1101, and PSYC 2100 (with a grade of C or better)
3-2-4

This course will focus on experimental designs used in laboratory research psychology. Topics will include hypothesis testing, interdependent-group and subjects designs, complex designs, and statistical analysis using t-tests and Analysis of Variance. Emphasis will be on the selection of appropriate design of different research questions, data collection, data analysis, the interpretation results, and writing laboratory reports. This course will include a lab.

PSYC 3040 - Motivation and Emotion
Prerequisite: PSYC 1101
3-0-3

An examination of motivation and emotion from a variety of perspectives. The course will explore biological, cognitive, developmental, evolutionary, physiological, and social approaches.

PSYC 3055 - Psychology Practicum
Prerequisite: PSYC 1101 , Junior or Senior status and permission of the instructor
3-0-3

This course is intended to give students hands-on experience in the practical application of psychological knowledge. It is appropriate for students who are considering future activities in psychology and wish to explore the field; junior or senior status and permission of the instructor are required for enrollment. Repeatable for credit one time only.

PSYC 3101 - International Social Psychology
3-0-3

Required of all International Studies Majors, this course will examine the influence of biological, cognitive and social factors on behavior in cross-national contexts.

PSYC 3230 - Abnormal Psychology
Prerequisite: PSYC 1101
3-0-3

An introduction to the major psychological disorders. The symptoms and signs of psychosis, affective disorders and disorders will be discussed. The way these symptoms and signs constellate into various syndromes, as defined in the DSM-IV, will be considered.

PSYC 3265 - Human Sexuality
Prerequisite: PSYC 1101

3-0-3

An examination of the biological, personal, interpersonal, and social aspects of human sexual behavior. Topics include: sexual values, sex and gender, sexual love, sexual behavior over the life span, reproduction, sex and health, sexual dysfunction and treatment, and social problems/issues related to sexual behavior.

PSYC 3301 - Psychological Testing
Prerequisite: PSYC 1101 and PSYC 2100 with a grade of C or better
3-0-3

The measurement of individual and group differences in abilities, interests, achievement, and traits.

PSYC 3305 - Developmental Psychology
Prerequisite: PSYC 1101
3-0-3

Human development from conception to death, emphasizing biological, cognitive emotional, social and personality development. Theories of development and applications to real-world problems will provide a context for understanding human change during the life-cycle.

PSYC 3903 - Special Topics in Psychology
1-3 Credit Hours

Special topics in Psychology 1 to 3 credit hours. Special topics course offered by the department on a demand basis. May be repeated for credit.

PSYC 4000 - International Psychology
Prerequisite: PSYC 1101
3-0-3

The course will examine mainstream as well as alternative theoretical, methodogical, and applied approaches that are relevant to the study and practice of international psychology. The topics discussed will emphasize psychology's relevance to the understanding and solution of global problems, as well as of how psychology itself is affected by events and cultures around the world.

PSYC 4050 - History and Systems of Psychology
Prerequisite: PSYC 1101
3-0-3

A review of the history of psychology from ancient to modern times. The rise and fall of psychological systems such as structuralism, functionalism, behaviorism, gestaltism, and psychoanalysis. The characteristics of contemporary psychology.

PSYC 4130 - Psychology of Aging
3-0-3

Course focuses on gerontology, with emphasis on learning, personality, attitudes, perception, ability, and adjustment in the aged.

PSYC 4220 - Psychoactive Drugs, Behavior, and Society
3-0-3

This course addresses how psychoactive drugs work int he central nervous system to affect

behavior. Stimulants, depressants, hallucinogens, analgesics and psychotropic drugs will be discussed primarily in terms of their pharmacological action in the brain. Substance abuse and treatment will also be discussed.

PSYC 4600 - Conflict Resolution
3-0-3

Styles of negotiation as a tool used to resolve conflicts and disputes. Also studied are alternative dispute resolution (ADR) systems used at the local, regional, national, and international levels.

PSYC 4800 - Psychology Capstone Seminar
Prerequisite: PSYC 3031 grade of C or better
3-0-3

This seminar course serves as the capstone course for the student majoring in Psychology. Students will research and complete self-directed project in which they will integrate the various aspects of their program.

PSYC 4903 - Special Topics in Psychology
1-3 Credit Hours

Special Topics in Psychology 1 to 3 credit hours. Course offered by department on a demand basis. May be repeated for credit.

Religion

RELG 1200 - World Religion
3-0-3

Survey of world religions including Hinduism, Buddhism, Islam, Judaism, and Christianity. Attention will be paid to historical development, basic tenets, and impact on culture.

Renewable Energy Engineering Technology

REET 1000 - Energy Fundamentals
3-0-3

This course provides an introduction to energy fundamentals. The course starts by looking at our societies current energy generation practices and gives a brief overview of the wide range of sustainable alternatives available now and in the future. Topics discussed include energy, power, and efficiency. In addition to power generation, the students will also explore topics of energy storage and transmission. The course will culminate in freshmen design experience that will tie all the concepts together.

REET 2020 - Engery Conversion
Prerequisite: REET 1000 , ECET 2111
3-3-4

This course starts with the introduction to both traditional and renewable energy conversion. Emphasis is placed on renewable energy, especially solar and wind. Fundamentals of electro-mechanical energy conversion follows. Theory of operation and operating characteristics of

transformers, DC machines, AC induction machines, and synchronous machines are thoroughly covered. Emphasis is placed on three-phase synchronous and induction machines.

REET 3030 - Energy Storage Systems
Prerequisite: REET 1000 , CHEM 1211
3-0-3

This course will explore the wide range of technology available for energy storage and its impact on the energy industry. Technology will include batteries, super capacitors, flywheels. pumped storage, and hydrogen among others. Special attention will be provided to advanced battery technologies and their use in energy systems.

REET 3550 - Introduction to Alternate Energy
Prerequisite: PHYS 2212, PHYS 2212L or PHYS 1112 , PHYS 1112L
3-3-4

This course will introduce students to alternative forms of energy generation, storage and delivery. The class will explore present day technologies using oil, coal and gas then movine into emerging technologies such as solar, wind, waves, tidal, geothermal, etc. Storage technologies such as batteries and flywheels will also be addressed along with fuel cell delivery techniques. The course will end by exploring more futuristic possibilities such as space-based solar and high-altitude wind generation.

REET 4040 - Senior Design Proposal
Prerequisite: Senior Standing
1-0-1

In this course, students will conduct initial research into an energy topic of interest to them with the goal of determining their senior design project. A complete proposal document is required to satisfy completion of this course.

REET 4050 - Senior Design Project
Prerequisite: Senior Standing
1-3-2

In this capstone course, the students implement the design and development of an approval project in Renewable Energy Engineering. The project which will involve the design, fabrication, and formal demonstration of hardware and software functionality is completed during the course of the semester. A formal project report and oral presentation are required.

REET 4100 - Solar Photovoltaics
Prerequisite: ECET 2300
3-0-3

The course starts with studying the semiconductor principles of photovoltaic power generation and provides an overview of current materials used in cell fabrication. The organization of solar cells within panel structures are then addressed, as well and the necessary technologies for interfacing these panels to off-grid and on-grid power distribution networks. The course finishes up with a design project where students will be asked to estimate energy needs and create an appropriate system for meeting these needs.
REET 4110 - Solar Thermal Systems
Prerequisite: MET 3401
3-0-3

The course starts with a review of basic definitions of thermodynamics and Thermodynamic cycles. General concepts of thermal radiation, radiation properties, radiation intensity and heat exchange between surfaces will be studied. This section includes solar radiation, solar geometry and solar

angles, and solar irradiation. Then solar thermal conversion, collectors, central receivers, distributed receivers. heliostat fields, thermal storage systems and hybrid plants and applications of technology in residential and industrial market will be covered. The course finishes up with a design and energy simulation of solar thermal systems.

REET 4200 - Wind Power Generation
Prerequisite: REET 2020 , MET 3101
3-0-3

The course consists of two parts, mechanical and electrical. The mechanical part starts with a review of fluid mechanics. Then the principles of wind power, maximum power, actual power and force analysis on the blades, mean wind and energy velocities will be studied. The Magnus Effect, the hit force the drag force and different wind turbine designs will be covered. The electrical part: designing a wind turbine system than can generate power with high efficiency requires a thorough understanding of the principles of aerodynamics of the rotor system. The influence of the number of blades, the tilt angle of the blades on the power output of the wind turbine will be covered. The current-voltage characteristic of wind turbine with constant rotation speed and constant wind speed will be studied. The construction, operation and speed control of three-phase induction motors will be thoroughly covered. The course ends up with a design project of a wind turbine.

REET 4210 - Oceanic and Hydropower Generation
Prerequisite: MET 3401 , MET 3101
3-0-3

General concepts of thermodynamic processes and cycles will be reviewed in the beginning. The course has two different sections. In the first section, "Energy from the Ocean" will be studied. In this section, first "Ocean Temperature Energy Conversion" (OTEC) will be discussed and then "Open and closed OTEC cycles" will be covered. This section will be continued with ocean waves, wave motion, energy and power from waves, wave-energy conversion by floats, different types of "wave machines" and poll tidal systems. In the second section, other "Hydropower generation methods" will be addressed. In this section, different types of hydropower generation such as hydroelectric dams, run-of-the-river hydroelectricity, and pumped-storage hydroelectricity will be discussed. This section includes different types of impulse and reaction water turbines. The course concludes with a design project of a "Hydropower Generation System".

REET 4500 - Environmental Aspects of Power Generation
Prerequisite: REET 1000 , Junior Standing
3-0-3

This course examines the environmental impact of electrical power generation, The environmental impact of electrical power generation. The environmental impact of traditional power generation schemes such as coal, hydroelectric, nuclear, and fossil fuels will be examined along with the impact, as well as the potential impact, of Renewable Energy sources such as solar, wind, oceanic and fuel cells.

REET 4510 - Sustainable Transportation Systems
Prerequisite: ECET 2300 , CHEM 1211
3-0-3

This course will explore the pros and cons of alternative transportation systems including electric, hybrid, compressed air, and fuel cell vehicles. Topics explored infrastructure requirements, overall system efficiencies, and hidden costs of implementation. The course finishes up with a focused transportation system analysis.

Science, Technology, Society

STS 2400 - Science, Technology, and Society
Prerequisite: ENGL 1101
2-0-2

An interdisciplinary course exploring the development and integration, both historical and contemporary, of science, technology, and society. The course seeks to help students better understand the world in which they live, the broader implications of their major course of study, and the complex social, ethical, and moral choices presented by modern science and technology. eCore (online) course ENVS 2202: Environmental Science is accepted for STS 2400.

STS 3347 - Perspectives on Science and Math
Prerequisite: ENGL 1102, STS 2400
3-0-3

This course explores ways that scientific investigators have explained the workings of the natural world. This course has four interlocking goals: to give an overview of the history of science and mathematics; to put this broader history and context to work in science and mathematics pedagogy; to improve writing skills to competence or mastery; and to improve research and information analysis skills to competence or mastery.

STS 3903 - Special Topics in Science, Technology, and Society
1-3 Credit Hours

Special topics course offered by the department on a demand basis 1 - 3 hours. Might be repreated for no credit.

STS 4000 - International Issues in Science and Technology
Prerequisite: ENGL 1101 and STS 2400
3-0-3

Examines the technical, social and moral issues raised by current international advances in science and technology. Places emphasis on comparative studies by examining a series of topics, each from the perspectives of a variety of nations.

STS 4400 - Topical Studies in Science and Technology
Prerequisite: ENGL 1101 and STS 2400
3-0-3

Examines the technical, social and moral issues raised by a particular issue of current concern in international science and technology. Students develop technical understanding, historical perspective and current events literacy relevant to the topic explored in a given term.

STS 4903 - Special Topics in Science, Technology, and Society
1-3 Credit Hours

Special topics course offered by the department on a demand basis 1 - 3 hours. Might be repreated for no credit.

Sociology

SOCI 1101 - Introduction to Sociology
3-0-3

This course provides an introduction to Sociology, including the basic concepts, different theoretical approaches, and the methods of analysis used by sociologists. Topics covered may include social structures, group dynamics, socialization and self, social stratification, culture and diversity, social change, global dynamics, and the interaction of society with political and economic forces in society. Also offered as an eCore (online) class.

Software Engineering

SWE 2313 - Introduction to Software Engineering
Prerequisite: CSE 1302C or CSE 1302J or CSE 1302E
3-0-3

This course provides an overview of the software engineering discipline, introducing the student to the fundamental principles and processes of software engineering. This course highlights the need for an engineering approach (both personal and team) to software with understanding of the activities performed at each stage in the development cycle. In this course, students will perform requirements analysis, design, implementation and testing. The course presents software development processes at the various degrees of granularity. Students will become aware of libraries of standards (IEEE, ACM, SWEBOK, etc.).

SWE 3613 - Software System Engineering
Prerequisite: CS 3424 and junior standing
3-0-3

Students practice and complete all the significant activities of software engineering development through various case studies and system projects. Cross-cutting aspects (e.g., security, reliability, performance) are considered while performing major software phases. A major component of the course includes planning and developing a team-based system project. Various structured analysis and design tools are used by students.

SWE 3623 - Software Systems Requirements
Prerequisite: (SWE 2313 or IT 3223) and (MATH 2345 or CSE 2300)
3-0-3

This course covers engineering activities related to the definition and representation of software system requirements. Topics include the elicitation, analysis, specification and validation of software system requirements. Emphasis is on the application of processes and techniques of requirements engineering. Projects focus on current analysis methods and supporting tools for specification, organization, change management, traceability, prototyping, and validating requirements.

SWE 3624 - Software Engineering
Prerequisite: CS 3424 and CSE 3153 or CS 3153
4-0-4

The entire software engineering life cycle is explored, with emphasis on the initial phases. Topics include problem definition, systems analysis, requirements gathering, cost and benefit analysis, proposal preparation, prototyping, design techniques and usability testing. Software engineering principles, practices, and design standards are examined through case studies. Various tools are used by students in conjunction with real-world projects. A major component is a team project which goes through prototyping and usability testing. SWE majors may not receive degree credit for this course.

SWE 3633 - Software Architecture & Design
Prerequisite: SWE 2313
3-0-3

This course covers the fundamental design principles and strategy for software architecture and design. Architectural styles, quality attributes, notations and documents, reference architecture, domain-specific architecture in architecture process and pattern-oriented design, component-oriented design, and interface design in detail design process are discussed.

SWE 3643 - Software Testing and Quality Assurance
Prerequisite: SWE 2313
3-0-3

This course shows how to define software quality and how it is assessed through various testing techniques. Topics include review/inspection technique for non-executable software, black-box and white box testing techniques for executable software and test result analysis. Specific test case development techniques such as boundary value, equivalence class, control paths, and dataflow paths test are introduced. Different levels of testing such as functional, component and system/regression tests are discussed with the concept of configuration management.

SWE 3683 - Embedded Systems Analysis & Design
Prerequisite: CS 3243
3-0-3

The analysis and design course focuses on using modern methods, techniques, and tools for specification and design of embedded systems. Topics include analytical methods such as RMA, development methods such as HOOD, and notations like UML, Petri-nets, etc. are covered. Performance evaluation based on modeling and simulation techniques is also covered. This is a project based course.

SWE 3843 - Embedded Systems Construction and Testing
Prerequisite: CS 3243
3-0-3

This course covers fundamental principles and techniques for embedded software engineering. It focuses on a component-based development approach to designing, implementing, and testing embedded programs. Topics include building standard-along and networked embedded systems, validation and verification of trustworthy embedded software, testing tools and environment, quality assurance and metrics for embedded systems, and hardware/software co-design and co-testing.

SWE 4324 - User-Centered Design
Prerequisite: (CSE 1302C or CSE 1302J or CSE 1302E) or IT 1324
4-0-4

A course that presents the fundamental knowledge, processes, skills, and practices leading to the user-centered design of computer systems and applications. The course addresses the effectiveness of human interactions with computers by examining issues of physical ergonomics, cognition and perception, human memory and information processing, and evaluation of prototype software in a Usability Lab. Usability engineering techniques are covered leading to improved system effectiveness in supporting use of computers, user learning, diversity in interaction styles, and individual versus group work. Class exercises provide practice of needed skills. A major project that integrates all aspects of user-centered task-oriented design is included.

SWE 4633 - Component-Based Software Development
Prerequisite: CS 3424
3-0-3

This course covers a wide range of component-based software development skills, from analyzing and modeling a problem with component-based notations and architectures, to implementing a solution using a particular component technology. The principles and methodologies in component based software development will be discussed in depth focusing on component-oriented programming and its related technologies. Component-based tools and languages, approaches for implementation of component-based software, including designing, building, assembling, and deploying reusable and COTS and in-house software components are discussed. Students will do projects focused on the life cycle of software components in various component technologies.

SWE 4663 - Software Project Management
Prerequisite: SWE 2313 and either MATH 2260 or IET 2227
3-0-3

This course studies how to plan and manage projects at each stage of the software development life cycle. It covers specific techniques of Planning, Organizing, Monitoring, and Adjusting (POMA) phases of software projects. Topics include technical and managerial skills needed to achieve project goals. A required team project combines technical and managerial techniques of software design and development.

SWE 4713 - SWE Application Domain
Prerequisite: Three of these four: SWE 3623, SWE 3633, SWE 3643, SWE 4324, SWE 4663
3-0-3

Students work as part of a team to develop solutions to problems posed by either internal or external customers in a specific SWE Application Domain. The purpose of the course is for the student to gain an understanding of the selected application domain, and its use of software to support functions/operations within that domain. Application domain selection is done every term from a variety of industrial domains including:• Security • Gaming • Automotive • Aerospace • Military • Finance and Commerce Problems may require considerable software development or evolution and maintenance of existing software products. The course culminates with the completion and presentation of an increment of the project solution.

SWE 4724 - Software Engineering Project
Prerequisite: TCOM 2010 & COMM 2400 & (SWE 3624 or three of these four: SWE 3623, SWE 3633, SWE 3643, SWE 4663)
4-0-4

This is the capstone project course and constitutes a major design experience. The course focus is on a team project comprising the development of a realistic software system during all phases of the software development life cycle. Topics include software project management, design, verification and validation, development, evolution and quality assurance. Current methods, techniques, and software tools are utilized in the development of the project.

SWE 4743 - Object-Oriented Development
Prerequisite: CS 3424
3-0-3

This course involves engineering activities related to the analysis, design, and implementation of object-oriented software systems. Topics included modeling foundations, requirements specification and documentation, design concepts and strategies, and OOAD methodologies with an emphasis on UML. The course includes a major project utilizing current analysis and design methods and tools implemented in a contemporary IDE.

SWE 4783 - User Interaction Engineering
Prerequisite: SWE 2313 or SWE 4324
3-0-3

This course follows a complete software engineering cycle to produce software objects that support users in effective, efficient, and enjoyable interactions with computers. Class exercises and a project incorporate concepts and methods including ethnographic and user analysis; cognitive ergonomics; usability metrics and criteria; software engineering practices, conventions, standards, and documentation; device-user action mapping; person-system function allocation; quality management systems; conceptual prototyping; embedded systems in support of ubiquitous computing; and function-behavior analysis.

SWE 4903 - Special Topics
Prerequisite: As determined by the instructor and Department Chair
1 to 4

Special Topics selected by the Department Chair. Offered on a demand basis. A student may repeat this course with special permission. Special topics may cover the state of the art of Software Engineering.

Spanish

SPAN 1001 - Elementary Spanish I
3-0-3

Introduction to listening, speaking, reading, and writing in Spanish and to the culture of Spanish speaking regions. Not open to native speakers of Spanish. Does not meet C-2 Core requirement.

SPAN 1002 - Elementary Spanish II
Prerequisite: SPAN 1001 or one year of high school Spanish
3-0-3

Continued listening, speaking, reading, and writing, in Spanish with further study of the culture of Spanish speaking regions. Not open to native speakers of Spanish.

SPAN 2001 - Intermediate Spanish I
Prerequisite: SPAN 1002 or equivalent.
3-0-3

A continuation of skills development of comprehension, speaking, reading of general and technical texts, writing, grammar and an introduction to Hispanic cultures. Not open to native speakers of Spanish. Also offered as an eCore (online) class with no lab required.

SPAN 2002 - Intermediate Spanish II
Prerequisite: SPAN 2001 or equivalent.
3-0-3

A continuation of SPAN 2001. Not open to native speakers of Spanish. Also offered as an eCore (online) class no lab required.

SPAN 3001 - Advanced Conversation
Prerequisite: SPAN 2002 or equivalent.
3-0-3

Development of oral fluency and listening comprehension in Spanish through linguistic and culturally appropriate activities. Expansion of general, business, scientific and technical vocabulary,

among others. Not open to native speakers of Spanish.

SPAN 3002 - Grammar and Composition
Prerequisite: SPAN 2002 or equivalent
3-0-3

Review of Spanish grammar. Practical writing practice in Spanish of personal and commercial correspondence, general and technical reports, and other forms.

SPAN 3003 - Hispanic Cultures and Civilizations
Prerequisite: SPAN 2002 or equivalent, but SPAN 3001 and SPAN 3002 recommended.
3-0-3

A background for technical and international trade purposes. The social values, institutions, customs and historical/cultural movements. Readings, writings, and discussions in Spanish

SPAN 3903 - Special Topics in Spanish
1-3 Credit Hours

Special Topics in Spanish 1-3 hours. Special topics in Psychology 1 to 3 credit hours. Special topics course offered by the department on a demand basis. May be repeated for credit.

SPAN 4001 - Professional Spanish
Prerequisite: Nine semester hours minimum of Spanish on the 3000 level.
3-0-3

An advanced level course in written and spoken Spanish common to the Hispanic world of the workplace, business, technology, and other professions, including simulations, writing reports, and cross-cultural references, among other topics.

SPAN 4002 - Techniques in Translation for Professional Spanish
Prerequisite: Nine semester hours minimum of Spanish on the 3000 level.
3-0-3

An advanced level course in the techniques of translation from Spanish to English of texts including business, technological, scientific, legal, medical, and other fields.

SPAN 4003 - Service Learning Project
3-0-3

A project arranged between between student and industry or community representative, with approval of faculty of Spanish. After 40 hours of service, final report is required.

SPAN 4903 - Special Topics for Professional Spanish
1-3 Credit Hours

Special topics in Spanish 1 to 3 credit hours. Special topics course offered by the department on a demand basis. May be repeated for credit.

Structural Engineering Technology

SET 3240 - Hydraulic Structures
Prerequisite: CET 2200 or ENGT 2124
3-0-3

Application of design procedures for reinforced concrete in circular and rectangular tanks, retention pond outlet structures, reservoirs, box culverts and any other type of structure use to store or transport liquids. Emphasis will be given to strength, deflection and cracking control and durability.

SET 3250 - Structural Loads and Connections
Prerequisite: CET 3210
3-0-3

This course is a study of the different types of loads on structures and the anaysis and design of structural connections. Service loads (both live and dead), wind, snow and rain loads will be determined and transferred into the structure. Also covered in this course will be bolted and welded steel connections. Selected timber and concrete connections will be covered.

SET 3260 - Masonry and Timber Design
Prerequisite: CET 3110
4-0-4

The Timber Design section will familiarize the students with Code Design of Wood Structures under dead, live, wind and snow loads. It will include the design of beams, columns, horizontal diaphragms, shear walls, connections and glue-laminated members. The Masonry section will include the design of beams/lintels, walls, columns and pilasters.

SET 4240 - Structural Rehabilitation
Prerequisite: CET 3220 and CET 3230
3-0-3

This course provides students with the standard techniques, and how they are applied, of upgrading existing structural systems. The course includes: field and/or analytical testing methods of current systems, repair and strengthening materials and techniques, redesign and retro-fit of members in flexure and axial loadings.

SET 4250 - Bridge Design
Prerequisite: CET 3220 and CET 3230
2-3-3

A comprehensive study of Bridges that consists of bridge history (types and advantages), structural analysis methods and design specification procedures of basic straight-girder type multi-span bridges. Construction repair/retro-fitting, and maintenance will also be covered. American Association of State Highway and Transportation Officials Design Standards and commercially available computer software will be used in the design of a bridge for a team project.

Surveying and Mapping

SURV 2110 - Introduction to Mapping
Prerequisite: MATH 1113
3-3-4

Introductory class in basic surveying and mapping skills including geographic information systems (GIS). Topics include scales, leveling, horizontal measurements, GPS mapping, topography, map

projections, GIS analytical tools, data sources, raster and vector data and software applications. Emphasis will be on small scale mapping.

SURV 2200 - Construction Measurements
Prerequisite: MATH 1113
3-3-4

Use and care of engineers level, transit and tape; leveling, traversing, stadia, contours, horizontal and vertical field layouts for buildings; reading and interpretation of site survey maps. (No credit for CET or Surveying and Mapping majors.)

SURV 2221 - Surveying I
Prerequisite: MATH 1113 and EDG 2160 or CE 1000
3-3-4

Angles, distances, elevations; horizontal and vertical location using total station and level; simple horizontal and vertical curves; contouring; introduction to the Global Positioning System; introductory coordinate computations; simple topographic survey project.

SURV 3222 - Surveying II
Prerequisite: SURV 2221
3-3-4

Route geometry computations and field techniques; automated data collection and reduction for topographic surveys; coordinate computations for intersections; route design project.

SURV 3320 - Photogrammetry and Remote Sensing
Prerequisite: SURV 2110 or SURV 2221
2-3-3

Analysis and interpretation of photographic and satellite imagery; vertical and orthography; ground control; project planning; digital softcopy methods.

SURV 3421 - Geographic Information Systems I
Prerequisite: SURV 2110 or SURV 2221
3-3-4

GIS concepts; spatial data analysis; information systems; digital elevation models; surveying and mapping components of GIS development.

SURV 3441 - Vector & Raster Analysis
Prerequisite: SURV 3421
2-3-3

Manipulation of vector and raster data. Use of local, focal, block and zonal statistical functions. Use of coordinates, datums, projections. Development of map topology. Overlay and proximity analysis. Spatial joins and queries. Data storage models

SURV 3451 - Terrain Analysis
Prerequisite: SURV 3441
2-3-3

Theory and methods of the generation, compilation, analysis, and applications of digital elevation data. Specific topics include GIS terrain data models, photogrammetry and LiDAR DEM

processing, terrain surface modeling, digital terrain analysis, terrain visualization, and watershed delineation. Computer exercises in the generation and processing of DEM using GIS and image processing software packages.

SURV 390X - Special Topics
Prerequisite: Junior standing, consent of the program head
1 to 4

Special topics offered by the department on a demand basis.

SURV 4110 - Geographical Information Systems (GIS) Practice
Prerequisite: SURV 4422 or permission of Department Chair.
1-6-3

A capstone course in the applications of GIS technology. Course requires a project developed with an industry partner in applying mapping and analytical skills.

SURV 4410 - Surveying Computations and Adjustments
Prerequisite: MATH 2260 and SURV 3222
3-3-4

Advanced surveying computations; matrix algebra; computer methods; statistical analysis of error propagation; variance and co-variance; least squares adjustments.

SURV 4415 - Geodetic Surveying Methods
Prerequisite: SURV 3421 (or concurrent)
3-3-4

Topics in Geodetic Surveying Methods including traversing, leveling and GPS. Coordinate systems and projects are utilized.

SURV 4420 - Remote Sensing
Prerequisite: SURV 3421
3-3-4

Remote sensing systems; ground truthing; mapping applications; satellite imagery integration into GIS.

SURV 4422 - Geographic Information Systems II
Prerequisite: SURV 3421
3-3-4

Continuation of GIS I; data collection techniques; advanced systems and macro programming.

SURV 4465 - Legal Aspects of Land Surveying
Prerequisite: SURV 3222
4-0-4

Cadastral systems; Georgia laws on surveying and property; boundary survey legal research; writing of legal descriptions; evidence evaluation; US Public Land System.

SURV 4470 - Land Development Design
Prerequisite: CET 4310 and SURV 2221

3-3-4

Site analysis; subdivision design; drainage design; sewer design; legal requirements; platting; CAD computer methods.

SURV 4475 - Land Surveying Practice
Prerequisite: SURV 4465
1-3-2

Legal research; boundary analysis; boundary survey project; office procedures; business practice.

SURV 4901 - Special Topics
Prerequisite: Senior standing, consent of the program head.
1-4 Credit Hours

Systems Engineering

SYE 2100 - Systems Analysis and Design
Prerequisite: Sophomore standing
3-0-3

In this course students will learn techniques for developing, analyzing and portraying design and life cycle systems requirements. Students will learn to use tools and techniques including Quality Function Deployment, IDEF0 Charts, and Enhanced Block Flow Diagrams.

SYE 2600 - Applications of Probability
Prerequisite: MATH 2253
3-0-3

This course covers axioms of probability, continuous and discrete distributions used in engineering, sampling distributions, expectation, conditional probability, central limit theorem, and introduction to Poisson Processes.

SYE 3100 - Systems Reliability and Maintainability
Prerequisite: SYE 2600 and Engineering Standing
3-0-3

This course introduces engineering principles and methods used for system reliability and maintainability. Data collection, accelerated testing, FMEA, FTA, system safety, and availability, sustainability are introduced.

SYE 3120 - Contemporary Technological Systems: Design, Analysis, and Architecture
Prerequisite: SYE 2100 ,and SYE 3100 or concurrent and Engineering Standing
3-0-3

This course focuses on how system engineering principles are applied to modern technological and infrastructure systems. Defense, space, communication, energy, transportation, aerospace and manufacturing systems are analyzed. Other topics include architecture descriptions, heuristic problem solving, sociotechnical issues and managing complexity.

SYE 3200 - Human Machine Systems

Prerequisite: SYE 2100 and Engineering Standing
3-0-3

In this course students will study the relationship between humans and the systems they interact with. Students will study human physical and psychological strengths and weaknesses as well as organizational and political issues that influence the effectiveness of Human Machine interactions.

SYE 3300 - Program Management
Prerequisite: SYE 2100 and Engineering Standing
3-0-3

This course focuses on management of large, complex programs and management in technologically intense environments. Concurrent engineering, project management, integrated product development, R&D, measuring and controlling the work, and managing risk will be covered.

SYE 3320 - Engineering Economics and Decision Analysis
Prerequisite: MATH 2253
3-0-3

This course covers the basic tools used in engineering economic decision making, including discounted cash flow, replacement and timing decisions, depreciation, risk analysis, and pricing mechanisms. Topics may also include an introduction to preferences and utilities, equilibrium concepts, game theory, and incentive compatibility.

SYE 3400 - Engineering Optimization I: Deterministic Decision Models
Prerequisite: MATH 3312 grade of "D" or better and Engineering Standing
3-0-3

This course focuses on deterministic methods of operations research and their applications. Constructing models, employing modern modeling languages, and understanding general solution strategies are emphasized. Applications include inventory & production planning, transportation & logistics, and project management.

SYE 3501 - Fundamentals of Nuclear Engineering
Prerequisite: PHYS 2212, PHYS 2212L and MATH 2254 and Engineering Standing
3-0-3

This course provides an overview of the nuclear sciences field. Topics covered include: basic nuclear physics, radioactivity and radioactive decay process, nuclear reactions, radiation detection, basic health physics, radiation protection, fission and fusion processes, neutron interaction, nuclear energy conversion, different nuclear reactors, reactor operations, reactor control and basic nuclear fuel cycle.

SYE 3502 - Radiation Detection and Measurement
Prerequisite: SYE 3501 and Engineering Standing
3-0-3

The detection and measurement of radiation is an integral component of the nuclear sciences field. This course covers the sources and properties of nuclear radiation, mechanism of radiation interaction with matter, detection methods and in particular detection of ionizing radiation that are of primary interest in nuclear power generation as well as medical and industrial applications. Various types of radiation detectors, neutron detection techniques and counting statistics are also discussed.

SYE 3600 - Statistics with Applications

Prerequisite: SYE 2600 and Engineering Standing
3-0-3

This course covers point and interval estimation, hypothesis testing, analysis of variance, and introduction to regression analysis, with applications to engineering problems.

SYE 3650 - Process Engineering and Improvement
Prerequisite: SYE 3600 and Engineering Standing
3-0-3

This course emphasizes application of engineering principles for improving the quality of processes, products and services. Topics include data collection, analysis and presentation, measurement systems, and process control and capability. Other topics include quality standards, procurement and robust design.

SYE 3700 - Manufacturing and Production Systems
Prerequisite: SYE 2600, and SYE 3400 can be take concurrently. Engineering Standing
3-0-3

An analysis of decision making in the current production environment and the tools and optimization models needed for finding solutions to problems relating to production planning and scheduling, inventory, and warehouse design.

SYE 3710 - Logistics and Supply Chain Systems
Prerequisite: SYE 2600, and SYE 3400 cab be taken concurrentlyand Engineering Standing
3-0-3

An analysis of decision making in the current logistics environment and the tools and optimization models needed for finding solutions to problems relating to supply chain design and strategy, transportation, and warehouse management.

SYE 3801 - Aerodynamics (Aeronautic Elective)
Prerequisite: MATH 2254 and Engineering Standing
3-0-3

Introduction to Aerodynamics; including circulation theory of lift, thin airfoil theory, viscous flow, boundary layer, finite wing theory, and drag in incompressible flow.

SYE 3802 - Aircraft Design and Performance (Aeronautic Elective)
Prerequisite: SYE 3801 and Engineering Standing
3-0-3

Airplane conceptual design principles are developed to meet modern aerodynamics, propulsion, structural, and performance specifications. This course examines the complete airplane design, including specifications, aerodynamic calculations, inboard profile drawing, weight and balance, general arrangement drawing, aerodynamic drag analysis, and complete performance report.

SYE 3803 - Fundamentals of Avionics
Prerequisite: SYE 3801 and Engineering Standing
3-0-3

The primary topics of this course are related to the understanding of the principles, theory, and technology of modern avionic systems for both military and civil aircraft. Various subsystems including sensory, fly-by-wire control, display, navigation, air data, autopilots, and flight management are examined individually and as an integrated whole. Both mathematical and conceptual approaches to every subsystem will be taught as well as key considerations, such as

flight safety, which undergird their usage and functionality.

SYE 3850 - Experimental Design
Prerequisite: SYE 3600 and Engineering Standing
3-0-3

This course introduces the use of statistically designed experiments to improve processes and products. Topics include analysis of variance, full and fractional factorial designs, response surface methodology, and robust parameter design techniques.

SYE 3901 - Special Topics in Systems Engineering
Prerequisite: Permission from instructor
1-0-1

Special topics offered by the program on a demand basis.
A grade of "C" or better is required to apply this course toward the BS in Engineering program or other engineering programs.

SYE 3902 - Special Topics in Systems Engineering
Prerequisite: Permission from instructor
2-0-2

Special topics offered by the program on a demand basis.
A grade of "C" or better is required to apply this course toward the BS in Engineering program or other engineering programs.

SYE 3903 - Special Topics in Systems Engineering
Prerequisite: Permission from instructor
3-0-3

Special topics offered by the program on a demand basis.
A grade of "C" or better is required to apply this course toward the BS in Engineering program or other engineering programs.

SYE 4400 - Engineering Optimization II: Stochastic Decision Models
Prerequisite: SYE 2600, SYE 3400 and Engineering Standing
3-0-3

Modeling and solution of decision problems under uncertainty. Topics include Markov Chains, stochastic programming, stochastic dynamic programming, queuing theory, utility theory and simulation. Computer solution techniques are emphasized.

SYE 4500 - System Modeling and Simulation
Prerequisite: SYE 2600 and Engineering Standing
3-0-3

Modeling and simulation of systems. Topics include basic simulation and system modeling techniques, random sampling procedures, input analysis, output analysis and system evaluation. Practical implementations using common modeling languages and simulation software are emphasized.

SYE 4501 - Nuclear Power Generation
Prerequisite: SYE 3501 and Engineering Standing
3-0-3

This course covers the principles of nuclear energy conversion to electric power. The content of the course includes: fundamentals of energy conversion, fission reactors, design and construction of light water reactors with emphasis on boiling water and pressurized water reactors, gas cooled reactors, fast breeder reactors, thermal and structural analysis of reactors and plant components, safety elements and accident prevention systems. The economic feasibility of nuclear power plants will also be discussed.

SYE 4502 - Radiation Protection and Health Physics
Prerequisite: SYE 3501 and Engineering Standing
3-0-3

This course covers the fundamentals of individual and population health protection against the harmful effects of radiation Topics included are: different sources of radiation, interaction of radiation with matter, radiation exposure principles and measurement, relationship between radiation exposure and biological damage, radiation protection and safety standards and guidelines, radiation protection instrumentation, internal and external radiation protection, pathways of radiation movement in the environment and radiation shielding.

SYE 4503 - Nuclear Fuel Cycle
Prerequisite: SYE 3501 and Engineering Standing
3-0-3

The feasibility and operation of nuclear power plants is directly influenced by the availability of suitable nuclear fuel as well as acceptable methods of disposal of nuclear waste. This course covers the progression of the nuclear fuel through different stages of mining, milling, processing, enrichment, fabrication and use in reactors, interim storage, reprocessing and disposal. The environmental impact of nuclear waste, economics of nuclear fuel cycle, challenges and solutions in management of radioactive waste and the prevailing regulations, standards and best practices are discussed.

SYE 4801 - Aircraft Propulsion
Prerequisite: SYE 3801 and Engineering Standing
3-0-3

This course is concerned with the preliminary design, subject to specifications, of an air-breathing engine for aircraft propulsion. This course discusses cycle calculations, installed performance and engine sizing information. Design and integration of components and support systems are explored. Propeller theory is introduced.

SYE 4802 - Helicopter Theory
Prerequisite: SYE 3801 and Engineering Standing
3-0-3

The course is designed for students interested in helicopter theory as an application of large scale complex system. It presents a comprehensive introduction to rotorcraft technology. It covers a range of disciplines from design, aerodynamics and propulsion points of view. It teaches what a helicopter engineer or enthusiast needs to know how to analyze an existing design or participate in the development of a new one. The course covers all aspects of hover, vertical flight and forward flight.

SYE 4803 - Aeronautics Project
Prerequisite: SYE 3802 and, SYE 4801 or SYE 4802 and Engineering Standing
3-0-3

The course focuses on the student completing a project that is related to design of an aerospace

vehicle and demonstrating comprehensive application of the subject matter in the SYE curriculum. The general intent is to demonstrate the students' knowledge of the integrative aspects of the systems engineering process. There is a formal report and a defended oral presentation required before industrial and academic experts.

SYE 4900 - System Design Project
Prerequisite: SYE 4400 and SYE 4500, courses can be taken concurrentlyand Engineering Standing
3-0-3

The course focuses on the student completing a project that is a comprehensive application of the subject matter in the SyE curriculum. The general intent of the project is to demonstrate the students' knowledge of the integrative aspects of the systems engineering process. There is a formal report and a defended oral presentation required before industrial and academic experts.

SYE 4901 - Special Topics in Systems Engineering
Prerequisite: Permission from instructor.
1-0-1

Special topics offered by the program on a demand basis.
A grade of "C" or better is required to apply this course toward the BS in Engineering program or other engineering programs.

SYE 4902 - Special Topics in Engineering
Prerequisite: Permission from instructor
2-0-2

Special topics offered by the program on a demand basis.
A grade of "C" or better is required to apply this course toward the BS in Engineering program or other engineering programs.

SYE 4903 - Special Topics in Systems Engineering
Prerequisite: Permission from Instructor
3-0-3

Special topics offered by the program on a demand basis.
A grade of "C" or better is required to apply this course toward the BS in Engineering program or other engineering programs.

SYE 4991 - Undergrade Research in SYE
Prerequisite: Permission from instructor
1-0-1

This is a specialized independent study in research determined by the students' needs and interests, in consultation with and under the guidance of a SYE faculty member. The student is expected to research 3-hours per week per credit hour of research, and document in a professional notebook. A report, poster, or presentation may also be required.

SYE 4992 - Undergrad Research in SYE
Prerequisite: Permission of the instructor.
2-0-2

This is a specialized independent study in research determined by the students' needs and interests, in consultation with and under the guidance of a SYE faculty member. The student is expected to research 3-hours per week per credit hour of research, and document in a professional

notebook. A report, poster, or presentation may also be required.

SYE 4993 - Undergrad Research in SYE
Prerequisite: Permission from instructor
3-0-3

This is a specialized independent study in research determined by the students' needs and interests, in consultation with and under the guidance of a SYE faculty member. The student is expected to research 3-hours per week per credit hour of research, and document in a professional notebook. A report, poster, or presentation may also be required.

Technical Communication

TCOM 2010 - Technical Writing
Prerequisite: ENGL 1102
3-0-3

Introduction to organization, style, and mechanics of technical and professional writing. Includes practice in writing such typical documents as technical descriptions, instructions, proposals, and recommendation reports. Emphasis placed on planning, organizing, and writing reports; designing visual aids; and editing. Among other assignments, at least one complete technical report is required.

TCOM 2020 - Introduction to the Professions
Prerequisite: ENGL 1101
3-0-3

Provides a survey of the technical and professional communication fields. Emphasis is placed on developing a strong professional identity for career planning. Students engage in self-assessment projects to help establish academic program match and appropriate career path fit. This course examines workplace environmental issues such as emerging technologies and social trends, as well as, the econonic outlook for the profession. Students explore career paths and core competencies for technical and professional communicators in work categories ranging from business and industry, to government, military and non-profits.

TCOM 2030 - Research in Technical Communication
Prerequisite: TCOM 2010
3-0-3

Introduction to research methods used by practitioners and scholars in technical communication. Students explore the relationship between theory and research and learn how to design and carry out empirical studies using both quantitative and qualitative methods. Emphasis is placed on the research methods used in workplace settings to design user-centered information products and to test their usefulness and usability.

TCOM 3010 - Science Writing
Prerequisite: ENGL 1102
3-0-3

Examination of the types of writing produced in various scientific professions. Depending on the semester, possible topics may include one or more of the following: environmental writing, public policy documents, and other scientific documents. Cross-listed as ENGL 3010

TCOM 3015 - Environmental Writing
Prerequisite: ENGL 1102
3-0-3

Close study of global and more localized environmental issues, including air, water, soil, biotic communities, and impact on and by humans. Students will read works on the relationship between technology, human population, and the environment and will write essays, give an oral report, and complete a research project on environmental topics. Cross-listed as ENGL 3015

TCOM 3020 - Proposal Writing
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or concurrently
3-0-3

Theory and practice of writing proposals for business, industry, and non-profit organizations, with emphasis on in-house planning and external grant-seeking proposals. Course covers persuasion theory and strategies while leading students step-by-step through the proposal development process. Students develop skills in gathering and evaluating information, analyzing audiences, collaborating with peers and clients, building persuasive arguments, writing clearly and cogently, and designing visually effective documents. Cross-listed as ENGL 3020

TCOM 3030 - Instructional Design
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or concurrently
3-0-3

Introduction to systematic instructional design and instructor-led training. Students will study a major model of instructional design and apply it to develop and refine a unit of instruction. Students will prepare and deliver a training lesson, participate in team instructional design activities, and evaluate the training developed and presented by other students.

TCOM 3045 - Fundamentals of Information Design
Prerequisite: TCOM 2010
3-0-3

Introduces students to the principles and best practices of effective information design for both print and electronic media. Includes such topics as information types, information categorization and hierarchies, types of organizational patterns, message and document genres, structural markup languages, structured information design and technologies, content management, and single sourcing.

TCOM 3070 - User Assistance
Prerequisite: TCOM 2010 and TCOM 2020
3-0-3

This course explores the concepts and strategies necessary for designing effective user assistance in its many forms. This course focuses on single sourcing, creating content that can be published in on line and print formats. Focus will be on creating effective embedded and standard help systems, user and task analysis, project planning, structured writing, and database-driven publishing.

TCOM 3120 - Technical Communication: Theory and Practice
Prerequisite: TCOM 2020 and TCOM 2030 with a "C" or better
3-0-3

This course examines a range of theories that have shaped technical communication thought and practice in the twenty-first century. This course exposes students to the evolving body of knowlege

that provides the foundation of the technical communication profession today. The course will also introduce students to some of the important theorists and practitioners who have contributed significantly to technical communication practice.

TCOM 3145 - Social Media Integration
Prerequisite: ENGL 1102
3-0-3

This course focuses on the integration management and use of social media in workplace settings. Topics covered include assessing readiness, social listening, developing guidelines/policies, and determining return on investment (ROI). Strategic and tactical communication practices and risk management is also discussed.

TCOM 3245 - Analytics and Search Engine Optimization (SEO) for Communicators
Prerequisite: TCOM 3400
3-0-3

Course will cover how communicators use analytics and current SEO practices in writing environments. Deployment of analytics/Webmaster tools and basic data assessment is included, as is analysis, interpretations, and report generation. Course covers find ability enhancement with use of proper SEO. Additionally, ADA compliance and implementation of 508 standards will be taught.

TCOM 3400 - Foundations of Design for the Web
3-0-3

Fundamentals of Web Development will introduce students to basic concepts in developing content for the web. Students learn to develop web sites using HTML and CSS. Students will also learn to develop pages with an eye toward findability, browser and device compatibility, and 508 compliance. Students who have taken TCOM 4035 or IT 3203 cannot take this course for credit.

TCOM 3430 - Foundations of Graphics
Prerequisite: TCOM 2010 or ARTS 3000
3-0-3

An introduction to the fundamental elements and principles of graphic design and application of these concepts to page design and layout. Study of elementary color theory. Introduction to production techniques and current software applications.

TCOM 390X - Special Topics
Prerequisite: Consent of the department chair
1 to 3 Credit Hours

Special topics in communications. Offered by the program at its discretion.

TCOM 4000 - Professional Editing
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or concurrently
3-0-3

Development of skills in proofreading, copyediting, and comprehensive editing. This course addresses issues of style, content, organization, and visual design.

TCOM 4035 - Fundamentals of Website Design
Prerequisite: TCOM 2010 , either TCOM 2020 or TCOM 2030 or concurrently

3-0-3

Study of effective information design and delivery for websites. Covers principles and best practices for creating usable websites and teaches students fundamentals of HTML, use of HTML authoring tools, web page writing and editing, web graphics and multimedia elements, and website architectures and content management. Students work individually and in teams to design and develop websites. Some classroom instruction is provided in basic HTML and XHTML coding, the composition of cascading style sheets, and the use of Dream Weaver and FrontPage.

TCOM 4040 - Applied Graphics
Prerequisite: TCOM 3430

3-0-3

This course examines the role of graphics in technical and professional communication. Students develop competency in desktop publishing, digital image editing, and vector-based graphics applications. Students complete practical projects that use typography, photographs, illustrations, engineering drawings, and data graphics. Projects focus on the role of graphics as both an independent communication and as support for text-based media used in business, industry, education, and web documents.

TCOM 4045 - Foundations of Multimedia
Prereq/Corequisite: TCOM 4030
3-0-3

A study of the foundations of multimedia including theory, planning, scripting, storyboarding, and production. Students will submit research work on the theory of multimedia.

TCOM 4070 - User Documentation
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or Concurrently
3-0-3

Introduction to the process and principles of writing manuals, with emphasis on user manuals. Students write and produce all or part of a manual. Course includes study of structured writing. Course also includes discussion of (1) production issues and (2) theory relevant to designing usable, readable manuals.

TCOM 4120 - Usability Testing
Prerequisite: TCOM 2020, TCOM 2030, TCOM 4030
3-0-3

Study of the relevant research and practical application of usability testing as part of product development. Includes strategies for planning, conducting, and analyzing a test. Teams will perform tests and report results from an actual test in a usability lab.

TCOM 4130 - Online Documentation
Prerequisite: TCOM 2010; either TCOM 2020 or TCOM 2030 or Concurrently
3-0-3

Study of the design and development of effective online Help systems and web-based documentation. Presents principles of usable online information design, task-based user analysis, and advanced tools and technologies for developing and delivering online information products, including single-sourcing, SGML, and XML. Students design and develop an HTML Help system. Instruction will be provided in the use of RoboHelp and alternative HTML Help authoring tools. Students entering the course without basic HTML knowledge will be expected to learn the basics of HTML on their own.

TCOM 4170 - Film and Video Production
Prerequisite: ARTS 3170 With a grade of "C" or better
3-0-3

Introduction to the role and use of video production for professional communication with an emphasis on visual narrative. Topics include creating scripts, developing storyboards, traditional filming and composition techniques, and construction of genre specific visual narratives. Technical focuses include basic camera usage, terminology, the use of software for editing, lighting techniques, basic sound recording and editing, and fundamental post-production and compression techniques for video. Students will complete three assigned videos as individual or team projects.

TCOM 4175 - Animation Design, 2D
Prerequisite: TCOM 4400 with a grade of "C" or better.
3-0-3

This course will examine the application of design principles to motion graphics. Students will learn basic techniques for creating animated and interactive graphics. The focus of the course will be on design principles and aesthetics pertaining to the moving image. Discussions will center on aesthetics of interface design with moving graphics, 2D space, user-centric design and working with digital imagery as information. Students will complete a number of small animations projects designed to familiarize them with the application of design principles and aesthetics to animation. Students will be required to complete a larger final project that unifies the topics presented throughout the semester in a coherent animated layout.

TCOM 4400 - Advanced Design for the Web
Prerequisite: TCOM 3400 and TCOM 3430
3-0-3

Advanced Design for the Web will allow students to build upon their basic knowledge of web development and design theory to produce more complex, creative, and engaging content for the web. Students will develop an advanced understanding of CSS and HTML, dynamic content, integrated multimedia, compliance, and web design theory.

TCOM 4600 - Directed Study
Prerequisite: Twenty-one hours of courses in the major variable credit
1 to 3 Credit Hours

A directed study for an undergraduate major who needs to complete an undergraduate requirement in the major that is not offered before the student's graduation date. The directed study is also for an undergraduate major who wishes to pursue a special area of communication not covered by the curriculum.

TCOM 4700 - Internship
Prerequisite: Junior standing, with a 3.0 or better GPA in major
3-0-3

An opportunity for students to apply principles and techniques of technical and professional communication in a specific organization. The student is responsible for finding an internship, but the program will help in the effort. The student must submit a written proposal describing the internship according to program guidelines. Each internship is monitored by the student's advisor.

TCOM 4800 - Project Portfolio
Prerequisite: TCOM 4030; Senior standing; completion of 24 hours of TCOM courses.
3-0-3

Course examines portfolios as professional tools for technical communicators. The course includes portfolio and writing theory along with a collaborative workshop environment. Students develop a professional portfolio of sample documents based on course project, internship experiences, and/or work history. In addition, students write a reflective paper examining their growth and maturity as technical communicators. Interviewing techniques, resume writing, and the job search process are included in the course. Cross-listed as ENGL 4800

University

PLA 2000 - Prior Learning Assessment for Students
2-0-2

This course introduces the concepts of prior learning assessment. Students will produce a portfolio for this course to receive possible prior lerning course credit.

SPSU 1001 - Hitchhiker's Guide to SPSU
1-0-1

This course will cover the relevant policies and procedures that students need to know about SPSU. Of special importance are the 2-year plan, advising, DegreeWorks, registration, student activities and related topics. Students will complete weekly activities for the course.

SPSU 2000 - Foundations of Effective Leadership
2-0-2

Programmed sessions and activities designed to enhance self-awareness of leadership skills and enable students to become effective leaders. The purpose of this course is to encourage students to carefully analyze their responsibilities and commitments in the context of leadership for the common good and for purposeful change. Students will come to understand their strengths and weaknesses as a leader and hone their ability to motivate and work with others. Through this course students will develop their own leadership potential through the completion of personal and leadership self-assessments, values exploration, and leadership skill practice through course activities.

Faculty

Southern Polytechnic State University Senior Administration

Dr. RON R. KOGER - Interim President

      Ed.D., University of Kansas
      M.Ed., University of Kansas
      B.S.Ed., Pittsburgh State University

Mr. RICHARD COLE- Vice President for Academic Affairs

      M.Arch., Georgia Institute of Technology

B.S., Georgia Institute of Technology
A.I.A., N.C.A.R.B. Certificate Holder
Reg.Arch.

Mr. MICHAEL J. FOXMAN- Interim Vice President for Business and Finance

MBA., Youngstown State University

B.S., Miami Unviersity

Mr. JAMES E. HERBERT- Vice President of Information Technology and Chief Information Officer

B.S., Southern Polytechnic State University

Mr. KARL D. STABER- Vice President for Student and Enrollment Services

M.S., Eastern Kentucky University

B.S., Eastern Kentucky University

Dr. RON DEMPSEY - Executive Director of Advancement

Ph.D., Southern Baptist Theological Seminary
M.A., University of Louisville
M.Div., Southern Baptist Theological Seminary

Dr. WENDY KALLINA - Executive Director of Institutional Research

Ph.D., Auburn University
M.S., Oklahoma State University
M.S., Georgia Southwestern State University
B.S., Georgia Southwestern State University

Dr. Ruston M. Hunt- Dean of Extended University

PhD., University of Illinois

M.S., University of Illinois

B.S., University of Illinois

Mr. David F. Caudill- Associate Vice President for Academic Affairs

MSIE., Lehigh University

BSME., North Carolina State University

Dr. Rebecca H Rutherfoord- Associate Vice President for Institutional Effectiveness

Ed.D., Indiana State University
M.S., Southern Polytechnic State University
M.S., Indiana State University
B.S., Indiana State University
CDP

President Emeritus

Dr. Steve R. Cheshier

Dr. Lisa A. Rossbacher

Faculty of the School of Architecture and Construction Management

Cole, C. Richard

Dean of ACM and Professor

M.Arch., Georgia Institute of Technology
B.S., Georgia Institute of Technology
A.I.A., N.C.A.R.B. Certificate Holder
Reg.Arch.

Department of Architecture Faculty

Akins, Ed

Assistant Professor

M.Arch., Georgia Institute of Technology
B.S., Georgia Institute of Technology

Bedette, Kathryn L.

Associate Professor

M.Arch., Arizona State University
B.S., Georgia Institute of Technology
AIA, Registered Architect

Carpenter, William J.

Professor

Ph.D., University of Central England at Birmingham
M.Arch., Virginia Polytechnic
B.Arch., Mississippi State University
F.A.I.A., Reg. Arch
N.C.A.R.B. Certificate Holder

Carroll, Michael J.

Assistant Professor

M.Arch., McGill University, Montreal
M.Arch., Dalhousie University, Halifax
B.E.D.S.,Dalhousie University, Halifax

Cole, C. Richard

Dean and Professor

M.Arch., Georgia Institute of Technology
B.S., Georgia Institute of Technology
A.I.A., N.C.A.R.B. Certificate Holder
Reg.Arch.

Crout, Durham

Associate Professor

Ph.D., University of Pennsylvania
M.S. Arch., University of Pennsylvania
M.Arch., Georgia Institute of Technology
B.S., Design, Clemson University

Dytoc, Bronne

Assistant Professor

M.B.S. Arch., University of Southern California
B.S.Arch., University of the Philippines
Cert. AEE 2000, Lund University, Sweden
U.A.P., Reg. Arch
LEED AP

Farooq, Ameen

Professor

Ph.D., Georgia Institute of Technology
University of Cambridge, UK
M.Arch., University of Idaho
B.Arch., University of Idaho
B. of Environmental Science, University of Punjab
A.P.A., Reg.Architect.

Frank, Tim

Assistant Professor

M.Arch., Georgia Institute of Technology
B.Arch., Virginia Polytechnic Institute and State University
Reg. Arch. GA
LEED AP, US Green Building Council

Hashas, Mine

Associate Professor

Ph.D., North Carolina State
M.A., Istanbul Technical University
B.A., Yildiz Technical University (Turkey)

Hong, Pyo-Yoon

Assistant Professor

Ph.D., University of Oklahoma
M.S., University of Oklahoma
M.S., Pusan National University, S. Korea
B.S., Pusan National University, S. Korea

Kaufman, Harry F.

Professor Emeritus
M.Arch., Harvard University
B.C.E., Villanova University
Reg.Arch., A.I. A., N.C.A.R.B. Certificate Holder
P.E., Indiana, Georgia

Martin, Elizabeth

Assistant Professor

> M.Arch. (Post-Professional), Southern California Institute of Architecture
> M.Arch., Tulane University
> B.Arch., Tulane University

Monaghan, Marietta

Lecturer

> M.S., Architecture, Georgia Institute of Technology
> M.Arch., Georgia Institute of Technology
> M.Arts, University of Alabama

Pittman, Peter

Associate Professor

> M.Arch., Georgia Institute of Technology
> B.S., Georgia Institute of Technology

Riether, Gernot

Assistant Professor

> M.Arch., Columbia University
> Dipl. Ing., University of Innsbruck

Rizzuto, Anthony

Associate Professor and Department Chair

> Ph.D., Georgia Institute of Technology
> M.Arch., University of Illinois
> B.A. of Design, University of Florida
> Assoc. A.I.A.

Setiawan, Arief

Lecturer

> Ph.D., Georgia Institute of Technology
> MCP, University of Cincinnati
> B.Arch., Gadjah Mada University, Yogyakarta, Indonesia

Shpuza, Ermal

Associate Professor
> Ph.D., Georgia Institute of Technology
> M.Sc., University of London
> Dipl., Polytechnic University of Tirana, Albania

Tango, Robert

Associate Professor

> M.S. Arch, University of Florida
> B.A. Design, University of Florida
> GA Registered Architect
> AIA
> LEED AP Accredited Professional
> NCARB Certificate Holder

Uddin, M. Saleh

    Professor

        Ph.D., University of Sheffield, United Kingdom
        M.Arch., Kent State University
        B.Arch., Bangladesh University of Teaching and Technology

Welty, Christopher

    Associate Professor

        M.Arch., Georgia Institute of Technology
        B.S., Georgia Institute of Technology

Zamani, Pegah

    Assistant Professor

        Ph.D., Georgia Institute of Technology
        M. Phil. in Arch., University of Tehran
        M. Arch., Azad University

Department of Architecture Faculty Emeriti

Fausett, James G., Professor Emeritus
Itzkowitz, Howard F., Professor Emeritus
Kaufman, Harry F., Professor Emeritus
Muller, Edward J., Professor Emeritus
Myatt, Robert L., Jr., Professor Emeritus
Sargent, Kenneth L., Jr., Assistant Professor Emeritus
Vaughn, Wilton W., Professor Emeritus

Department of Construction Management Faculty

Abaza, Hussein

    Associate Professor
        Ph.D., Virginia Polytechnic and State University
        MA.Sc., Virginia Polytechnic and State University
        B.A., Virginia Polytechnic State University

Eckert, Al

El-Itr, Zuhair

    Professor

        Ph.D., Georgia Institute of Technology
        M.S.C.E., Georgia Institute of Technology
        B.S.C.E., American University-Beirut

Jambro, John

    Assistant Professor

        M.S. Southern Polytechnic State University
        B.A., State University of New York college of Technology, New York

Juneja, Parminder

Makarechi, Shariar

Assistant Professor

Ph.D., Georgia Institute of Technology
M.S., George Washington University
B.S., Aryamehr University of Technology, Iran
P.E., California, D.C, Georgia, Maryland, Virginia, West Virginia

Meadati, Pavan

Associate Professor

Ph.D., University of Nebraska, Lincoln
M.S., Indian Institute of Technology, Madras
B.S., Osmania University (India)

Rogers, Charner

Assistant Professor

Ph. D., Georgia Institute of Technology
M.S., Tennessee State University
B.S.,   University of Memphis

Siddiqi, Khalid M.

Professor and Department Chair

Ph.D., Georgia Institute of Technology
M.S., Asian Institute of Technology, Bangkok Thailand
B.S., NED University of Engineering and Technology, Karachi, Pakistan

Weidner, Maureen
Lecturer

MA.,Texas A & M, Texas
B.A., Texas A & M, Texas

Williams, Brandi

Assistant Professor

M. Ed., University of Georgia
M.S., Southern Polytechnic State University
B.S., Southern Polytechnic State University

Department of Construction Management Faculty Emeriti

Hall, Allan J., Professor Emeritus

Faculty of the School of Arts and Sciences

Newell, Julie R.

Professor and Dean, School of Arts and Sciences

Ph.D., University of Wisconsin-Madison
M.A., University of Wisconsin-Madison
B.S., Boise State University
B.A., Boise State University

Department of Biology, Chemistry Faculty

Beach, Michael B.

Associate Professor

Ph.D., University at Albany
B.S., University at Albany

Duff, Jack L.

Senior Lecturer

M.S., Georgia Institute of Technology
B.S. University of West Florida at Pensacola

Ferreira, Daniel R.

Assistant Professor

Ph.D., University of Connecticut
M.S., University of Connecticut
B.S., University of California at Davis

Hesser, Marcia W.

Lecturer

Ph.D., Clemson University
M.S., Clemson University
B.S., Clemson University

Gabrielli, Alan M.

Professor

Ph.D., University of South Carolina
B.S., Francis Marion College

Kang, Lu

Assistant Professor

Ph.D., Wesleyan University
M.S., Chinese Academy of Science
B.S., Xiamen University

King, Adrienne L.

Assistant Professor

        Ph.D., University of Alabama at Birmingham
        M.S., Tuskegee University
        B.S., Prairie View A&M University

Louten, Jennifer

Associate Professor

        Ph.D., Brown University
        B.S., Rochester Institute of Technology

Sakaris, Peter C.

Associate Professor

        Ph.D., Auburn University
        M.S., University of Maryland Eastern Shore
        B.S., State University of New York, Stony Brook

Singh, Rajnish

Associate Professor
        Ph.D., Case Western Reserve University
        M.S., Nagpur University, India
        B.S., Nagpur University, India

Sugalski, Mark T.

Associate Professor and Department Chair

        Ph.D., Miami University (Ohio)
        M.S., Miami University (Ohio)
        B.S., Roger Williams University

Tseng, Tsai-Tien

Assistant Professor

        Ph.D., University of Illinois at Urbana-Champaign
        M.S., University of California, San Diego
        B.S., University of California, San Diego

Weand, Matthew P.

Assistant Professor

        Ph.D., University of Kentucky
        M.S., Ohio University
        B.S., Tufts University

Zhou, Wei

Associate Professor

        Ph.D., Texas Tech University
        M.S., Tongji University (China)

B.S., Tongji University (China)

Department of Physics Faculty

Kulasiri, Ratnappuli

Assistant Professor

Ph.D., University of Cincinnati
B.S., University of Colombo, Sri Lanka

Garofalo, David

Lecturer

Ph.D., University of Maryland
B.S., University of Maryland

Patrick, Russell S.

Professor

Ph.D., Drexel University
M.S., Drexel University
B.S., Drexel University

Patterson, Philip E.

Associate Professor and Department Chair

Ph.D., University of Georgia
M.S., Clark Atlanta University
M.S., Southern Polytechnic State University
B.S., Purdue University

Ranasinghe, Kisa

Associate Professor

Ph.D., University of Missouri, Rolla
M.S., University of Missouri, Rolla
B.Sc., University of Colombo, Sri Lanka

Smith, Eric A.

Lecturer

M.S., Vanderbilt University
B.S., Georgia Institute of Technology

Sutherland, Erin C.

Assistant Professor

Ed.D., Peabody of Vanderbilt University
M.A., University of North Alabama
B.S., Auburn University

Thackston, Michael G.

Professor

Ph.D., Georgia Institute of Technology
M.S., Georgia Institute of Technology
B.S., Georgia Institute of Technology

Whitenton, James B.

Professor

Ph.D., University of Wisconsin
B.S., University of Texas

Department of Biology, Chemistry, and Physics Faculty Emeriti

Burnett, William, Professor Emeritus
Lahiri, Jayanti, Professor Emeritus
Oxford, Earl, Professor Emeritus
Robinson, George, Professor Emeritus
Scales, Sam, Professor Emeritus
Tambe, Balkrishna, Professor Emeritus
Tippens, Paul, Professor Emeritus
Tucker, Lee, Professor Emeritus

Department of Digital Writing and Media Arts Faculty

Anderson, Kami

Assistant Professor

Ph.D., Howard University
M.A., American University
B.A., Spelman University

Bohannon, Jeanne

Assistant Professor

Ph.D., Georgia State University
M.Ed., Western Governors University
B.A., Georgia State University

Carter, Terry

Professor

Ph.D., University of South Carolina
M.A., University of South Carolina
B.A., University of South Carolina

Daws, Laura Beth

Assistant Professor

Ph.D., University of Kentucky
M.A., Auburn University
B.A., University of North Alabama

Colebeck, Donna

Lecturer

> M.F.A., Rochester Institute of Technology
> B.S., Nazareth College of Rochester

Farber, Beth

Senior Lecturer

> M.M., Oklahoma City University
> B.M.Ed., Boston Conservatory of Music

Haimes-Korn, Kim

Professor

> Ph.D., Florida State University
> M.A., Florida State University
> B.A., Florida State University

Harr-Lagin, Kelsey

Instructor

> M.A., University of Northern Iowa
> B.A., University of Northern Iowa

Hopper, Keith B.

Associate Professor

> Ph.D., Georgia State University
> M.A., Boise State University
> B.S., Boise State University

Kokil, Uttam

Assistant Professor

> Ph.D., De Montfort University
> M.F.A., Rochester Institute of Technology
> B.F.A., Sir J.J Institute of Applied Art

Logan, Monique

Instructor

> M.S., Southern Polytechnic State University
> B.A., Spelman College

Lahey, Michael

Assistant Professor

> Ph.D., Indiana University
> M.A., Indiana University
> B.A., The University of Florida

Mathis, Robin

Lecturer

> Ph.D., Texas A&M University
> M.A., Texas State University

B.A., Texas Tech University

Omidvar, Iraj

Associate Professor

Ph.D., Iowa State University of Science and Technology
M.A., Iowa State University of Science and Technology
B.A., Iowa State University of Science and Technology

Orr, Jeffery L.

Instructor and Director of the ATTIC

Ph.D., University of Georgia
M.A., Jackson State University
B.S., Mississippi State University

Palmer, Laura

Associate Professor and Department Chair

Ph.D., Texas Tech University
M.A., Texas Tech University
B.A., University of British Columbia

Rorabaugh, Peter

Assistant Professor

Ph.D., Georgia State
M.Ed., Georgia State
B.A., University of Georgia

Reichert, Nancy L.

Associate Professor

Ph.D., Florida State University
M.A., Florida State University
B.A., University of Dayton

Shinall, Cheryl

Lecturer

M.A., Kennesaw State University
B.A., Emory University

Smith, Herbert J.

Professor

Ph.D., Kent State University
M.A., Northeastern University
B.A., Northeastern University

Stefani, Debora

Instructor

Ph.D., Georgia State University
M.F.A., University of Foscari
B.A., University of Foscari

Stephenson, Charlotte

Instructor

M.A., University of Alabama
B.A., Judson College

Stevens, Mark K.

Associate Professor

Ph.D., Florida State University
M.A., Florida State University
B.A., University of South Florida

Weaver, Melissa

Lecturer

M.S., University of Tennessee, Knoxville
B.A., University of Tennessee, Knoxville

Department of Digital Writing and Media Arts Faculty Emeriti

Barnum, Carol Professor Emerita
Hays, Robert, Professor Emeritus
Morrow, Susan, Professor Emerita
Oliver, Betty, Professor Emerita
Pfeiffer, William S., Professor Emeritus
Rainey, Kenneth, Professor Emeritus
Stevens, Mark, Professor Emeritus
Tumlin, John S., Professor Emeritus
Wess, Robert, Professor Emeritus
Wiseman, Thomas, Professor Emeritus

Department of Mathematics Faculty

Acharya, Keshav

Lecturer

Ph.D., University of Oklahoma
M.S., Norwegian University of Science and Technology, Norway
M.A., Tribhuvan University, Nepal
B.A., Tribhuvan University, Nepal

Adhikari, Dhruba

Assistant Professor

Ph.D., University of South Florida
Diploma, International Centre for Theoretical Physics, Italy
M.Sc., Tribhuvan University, Nepal
B.Sc., Tribhuvan University, Nepal

Cao, Zhu

Assistant Professor

Ph.D., University of Illinois at Urbana-Champaign
M.S., University of Illinois at Urbana-Champaign
B.S., Shandong University

Deng, Shangrong

Associate Professor

Ph.D., Michigan State University
M.A., Michigan State University
B.S., South China Normal University, Shanghai

Dillon, Meighan I.

Professor

Ph.D., University of Virginia
B.A., Hunter College-CUNY

Edwards, Steven R.

Professor

Ph.D., University of Virginia
M.S., Southern Illinois University
B.A., St. Johns College

Fadyn, Joseph N.

Professor

Ph.D., Lehigh University
M.S., Georgia State University
M.S., Lehigh University
B.A., Lehigh University

Fowler, Joel C.

Associate Professor

Ph.D., California Institute of Technology
M.S., Emory University
B.S., Emory University

Griffiths, William

Associate Professor

Ph.D., University of Florida
M.S., University of Florida
B.S., University of Florida

Holliday, Sarah

Associate Professor and Department Chair

Ph.D., Auburn University
M.A.M., Auburn University
B.A., Converse College

Kang, Yang

Lecturer

> Ph.D., University of California
> M.S., University of California
> B.S., Washington State University

LeBlanc III, Maurice

Lecturer

> Ph.D., University of Georgia
> M.A., University of Georgia
> B.S., University of Texas

McMorran, Andrew G.

Associate Professor

> Ph.D., Old Dominion University
> M.S., Old Dominion University
> B.Sc. (Hons), Heriot-Watt University, Scotland

Pascu, Nicolae

Associate Professor

> Ph.D., Babes-Bolyai University of Cluj-Napoca, Romania
> M.S., University of Connecticut
> M.S., Transilvania University of Brasov, Romania
> B.S., Transilvania University of Brasov, Romania

Ritter, Lake

Associate Professor

> Ph.D., Northwestern University
> M.S., University of Texas at Dallas
> B.S., University of Texas at Dallas

Vandenbussche, Jennifer

Assistant Professor

> Ph.D., University of Illinois at Urbana-Champaign
> M.A., University of Illinois at Urbana-Champaign
> B.M., State University of New York at Potsdam

Wang, Long L.

Associate Professor

> Ph.D., University of Wisconsin
> M.S., University of Wisconsin
> B.S., Shanxi Teacher's University

Xu, Taixi

Associate Professor

> Ph.D., Emory University
> M.S., Emory University
> M.S., Hebei Teacher's University

B.S., Shijiazhuang Railway Institute

Department of Mathematics Faculty Emeriti

Abusaid, Ahmad, Associate Professor Emeritus
Andrews, Robert H., Associate Professor Emeritus
Gordon, John T., Professor Emeritus
Haddle, Gillian P., Professor Emeritus
Hall, Kathleen A., Professor Emerita
Kropa, James C., Professor Emeritus
Stricklen, Jr., Simon A., Professor Emeritus
Pace, Jack R., Associate Professor Emeritus
Stone, Ernest R., Associate Professor Emeritus
Vinelli, Jose L., Associate Professor Emeritus
Young, Donald F., Professor Emeritus
Youngblood, Ralph P., Professor Emeritus

Department of Social and International Studies Faculty

Churella, Albert J.

Associate Professor

Ph.D., The Ohio State University
M.A., The Ohio State University
B.A., Haverford College

Cochrane, J. LaJuana

Associate Professor and Psychology Coordinator
Ph.D., University of Alabama
M.A., University of Alabama
B.A., Fisk University

Ghadge, Ravi

Assistant Professor

Ph.D., University of Illinois at Urbana-Champaign
M.Phil., Jawaharlal Nehru University, India
M.A., Jawaharlal Nehru University, India
B.A., University of Pune, India

Grant-Williams, Stacey

Lecturer

M.A., Clark Atlanta University
B.A., University of South Carolina

Holdzkom, Marianne

Associate Professor

Ph.D., The Ohio State University
M.S., Ball State University
B.S., University of Evansville

Jung, Kyunghun

Assistant Professor

Ph.D., University of New Mexico
M.A., Korea University, S. Korea
B.A., Korea University, S. Korea

LeFebvre, Rebecca

Lecturer

Ph.D., Kennesaw State University
M.S., National Technological University
B.S., Rice University

Newell, Julie R.

Professor and Dean of the School of Arts and Sciences

Ph.D., University of Wisconsin-Madison
M.A., University of Wisconsin-Madison
B.S., Boise State University
B.A., Boise State University

Nisley, Thomas J.

Associate Professor

Ph.D., University of Florida
M.A., Old Dominion University
B.S., Christopher Newport College

Nuhfer-Halten, Bernice

Professor and Language Coordinator

Ph.D., Florida State University
M.A., Middlebury College, Madrid
B.A., Florida State University
A.A., Palm Beach Junior College

Rotnem, Thomas E.

Professor and Department Chair

Ph.D., The Ohio State University
Graduate Certificate of Specialist in Russian Area Studies, The Ohio State University
M.B.A., Georgia State University
M.A., Ohio University
B.A., Ohio University

Sharma, Leigh A.

Assistant Professor

Ph.D., University of Iowa
M.A., University of Iowa
B.A., Reed College

Skutans, William

Lecturer

M.A., Northeastern Illinois University
B.A., Northern Illinois University

Snook, Carl

Lecturer

Ph.D., Michigan State University
M.A., Michigan State University
M.A., Kent State University
B.A., Kent State University

Soiset, Roger

Lecturer

M.A., California State University, Long Beach
B.A., The Citadel

Vickrey, Mark D

Senior Lecturer

M.A., Appalachian State University
B.A., University of Central Florida

Department of Social and International Studies Faculty Emeriti

Fischer, Robert, Professor Emeritus
Weeks, Charles J., Professor Emeritus

Faculty of the School of Computing and Software Engineering

Rutherfoord, Rebecca

Professor and Dean of the School of Computing and Software Engineering

Ed.D., Indiana State University
M.S., Southern Polytechnic State University
M.S., Indiana State University
B.S., Indiana State University
CDP

Department of Computer Science and Software Engineering Faculty

Bobbie, Patrick O.

Professor

Ph.D., University of Southwestern Louisiana
M.S., Marquette University
B.S., University of Science & Technology, Ghana

Chastine, Jeffrey W.

Associate Professor

Ph.D., Georgia State University
M.S., Georgia Institute of Technology
B.M., Valdosta State University

Duggins, Sheryl L.

Professor

Ph.D., University of Florida
M.S., University of Missouri-Columbia
B.A., University of Missouri-Kansas City

Franklin, D. Michael

Assistant Professor

M.S., University of Tennessee
B.S., Southern Polytechnic State University

Gesick, Richard A.

Lecturer

M.S., Southern Polytechnic State University
B.S., University of West Florida
B.S., Purdue University

Harbort, Robert A., Jr.

Professor

Ph.D., Emory University
M.S., Georgia Institute of Technology
B.S., Emory University
P.E., Georgia

Hung, Chih-Cheng

Professor

Ph.D., University of Alabama-Huntsville
M.S., University of Alabama-Huntsville
B.S., Soochow University

Jung, Edward

Assistant Professor

Ph.D., University of Minnesota
B.S., University of Minnesota

Lartigue, Jonathan.

Associate Professor

Ph.D., Auburn University
M.SwE., Auburn University
B.A., Auburn University

Li, Lei.

Associate Professor

Ph.D., Georgia State University
M.S., Georgia State University
B.S., China University of Mining & Technology

Lo, Chia-Tien (Dan)

Associate Professor

Ph.D., Illinois Institute of Technology
M.S., National Taiwan University
B.A., National Chung-Hsing University

Morrison, Briana B.

Assistant Professor

M.S., Southern Polytechnic State University
B.S., Tulane University

Peng, Chao.

Assistant Professor

Ph.D., Virginia Tech
M.S., Virginia Tech
M.F.A., University of Alaska
B. Arch., Hebei University of Engineering

Pierce, Patricia P.

Senior Lecturer

M.S.S.W.E., Southern Polytechnic State University
B.A., Dunbarton College of Holy Cross

Pournaghshband, Hassan

Professor

Ph.D., University of Oklahoma
M.S., Northwestern University
B.S., University of Tehran

Preston, Jon A.

Professor and Department Chair

Ph.D., Georgia State University
M.S., Georgia Institute of Technology
B.S., Georgia Institute of Technology

Qian, Kai

Professor

Ph.D., University of Nebraska-Lincoln
M.S., East China Normal University
B.S., Harbin Engineering College

Tsui, Frank

Associate Professor

> Ph.D., Georgia Institute of Technology
> M.S., Indiana State University
> B.S., Purdue University

Department of Computer Science and Software Engineering Faculty Emeriti

Murphy, Michael G., Professor Emeritus
Schroeder, Ronald N., Associate Professor Emeritus

Department of Information Technology Faculty

Brown, Robert L.

> *Lecturer*

> > M.S., Southern Polytechnic State University
> > B.S., State University of New York Regents College

Halstead-Nussloch, Richard

> *Professor*

> > Ph.D., University of Michigan
> > B.A., Macalester College

Peltsverger, Svetlana

> *Assistant Professor and Department Chair*

> > Ph.D., Russian Academy of Science, Moscow
> > M.S., Chelyabinsk Polytechnic Institute, Russia
> > B.S., Chelyabinsk Polytechnic Institute, Russia

Rutherfoord, Rebecca

> *Professor and Dean of the School of* Computing and Software Engineering

> > Ed.D., Indiana State University
> > M.S., Southern Polytechnic State University
> > M.S., Indiana State University
> > B.S., Indiana State University
> > CDP

Vande-Ven, Susan

> *Lecturer*

> > M.S., Georgia Institute of Technology
> > M.B.A., University of Akron
> > B.S., Purdue University

Yang, Ming

> *Assistant Professor*

Ph.D., Wright State University
M.S., Tianjin University
B.S., Tianjin University

Zhang, Chi

Assistant Professor

Ph.D., University of Nebraska, Omaha
M.S., University of Nebraska, Omaha
M.S. Ed., University of Nebraska, Kearney
B.S., Beijing Normal University

Zheng, Guangzhi (Jack)

Assistant Professor

Ph.D., Georgia State University
M.S., San Francisco State University
B.S., Southwestern University

Faculty of the School of Engineering Technology & Management

Currin, Thomas R.

Professor and Dean, School of Engineering and School of Engineering Technology & Management

Ph.D., University of Connecticut
M.C.E., North Carolina State University
B.S., Southeastern Massachusetts University
P.E., Georgia, Massachusetts

Department of Business Administration Faculty

Ariail, Don

Associate Professor

Ph.D., Nova Southern University
M.P.A., Georgia State University
B.A., Georgia State University

Hiatt, Mark

Assistant Professor

Ph.D., Northcentral University
M.M., Northwestern University
B.S., U.S. Military Academy - West Point

Kelani, Zeynep

Lecturer

M.S., Southern Polytechnic State University
M.S., Marmara University

B.S., Mimar Sinan University

Khayati, Amine

Assistant Professor

Ph.D., Southern Illinois University
M.S., University of Memphis
B.A., University of Tunis

Melnik, Mikhail

Associate Professor

Ph.D., Georgia State University
M.A., Boston University
B.A., Georgia State University

North, Max M.

Professor

Ph.D., Clark Atlanta University
M.S., Jackson State University
B.S., Karaj College, Iran

Obeidat, Muhammad A.

Professor

Ph.D., Illinois Institute of Technology
M.S., Western Michigan University
B.S., Yarmouk University, Jordan

Quinet, Greg

Assistant Professor

M.S., Southern Polytechnic State University
B.S., Embry-Riddle Aeronautical University

Richardson, Ronny

Professor and Department Chair

Ph.D., Georgia State University
M.S., Georgia State University

M.B.A., Georgia State University
B.S., University of Southern Mississippi

Shumate, Shannon

Lecturer

M.A., Auburn University
B.S., Auburn University

Sinha, Mona

Assistant Professor

Ph.D., Texas A & M
M.MSM., University of Bombay

B.S., Thackersey Women's University

Smith, Sondra

Temporary Full-time Instructor

M.PAcc., University of West Georgia
B.B.A., University of West Georgia

Stephenson, Sandria

Assistant Professor

Ph.D., University of Georgia
M.B.A., Florida A & M University
B.A., University of the Virgin Islands

Toson, Sonia

Assistant Professor

J.D., American University
M.B.A., American University
B.A., University of Illinois

Tsay, Bor-Yi

Professor

Ph.D., University of Houston
M.B.A., Eastern Washington University
B.S., National Taiwan University

Vasa-Sideris, Sandra

Professor

Ph.D., Georgia State University
M.B.A., Georgia State University
M.A., University of Tennessee
B.A., University of Tennessee

Department of Business Administration Faculty Emeriti

Yancy, Robert, Professor Emeritus

Department of Electrical and Computer Engineering Technology Faculty

Asgill, Austin B.

Professor and Department Chair

Ph.D., University of South Florida
M.Sc., University of Aston in Birmingham
M.B.A., Florida State University
B.Eng.(Hons), Fourah-Bay College, University of Sierra Leone
P.E., Florida.

Bachman, Charles L.

Professor Emeritus

M.Engr., Pennsylvania State University
M.S.E.E., University of Pittsburgh
B.S.E.E., Pennsylvania State University
P.E., Pennsylvania

Chin, Craig A.

Assistant Professor

Ph.D., Florida International University
M.S.E.E., Florida International University
B.S.E.E., University of the West Indies

Davis, Kim

Professor Emeritus

M.S.E.T., Rochester Institute of Technology
B.E.E.T., Southern Polytechnic State University
P.E., California

Fallon, Thomas

Associate Professor

Ph.D., Georgia State University
M.S.E.E., Georgia Institute of Technology
B.S.E.E., Georgia Institute of Technology

Frinzi, Pamela S.

Professor

M.S., Southern Polytechnic State University
B.S., Southern Polytechnic State University

Grosch, Theodore O.

Assistant Professor

Ph.D., Pennsylvania State University
M.S.E.E., Pennsylvania State University
B.S.E.E., Pennsylvania State University

Ho, Hai T.

Associate Professor

Ph.D., University of Colorado at Boulder
M.S.E.E., University of Colorado at Denver
B.S.E.E., University of Colorado at Boulder

Jenkins, L. Brent

Associate Professor

M.S.E.E., Georgia Institute of Technology
B.S.E.E., University of Missouri - Rolla
P.E., Georgia

Larisch, Scott

Assistant Professor

M.S.E.E., University of Southern California
B.S.E.E., University of Colorado at Boulder

Misoc, Florian

Associate Professor

Ph.D., Kansas State University
M.S.E.T., Pittsburg State University
B.S.E.E., University of Buchcarest, Romania
P.E., Arkansas

Preethy, Adimathara P.

Assistant Professor

Ph.D., Nanyang Technological University, Singapore
M.Tech., Cochin University of Science and Technology, India
B.S.E.E., Cochin University of Science and Technology, India

Thain, Walter E., Jr.

Associate Professor
Ph.D., Georgia Institute of Technology
M.S.E.E., Georgia Institute of Technology
B.S.E.E., Georgia Institute of Technology

Tippens, Scott J.

Professor

M.S.E.E., Georgia Institute of Technology
B.S.E.E., Georgia Institute of Technology

Wagner, Jeff H.

Assistant Professor

M.S.E.E., Georgia Institute of Technology
B.S.E.E., Georgia Institute of Technology

Wilcox, Daren R.

Assistant Professor

M.S.E.E., University of Central Florida
B.S.E.E., University of Central Florida

Zia, Omar

Professor Emeritus

Ph.D., Warsaw Technical University
M.S.E.E., Warsaw Technical University
B.S.E.E., Warsaw Technical University
P.E., California, Oregon, Georgia

Department of Electrical and Computer Engineering

Technology Faculty Emeriti

Bachman, Charles L., Professor Emeritus
Burton, Walter E., Professor Emeritus
Cowan, Clifford W., Professor Emeritus
Davis, Kim, Professor Emeritus
Dreyer, Robert N., Professor Emeritus
Keown, John L., Professor Emeritus
Wojnowiak, Paul, Professor Emeritus
Wilson, julian A., Professor Emeritus
Zia, Omar, Professor Emeritus

Department of Industrial Engineering Technology Faculty

Atkins, Robert W.

> *Professor*

>> M.B.A., Georgia State University
>> B.S., Virginia Poly Tech and State University
>> P.E., Georgia

Ball, Thomas

> *Assistant Professor and Department Chair*

>> M.B.A., Georgia State University
>> B.A., Oglethorpe University

Caudill, David F.

> *Professor and Associate VPAA*

>> M.S.I.E., Lehigh University
>> B.S., North Carolina State University

Dollar, E. Lester, III

> *Associate Professor*

>> M.S., Georgia Institute of Technology
>> B.S., Georgia Institute of Technology

Hunt, Ruston

> *Associate Professor*

>> Ph.D., University of Illinois
>> M.S.I.E., University of Illinois
>> B.S.I.E., University of Illinois

Jackson, Kenneth J.

> *Assistant Professor*

>> Ph.D., Georgia Institute of Technology
>> M.S.I.E., Georgia Institute of Technology
>> M.S.M.E., Georgia Institute of Technology

B.S.M.E., Auburn University

Scherrer, Christina R.

Assistant Professor

Ph.D., Georgia Institute of Technology
M.S., Georgia Institute of Technology
B.S.., Georgia Institute of Technology

Thomas, Walter, Jr.

Professor Emeritus

Ph.D., Georgia State University;
M.B.A., Georgia State University

M.S., Georgia Institute of Technology
B.S., Georgia Institute of Technology
A.T.E.T., Southern Polytechnic State University

Department of Industrial Engineering Technology Faculty Emeriti

Bannerman, James W., Professor Emeritus
Brooks, Glen E., Professor Emeritus
Carden, Patricia, Professor Emerita
Carmichael, Thomas H., Professor Emeritus
Franklin, Patricia S., Professor Emerita
Hamrick, Janes, Professor Emeritus
McClure, Hoyt L., Professor Emeritus
McGuire, Richard W., Professor Emeritus
McKee, James, Associate Professor Emeritus
McPherson, Jack, Professor Emeritus
Stephens, Kenneth S., Professor Emeritus
Wimberly, Charles A., Professor Emeritus

Department of Mechanical Engineering Technology Faculty

Sweigart, John F.

Associate Professor and Department Chair

M.S.E.M., University of Missouri-Rolla
B.S.M.E., University of Missouri-Columbia
P.E., Georgia

Como, Joseph A.

Lecturer

M.Ed., Georgia State University
B.S., Mechanical Engineering, University of Hartford

Conrey, Gregory M.

Associate Professor

>   M.Ed., Georgia State University
>   B.S., Eastern Kentucky University

Dhanasekaran, Puttagounder Swaminathan

Assistant Professor

>   Ph.D., Wichita State University
>   M.Ed., Georgia State University
>   B.S., Eastern Kentucky University

Emert, Randall

Assistant Professor

>   M.S. Western Illinois University
>   B.S., Western Illinois University

Horton, Donald D.

Associate Professor

>   M.S.M.E., Michigan Technological University
>   B.S.M.E., Michigan Technological University
>   P.E., Georgia

Khazaei, Ali

Associate Professor

>   Ph.D., Tehran Azad University
>   M.Sc., University of Tehran
>   B.Sc., University of Tehran

Nasseri, Simin

Assistant Professor

>   Ph.D., University of Sydney, Australia
>   M.E., Iran University of Science and Technology
>   B.Sc., Iran University of Science and Technology

Russell, Norman A.

Associate Professor

>   Ph.D., Institute of Paper Chemistry
>   M.S., Institute of Paper Chemistry
>   B.S., Pulp and Paper Technology, North Carolina State University
>   P.E., Alabama

Mechanical Engineering Technology Faculty Emeriti

Lee, Julian R., Professor Emeritus
Logue, Laurence J., Professor Emeritus
Pearce, Britt, Professor Emeritus
Taylor, Leonard H., Head and Professor Emeritus
Williams, Orren W., Professor Emeritus
Young, Ronald C., Professor Emeritus

Faculty of the School of Engineering

Currin, Thomas R.

Professor and Dean, School of Engineering and School of Engineering Technology and Management

Ph.D., University of Connecticut
M.C.E., North Carolina State University
B.S., Southeastern Massachusetts University
P.E., Georgia, Massachusetts

Department of Civil and Construction Engineering Faculty

Barham, Wasim

Assistant Professor

Ph.D., University at Buffalo, State University of New York
M.S., Jordan University of Science and Technology
B.S., Jordan University of Science and Technology

Beadles, Sam

Professor and Department Chair

M.S., University of California, Los Angeles
B.S., Northern Arizona University
P.E., Georgia

Karim, M.A.

Assistant Professor

Ph.D., Cleveland State University, Cleveland, OH
M.S., Bangladesh University of Engineering and Technology
B.S., Bangladesh University of Engineering and Technology

Kim, Sung-Hee

Associate Professor

Ph.D., Texas A&M University, College Station, TX
M.S., Georgia Institute of Technology, Atlanta, GA
B.S., Inha University, Inchon, South Korea

Oguzmert, Metin

Assistant Professor

Ph.D., Syracuse University, Syracuse, NY
M.S., Istanbul Technical Univesity
B.S., Istanbul Technical University

Yang, Jidong

Assistant Professor

Ph.D., University of South Florida, Tampa, FL

M.S., University of South Florida, Tampa, FL

B.S., Hebei Agricultural University, Hebei, China

Yee, Tien M.

Assistant Professor

Ph.D., University of Kentucky, Lexington, KY

M.S., University of Kentucky, Lexington, KY

B.S., University of Kentucky, Lexington, KY

Department of Electrical and Mechatronics Engineering Faculty

Crimm, Lance

Professor and Department Chair

M.S.E.E., Georgia Institute of Technology

B.S.E.E., Georgia Institute of Technology

P.E., Georgia

Chakravarty, Sumit

Assistant Professor

Ph.D., University of Maryland

M.S., Texas A&M

B.S., Nagpur University

Chang, Yusun

Assistant Professor

Ph.D., Georgia Institute of Technology

M.S., Columbia University

M.S., Korea Aerospace University

B.S., Korea Aerospace University

Das, Sandip

Assistant Professor

Ph.D., University of South Carolina

M.E., University of South Carolina

B.E., Indian Institute of Engineering, Science and Technology

Diong, Bill

Associate Professor

Ph.D., University of Illinois at Urbana-Champaign

M.S., University of Illinois at Urbana-Champaign

B.S., University of Illinois at Urbana-Champaign

Ham, Chan

Assistant Professor

> Ph.D., University of Central Florida
> M.S.EE, University of Central Florida
> B.E., Dongguk University

Lee, Hoseon

Assistant Professor

> Ph.D., Georgia Institute of Technology
> M.S., Georgia Institute of Technology
> B.S., Georgia Institute of Technology

Ma, Kuo-Sheng

Assistant Professor

> Ph.D., University of California, Irvine
> M.S., University of California, Irvine
> M.S., University of California, Riverside
> B.S., TamKang University

Marshall, Matthew

Assistant Professor

> Ph.D., Georgia Institute of Technology
> M.S., University of Florida
> B.S., University of Florida

McFall, Kevin

Assistant Professor

> Ph.D., Georgia Institute of Technology
> M.S., Massachusetts Institute of Technology
> B.S., Virginia Polytechnic Institute and State University

Wang, Ying

Assistant Professor

> Ph.D., The University of British Columbia
> M.S., Shanghai Jiao Tong University
> B.S., Shanghai Jiao Tong University

Department of Systems and Mechanical Engineering Faculty

Butler, Renee

Associate Professor and Department Chair

> Ph.D., Georgia Institute of Technology
> M.S.O.R., Georgia Institute of Technology
> B.I.E., Georgia Institute of Technology
> P.E., Georgia

Atiqullah, Mir

Professor

> Ph.D., Purdue University, Indiana
> M.S.M.E., Purdue University, Indiana
> B.S.M.E., Bangladesh University of Engineering & Technology

Ghavi, Mahmoud

Professor

> Ph.D., University of Arkansas
> M.S.N.E., University of Arkansas
> B.S.M.E., University of Tulsa

Ilksoy, Erhan

Senior Lecturer

> M.S.M.E., Georgia Institute of Technology
> B.S.M.E., Bosphorus University (Formerly, American Robert College)

Khalid, Adeel

Assistant Professor

> Ph.D., Georgia Institute of Technology
> M.S.I.E., Georgia Institute of Technology
> M.S.A.E., Georgia Institute of Technology
> M.S.M.E., Michigan State University
> B.S.M.E., GIK Institute of Technology (Pakistan)

Lowder, Margaret Loraine

Assistant Professor

> Ph.D., Georgia Institute of Technology
> M.S., Mechanical Engineering, Georgia Institute of Technology
> B.S., Mechanical Engineering, Georgia Institute of Technology

Mayeed, Mohammed

Assistant Professor

> Ph.D., University of Tokyo, Japan
> M.S.M.E., Bangladesh University of Engineering & Technology
> B.S.M.E., Bangladesh University of Engineering & Technology

Moghaddam, Kamran

Assistant Professor

> Ph.D., University of Louisville
> M.S.I.E., Tehran Polytechnic
> B.S., Applied Mathematics, University of Tehran
> P.E., Kentucky

Ruhala, Laura

Associate Professor

> Ph.D., Engineering Science and Mechanics, August 1999, College of Engineering,
> Pennsylvania State University State College,
> B.Sc., Mechanical Engineering, Minor in Applied Mathematics

Specialty in Machine Design, June 1991
GMI Engineering & Management Institute, Flint, MI, USA

Ruhala, Richard

Associate Professor

Ph.D., Pennsylvania State University
B.S.M.E., Michigan State University

Salman, Muhammad

Lecturer

Ph.D., Mechanical Engineering, Georgia Institute of Technology
M.S., Mechanical Engineering, Georgia Institute of Technology
M.S., Mechanical Engineering, University of Engineering and Technology, Lahore, Pakistan
B.S., Mechanical Engineering, University of Engineering and Technology, Lahore, Pakistan

Sooklal, Valmiki

Assistant Professor

Ph.D., Mechanical Engineering, Tulane University
M.S., Mechanical Engineering, Tulane University
B.S., Mechanical Engineering, University of the West Indies

Winchester III, Woodrow W.

Associate Professor

Ph.D., Industrial & Systems Engineering, NC A&T SU
M.S., Industrial & Systems Engineering, NC A&T SU
B.S., Industrial & Systems Engineering, NC A&T SU

Veazie, David

Professor

Ph.D., Georgia Institute of Technology
M.S.M.E., Georgia Institute of Technology
B.S.M.E., Minor Math/Physics, Southern University – Baton Rouge, Louisiana

Chen, Li

Librarian, Associate Professor

M.L.I.S., University of Western Ontario
B.A., Beijing Foreign Language University

Kim, Hyun Chu "Leah"

Librarian-Assistant Professor

M.L.I.S., Valdosta State University
B.A., University of Washington - Seattle

Ma, Yongli

Librarian-Associate Professor and Assistant Director

M.L.I.S., University of South Carolina
M.Ed., University of South Carolina

B.A., Shanghai Foreign Languages Institute

Mills, Joyce White

Librarian, Associate Professor and Library Director

Ph.D., Florida State University
D.A.S.L., Emory University
M.S.L.S., University of Wisconsin
B.A., Spelman College

Vincent, Steven F.

Librarian, Associate Professor

M.A., Western Michigan University
M.S.L., Western Michigan University
A.B., University of Michigan

Wimer, Aaron

Librarian-Assistant Professor

M.L.I.S., Clarion University of Pensylvania
B.S., Clarion University of Pennsylvania
A.A., Butler County Community College

Institutions of the University System of Georgia

Research Universities

Georgia Institute of Technology	Atlanta
Georgia Regents University	Augusta
Georgia State University	Atlanta
University of Georgia	Athens

Regional Universities

Georgia Southern University	Statesboro
Valdosta State University	Valdosta

State Universities

Albany State University	Albany
Armstrong Atlantic State University	Savannah
Clayton State University	Morrow
Columbus State University	Columbus
Fort Valley State University	Fort Valley

Georgia College & State University	Milledgeville
Georgia Southwestern State University	Americus
Kennesaw State University	Kennesaw
Savannah State University	Savannah
Southern Polytechnic State University	Marietta
University of North Georgia	Dahlonega
University of West Georgia	Carrolton

State Colleges

Abraham Baldwin Agricultural College	Tifton
Atlanta Metropolitan State College	Atlanta
Bainbridge State College	Bainbridge
College of Coastal Georgia	Brunswick
Dalton State College	Dalton
Darton State College	Albany
East Georgia State College	Swainsboro
Georgia Gwinnett College	Lawrenceville
Georgia Highlands College	Rome
Georgia Perimeter College	Decatur
Gordon College	Barnesville
Middle Georgia State College	Macon
South Georgia State College	Douglas

Athletics

Athletics

Southern Polytechnic State University is a member of the National Association of Intercollegiate Athletics (NAIA) and the Southern States Athletic Conference (SSAC). The University competes in four intercollegiate sports, including men's soccer in the fall, men's and women's basketball during the winter, and baseball in the spring. All four of the Southern Polytechnic teams have enjoyed much success over the years. The squads use the nickname "Hornets" and the school colors are forest green, white and black.

Athletic Facilities

Southern Polytechnic features several on-campus athletic facilities. An athletic training room located in the Hornets Nest, the University's gymnasium, serves the medical needs of all student-athletes.

The men's soccer team plays at Neusoft Technologies Field, located on the far west side of campus. Locker room space and a building for storage are near the field.

Serving as the home court for the Southern Polytechnic men's and women's basketball squads is the Hornets Nest, located on the south side of campus. The athletic training room is just a few steps from the court and locker room space for Southern Poly's teams, visiting squads and game officials is nearby.

Sir Walter J. Kelly Sr. Memorial Field, located near the gymnasium on the far south end of campus, is where the Hornets play baseball. The facility features new seating, a new scoreboard and a new press box. An indoor facility, located down the left-field line just a few steps from SPSU's dugout, includes two full-size batting cages, two soft-toss areas, a bullpen with a mound and weight training equipment. There is locker room space and buildings for storage near the field.

For more information, please visit us at www.SPSUHornets.com.

Bookstore

The Southern Polytechnic State University bookstore is located on the lower level of the Student Center. In addition to new and used textbooks, you can also purchase software, reference books, school supplies, engineering supplies, calculators, SPSU apparel, greeting cards, health and beauty aids, drinks, and snacks.

On the last day of registration and the first week of classes, the bookstore is open for extended hours.

Please visit us to find more information and purchase your books online at www.spsu.edu/bookstore.

Career and Counseling Center

Counseling Services

The Career and Counseling Center offers a variety of counseling services to help students succeed. The Center provides counseling for personal, academic, and career concerns.

Personal concerns such as anxiety, depression, relationship problems, low self-esteem, low self-confidence, and communication issues can make it very difficult for students to gain the most from the university and from their classes. Professional counselors provide time limited **individual and/or group sessions for students** seeking confidential assistance with these and other personal issues.

Part of the career development process involves increasing self-understanding in such areas as values, life goals, interests, and skills. **Counselors can help students increase their self-understanding and learn how to match their personal characteristics with the work environments that a university education makes possible for them.**

Academic concerns center on more effective time management, study skills and dealing with test anxiety. Counselors can assist students in identifying deficiencies in these areas to make the overall academic experience more successful. Many students find university work more difficult than they expected and find that it strains their abilities.

Counselors can assist students in developing skills to manage stress, overcome test anxiety, improve test-taking strategies, enhance memory and better understand their learning style. The Career and Counseling Center provides a variety of assessments to assist students in clarifying and/or confirming their goals.

Counselors provide outreach programs on many topics, including stress management, anxiety, depression, relationship building, procrastination and other student concerns (a detailed list can be found on the Center's website at www.spsu.edu/counselingservices/index.htm.)

All counseling services are **free of charge**, confidential, and **are available by appointment**. Counseling staff

members are also available for consultation with SPSU faculty and staff who are concerned about specific situations and/or individuals.

Career Services

The Career and Counseling Center provides job search assistance for graduates and for students seeking full-time, part-time, temporary and on-campus employment. The Center provides assistance to students in preparing for the job search and obtaining employment suited to their career goals and aspirations, but can never guarantee employment for any student or graduate. Services offered include:

| Assisting in resume preparation
| Offering career search workshops and mock interviews
| Access to Jobs and career database (Career Link)
| On-campus interviews **and/or information sessions**

Students are encouraged to make use of career services as early as possible during their stay at Southern Polytechnic. **Degree candidates should begin the job search process at least two semesters prior to their graduation.**

On-Campus Employment

There are two kinds of on-campus positions for students: College Work Study (from funds awarded by the Financial Aid Office) and Student Assistants (from funds that are allocated to the department). Undergraduate students seeking on-campus employment should begin their search by registering in the Career Link database. International students should begin the job search process in the ATTIC.

Alumni assistance: Job search assistance for alumni includes web registration in the **CAREER LINK** (jobs) database on the Center's web page. Alumni may attend any skillshop sessions offered by the Center and career fairs sponsored by the Center.

Experiential Education (Cooperative Education and Internship)

Southern Polytechnic State University offers it's students the opportunity to gain valuable work experience directly related to their academic majors through a University sponsored experiential education program. Students interested in either program should attend an orientation session or should complete the online orientation session (dates and links posted on the Career and Counseling Center's website).

Benefits of participating in Cooperative Education or an Internship include:

| Providing career related hands-on work experience
| Earning a competitive salary for school and tuition expenses
| Learning the company culture
| Networking with professionals in your field
| Helping get your foot in-the-door for full-time employment
| Developing self-confidence
| Establishing valuable contacts for letters and references
| Gaining practical experience in the work environment
| Helps students in their career decision making process
| Provides substantial support for education expenses

Cooperative Education (Co-op)

Co-op is founded on the principle that learning takes place through practical experience as well as through academic achievement. Students participating in the co-op program alternate school and work.

Co-op students are required to follow all guidelines set forth by the Career and Counseling Center, as well as the rules and regulations of the University. In addition to university requirements, students must meet any additional co-op requirements set forth by the co-op employer. Students unable to maintain university or company co-op requirements may be given one probationary term to correct deficiencies before being withdrawn from the co-op program.

The Career and Counseling Center refers students to employers after they have been approved as a co-op applicant (Note that acceptance as a co-op applicants does not guarantee a student's employment in a co-op position). The employer has the final decision regarding offering co-op employment. Upon acceptance of a co-op position, the student is expected to remain with their co-op employer for a minimum of three (3) co-op work terms. In addition to Career Services referrals, co-op participation can also be started through student self-referral. Students and employers must meet program requirements and guidelines (contact program coordinator for details).

Students with metro-Atlanta co-op assignments may live in Southern Polytechnic State University housing. In addition, students with local co-op work assignments are eligible to participate in all co-curricular, intramural, and health service activities on campus with the payment of the regular student athletic, activity, and health fees. Although no credit is awarded (students receive a grade of 'S' or 'U'), the university views co-op students as active, continuing, full-time students during their periods of approved work experience.

Although neither the student nor the employer makes a commitment for full-time employment upon completion of the co-op program, many SPSU co-op students are offered career employment with their co-op employers. Satisfactory completion of both requirements for graduation and co-op guidelines make an undergraduate student eligible to receive recognition for participation in the co-op program on their Southern Polytechnic State University diploma and academic record.

Internship Program

The Southern Polytechnic State University Internship program is a short-term or time-limited work experience in a professional environment. It is designed to enhance academic, personal, and professional development and will assist students in making a smooth transition from the classroom to the world of work, and to provide students with insight about potential careers. Usually, an internship is a one-time experience for a student who has attained at least some academic preparation in a professional field.

Co-op and Internship Eligibility and Requirements for Undergraduate Students

- Be a registered, full-time student at the time of application to the program and during the semester prior to going to work (i.e., carry at least 12 hours fall and spring and 6 hours during the summer)
- Have and maintain a minimum 2.00 GPA (many employers require higher averages)
- Have completed at least 24 semester hours of academic credit toward their degree
- Must have completed at least one semester at SPSU
- Attend an orientation session (can be online) and meet with the program coordinator, and
- Co-op applicants must commit to participate in a minimum of three (3) alternating co-op work terms with the same employer

Students must be fully authorized to work in the United States to participate in the co-op program.

International Students

Must obtain written eligibility authorization from the International Services Coordinator in the ATTIC before beginning **EACH** working assignment. Due to the INS regulations, International students are not permitted to Intern more than one and a half-academic years for undergraduates and one academic year for graduates. Once an Internship is obtained, International students **MUST** return to the International Services Coordinator to complete additional paperwork. International students failing to do so will be **DROPPED** from the Internship Program.

Degrees and Certificates Offered

Bachelor of Arts

Computer Science, BA

Area A

| | ENGL 1101 - English Composition I **3 Credits**
| | ENGL 1102 - English Composition II **3 Credits**
| | MATH 1113 - Pre-calculus **4 Credits**

Area B

| | COMM 2400 - Public Speaking **2 Credits**
| | STS 2400 - Science, Technology, and Society **2 Credits**
| | COMM 2400 - Public Speaking **2 Credits**
| | STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| | Group 1 - Literature of the World **3 Credits**
| | Group 2 - Art and Culture of the World **3 Credits**

Area D

| | MATH 2253 - Calculus I **4 Credits**
| | Take any 2 of the courses below (with labs):

| | BIOL 2107 - Principles of Biology I **3 Credits**
| | BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| | BIOL 2108 - Principles of Biology II **3 Credits**
| | BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| | CHEM 1211 - Principles of Chemistry I **3 Credits**
| | CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| | CHEM 1212 - Principles of Chemistry II **3 Credits**
| | CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| | PHYS 1111 - Introductory Physics I **3 Credits**
| | PHYS 1111L - Introductory Physics Laboratory I **1 Credits**

Area E

| | Group 1 - American Context **3 Credits**
| | Group 2 - World History **3 Credits**
| | Group 3 - Behavioral Science **3 Credits**
| | Group 4 - Cultures and Societies **3 Credits**

Area F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| Free Elective **(1 credit hour)**
| 1 hour each from Areas A & D **(2 credit hours)**

Required Courses

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| CS 3123 - Programming Language Concepts **3 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CS 3224 - Computer Organization & Architecture **4 Credits**
| CS 3243 - Operating Systems **3 Credits**
| CS 3424 - Data Structures **4 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| SWE 3613 - Software System Engineering **3 Credits**
| Upper-Level CS Elective (or Approved UL CGGD/SWE/IT Elective) **4 Credits**
| Upper-Level Free Electives (UL CS must be at least 4 hours, and the total of CS UL and UL free electives is 10 hours) **6 Credits**
| Approved Minor **15 Credits**
| Free Electives **5 Credits**

Degree Program Total: 123

English and Professional Communication, BA

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**

| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature of the World **3 Credits**
| Group 2- Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Science **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
Or
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Course in Behavioral Science **3 Credits**
| Group 4- Course in Cultures and Societies **3 Credits**

Area F

Required Courses, 12 Credits
| COMM 2170 - Introduction to Media Studies **3 Credits**
| ENGL 2030 - Research in Professional and Critical Writing **3 Credits**
| TCOM 2020 - Introduction to the Professions **3 Credits**
| ENGL 2500 - Language and Meaning **3 Credits**
Choose Two Courses, 6 Credits
| COMM 2000 - Business Communication **3 Credits**
| COMM 2065 - Cross-Cultural Communication **3 Credits**
| COMM 2150 - Ethics and Communication **3 Credits**
| Other coursework, as approved by the Department (6 Credits Max)
| Any Foreign Language, 2001 or higher (6 Credits Max)

Upper Level Required Courses (19 Credits)

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| COMM 3160 - Media Theory and Practice **3 Credits**
| ENGL 3045 - New Media Writing **3 Credits**
| ENGL 3100 - Rhetoric: History, Theory, and Practice **3 Credits**
| ENGL 4110 - Writing in Collaborative Environments **3 Credits**
| ENGL 4800 - Project Portfolio **3 Credits**
| TCOM 3400 - Foundations of Design for the Web **3 Credits**

Upper Level Area Distribution (27 Credits)

| A minimum of 6 credit hours must be taken in each of the three tag areas.

| No more than 6 credits may be at the 2000 level.

| Up to 6 credits outside of courses listed below, with departmental approval.

1. **Textual Production Area**

COMM 2000 - Business Communication
COMM 3250 Newspaper Practicum
ENGL 3081 Studies in Genre
ENGL 3082 Science and Literature
ENGL 3010 Science Writing
ENGL 3025 Creative Writing Workshop
ENGL 3040 Article and Essay Workshop
ENGL 3045 New Media Writing
TCOM 3015 Environmental Writing
TCOM 3020 Grant and Proposal Writing
TCOM 4000 Professional Editing

2. **Visual Production Area**

ARTS 2010 Intro to Drawing
ARTS 3010 Drawing for New Media
ARTS 3000 Visual Thinking
ARTS 3170 Digital Photography
TCOM 3430 Foundations of Graphics
TCOM 4040 Applied Graphics
TCOM 4170 Film and Video Production
TCOM 4400 Advanced Design for the Web

3. **Media & Cultural Studies Area**

ENGL 3180 Film as Literature
ENGL 4010 Publishing for New Media
ENGL 4170 Media and Narrative

COMM 3060 Media, Culture, and Society
COMM 3065 International Communication
TCOM 4045 Foundations of Multimedia
TCOM 3145 Social Media Integration

Free Electives (15 credits)

Degree Program Total: 121

For additional information about the B.A. program, contact the Digital Writing and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu. You can also visit our website at etcma.spsu.edu.

Mathematics, Education Track, BA

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

- ENGL 1101 - English Composition I **3 Credits**
- ENGL 1102 - English Composition II **3 Credits**
- MATH 1113 - Pre-calculus **4 Credits**

Area B

- COMM 2400 - Public Speaking **2 Credits**
- STS 2400 - Science, Technology, and Society **2 Credits**

Area C

- Group 1 - Literature of the World **3 Credits**
- Group 2 - Art and Culture of the World **3 Credits**

Area D

- Any Two Lab Sciences **8 Credits**
- MATH 2253 - Calculus I **4 Credits**

Area E

- Group 1 - American Context **3 Credits**
- Group 2 - World History **3 Credits**
- Group 3 - Behavioral Science **3 Credits**
- Group 4 - Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

- MATH 2254 - Calculus II **4 Credits**
- MATH 2255 - Calculus III **4 Credits**
- MATH 3312 - Linear Algebra **4 Credits**
  CSE 1301 **3 Credits** (Choose from following)

| CSE 1301C - Programming & Problem Solving I
| CSE 1301E - C++ Programming for Engineers
| CSE 1301J - Programming & Problem Solving I

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 3310 - Introduction to Advanced Mathematics **3 Credits**
| MATH 3320 - Introductory Real Analysis I **4 Credits**
| MATH 3321 - Introductory Real Analysis II **4 Credits**
| MATH 3696 - Geometry **3 Credits**
| MATH 4407 - Vector Analysis **3 Credits**
| MATH 4440 - Abstract Algebra **4 Credits**
| MATH Electives **3 Credits**
| MATH 4451 - Capstone Mathematics Project **3 Credits**

Education Courses
| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| MAED 2010 - Functions and Modeling **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 123

New Media Arts, BA

The Bachelor of Arts in New Media Arts provides students with an opportunity to develop the technical and artistic skills needed to serve as practitioners in the fields of multimedia development and design, web design, and video production. As a degree that straddles two worlds--the fine and the applied arts--the degree program encourages both creativity and practical application. Students will have an opportunity to develop a strong foundation in the traditional fine arts and learn to translate these skills to new media contexts. They will also learn to approach the technical aspects of new media applications from the sensibilities of an artist as well as a technician.

With its balance between the artistic and technical aspects of new media production, the new media arts degree program should prepare students to meet a growing marketplace need for multimedia artists and to rise to the top of the pack of individuals competing for these positions. While providing an undergraduate degree option for students interested in entering careers in the fine and applied arts, it would also provide appropriate preparation for graduate

study.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature of the World **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
OR
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies **3 Credits**

Area F

Required Courses 6 Credits
| ARTS 2020 - History and Principles of Design **3 Credits**
| COMM 2170 - Introduction to Media Studies **3 Credits**
Studio Courses, Choose Three- 9 Credits
| ARTS 2010 - Introduction to Drawing **3 Credits**
| ARTS 2110 - Painting and Mixed Media **3 Credits**
| ARTS 2220 - 2D and 3D Design **3 Credits**
| ARTS 2903 - Music Theory **3 Credits**
Choose One- 3 Credits
| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**

MAJOR REQUIREMENTS

Basic Required Courses in the Major (24 Credits)

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ARTS 3000 - Visual Thinking **3 Credits**
| ARTS 3100 - History of New Media Arts **3 Credits**
| COMM 3160 - Media Theory and Practice **3 Credits**
| ARTS 4100 - Media Arts Studio **3 Credits**
| ENGL 3045 - New Media Writing **3 Credits**
| TCOM 3430 - Foundations of Graphics **3 Credits**
| TCOM 3400 - Foundations of Design for the Web **3 Credits**
| ARTS 4800 - Senior Portfolio **3 Credits**

Additional Courses in the Major (18 Credits; Choose 6)

| ARTS 3010 - Drawing for New Media **3 Credits**
| ARTS 3170 - Digital Photography **3 Credits**
| ARTS 4270 - Advanced Digital Video **3 Credits**
| ARTS 4600 - Directed Study **3 Credits**
| ARTS 4700 - Internship **3 Credits**
| ARTS 4903 - Special Topics **3 Credits**
| CGDD 3103 - Application Extension and Scripting **3 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**
| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| COMM 3060 - Media, Culture, and Society **3 Credits**
| ENGL 3180 - Film as Literature **3 Credits**
| ENGL 4170 - Media and Narrative **3 Credits**
| TCOM 4040 - Applied Graphics **3 Credits**
| TCOM 4045 - Foundations of Multimedia **3 Credits**
| TCOM 4170 - Film and Video Production **3 Credits**
| TCOM 4175 - Animation Design, 2D **3 Credits**
| TCOM 4400 - Advanced Design for the Web **3 Credits**

Free Electives

Free Electives 18 Credits

Degree Program Total: 121

For additional information about the B.A. program, contact the Digital Writing and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu. You can also visit our website at etcma.spsu.edu.

Bachelor of Architecture

Architecture, BARCH

[5 Year Professional Degree]

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| Sciences - Lab Science - Any Lab Science **4 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 American Context , One Course **3 Credits**
| Group 2 World History , One Course **3 Credits**
| Group 3 Behavioral Science , One Course **3 Credits**
| Group 4 Cultures and Societies , One Course **3 Credits**

Area F

| ARCH 1001 - Design Foundation I **4 Credits**
| ARCH 1002 - Design Foundation II **4 Credits**
| ARCH 1241 - Design Communication I **2 Credits**
| ARCH 2003 - Design Foundation III **4 Credits**
| ARCH 2242 - Design Communication II **2 Credits**

One credit from MATH 1113 and one credit from MATH 2253 will be added to Area F.

Requirements

Architecture

- | ARCH 1000 - Orientation to Architecture **2 Credits**
- | ARCH 2111 - Architecture Culture I: Early Civilizations & Medieval **3 Credits**
- | ARCH 2004 - Design Foundation IV **4 Credits**
- | ARCH 2112 - Architecture Culture II - The Renaissance through 1850 **3 Credits**
- | ARCH 2211 - Architecture Structures I - Introduction to Structures **3 Credits**
- | ARCH 2311 - Environmental Tech I - Systems Selection and Materials **3 Credits**
- | ARCH 3011 - Architecture Studio V **4 Credits**
- | ARCH 3012 - Architecture Studio VI **4 Credits**
- | ARCH 3113 - Architecture Culture III - 1850 through 1945 **3 Credits**
- | ARCH 3116 - Urban Planning and Design Theory **3 Credits**
- | ARCH 3211 - Architecture Structures II: Steel and Wood **4 Credits**
- | ARCH 3212 - Architecture Structures III: Concrete and Lateral Loads **3 Credits**
- | ARCH 3313 - Environmental Technology II: Human Comfort, Sustainability and HVAC Systems: **3 Credits**
- | ARCH 3314 - Environmental Technology III: Natural & Artificial Lighting, Electrical Systems & Vertical Circulation: **3 Credits**
- | ARCH 4013 - Architecture Studio VII **4 Credits**
- | ARCH 4014 - Architecture Studio VIII **4 Credits**
- | ARCH 4114 - Architecture Cultures IV: 1945-Current **3 Credits**
- | ARCH 4224 - Professional Practice I - Codes and Technical Documents **3 Credits**
- | ARCH 5412 - Professional Practice II - Cost Control **2 Credits**
- | ARCH 5413 - Professional Practice III - Practice and Ethics **3 Credits**
- | ARCH 5593 - Thesis Prep **2 Credits**
- | ARCH 5998F - Focus Studio **4 Credits**
- | ARCH 5999R - Thesis Research S/U **1 Credits**
- | ARCH 5999T - Thesis Studio **4 Credits**
- | Electives **17 Credits**
- | ARCH 39X1 - Special Topics **1 to 4 Credits**
- | ARCH 49X1 - Directed Study **1 to 4 Credits**
- | SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Degree Program Total: 153

Bachelor of Apparel and Textiles Technology

Apparel and Textiles, BAT

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| C1 - Literature of the World **3 Credits**
| C2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Two Area D Lab Science Courses **8 Credits**
| Math - One Area D Math Course **4 Credits**

Note: A student cannot receive credit towards the ATT degree for both MATH2260 and IET2227

Area E

| E1 - US History **3 Credits**
| E2 - World History **3 Credits**
| E3 - Behavioral Science **3 Credits**
| E4 - Cultures and Societies **3 Credits**

Area F

| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| ATT 1200 - Apparel Design Graphics **2 Credits**
| ATT 1300 - International Sourcing **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits**
| MGNT 2201 - Business Computer Applications **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**

One credit from MATH 1113 will be added to Area F to complete the 18 hour requirement.

Major Courses

| ATT 1000 - Orientation **1 Credits**
| ATT 1400 - Principles of Merchandising **3 Credits**
| ATT 2301 - Apparel Computer-Aided Technical Design I **4 Credits**
| ATT 3100 - Fashion Merchandising **3 Credits**
| ATT 3505 - Fabric Formation and Design **3 Credits**
| ATT 3600 - Apparel Analysis and Product Development **3 Credits**
| ATT 3602 - Apparel Computer-Aided Technical Design II **4 Credits**
| ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends **3 Credits**
| ATT 4444 - Quality Assurance for Textiles and Apparel **4 Credits**
| ATT 4670 - Apparel/Textile Business Practices **3 Credits**
| ATT 4750 - Advanced Design and Product Development **3 Credits**
| ATT 4840 - Textile/Apparel Business Project **3 Credits**
| IET 4810 - Ethics and Safety **1 Credits**
| MGNT 3135 - Principles of Marketing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

ATT Related Electives: Select four courses: * 12

| ARTS 2010 - Introduction to Drawing **3 Credits**
| ATT 4820 - Senior Internship **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 3205 - Management Information Systems **3 Credits**
| MGNT 4145 - International Management **3 Credits**
| Free Electives **6 Credits**
Note: A student cannot receive credit towards the ATT degree for both MATH2260 and IET2227

Degree Program Total: 120

* At least six hours of Related Elective must be upper level courses

Bachelor of Applied Science

Information Technology, BAS

This program is designed for students who have completed an AAS or AAT degree from a two year technical college in a computing discipline.

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

AREA C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 1113 - Pre-calculus **(3 credits - 1 hour to Area F)**
Take any 2 of the courses below (with labs) for a total of 8 hours:

| ASTR 1000K - Introduction to the Universe **4 credits**
| BIOL 2107K - Principles of Biology I **4 Credits**
| BIOL 2108K - Principles of Biology II **4 Credits**
| CHEM 1211K - Principles of Chemistry I **4 Credits**
| CHEM 1212K - Principles of Chemistry II **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credit**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credit**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory **1 credit**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credit**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

Students who do not have enough hours from their technical block and general education hours to equal 60 semester hours, may receive "elective" credit hours to make up the deficient number of hours.

Technical Block Course **(3 credit hours)**
Technical Block Course **(4 credit hours)**

| CSE 2300 - Discrete Structures for Computing **3 Credits**
| CSE 1301J - Programming & Problem Solving I **4 Credits**

| IT 1324 - Advanced Programming Principles **4 Credits**
| Area D Carryover credit **1 credit**

Required Courses

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| IT 3203 - Introduction to Web Development **3 Credits**
| IT 3123 - Hardware/Software Concepts **3 Credits**
| IT 3223 - Software Acquisition and Project Management **3 Credits**
| IT 3423 - Operating Systems Concepts & Administration **3 Credits**
| IT 3883 - Advanced Applications Development **3 Credits**
| IT 4323 - Data Communications & Networks **3 Credits**
| IT 4823 - Information Security Administration & Privacy **3 Credits**
| Technical Block Remainder Courses from AAS **(30 credit hours)**
| Directed Electives - Choose 2 from the course list below. **6 credits**

Directed Electives

| IT 3503 - Foundations of Health Information Technology **3 Credits**
| IT 4123 - Electronic Commerce **3 Credits**
| IT 4153 - Advanced Database **3 Credits**
| IT 4203 - Advanced Web Development **3 Credits**
| IT 4333 - Network Configuration & Administration **3 Credits**
| IT 4683 - Management of Information Technology and Human Computer Interaction **3 Credits**
| IT 4723 - IT Policy and Law **3 Credits**
| IT 4833 - Wireless Security **3 Credits**
| IT 4843 - Ethical Hacking for Effective Defense **3 Credits**
| IT 4853 - Computer Forensics **3 Credits**

Degree Program Total: 122

All IT, CS, CSE and SWE designator courses must have a grade of 'C' or better.

Manufacturing Operations, BAS

The Bachelor of Applied Science in Manufacturing Operations has been specifically designed for students who have completed an Associate of Applied Science Degree from a Technical College System of Georgia institution.

The goal of the partnership between SPSU and the TCSG schools is to provide the opportunity for degreed graduates from the technical schools of Georgia to complete a Bachelor's degree in approximately 60 semester credits which in equivalent to about two years as a full time student.

All required major courses to complete the BAS in Manufacturing Operations program are offered totally online by SPSU faculty. All general education requirements are also offered on-line through the university system called E-core.

The BAS Manufacturing Operations program prepares students in the areas of manufacturing, logistics and operations through an industry-driven curriculum encompassing manufacturing processes, quality principles, engineering economy, work measurement and facilities layout.

Companies traditionally who hire SPSU graduates include such leaders as Shaw Industries, Delta Airlines, Georgia Power, Mohawk Industries, Lockheed Martin and UPS.

Since each TCSG program is different, the website iet.spsu.edu/BAS.html outlines the articulation of each program to SPSU.

Further information on the TCSG and SPSU program can also be found at tcsg.spsu.edu.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| Technical Block - Up to 17 Semester Hours **17 Credits**
| Major Technical Block - Up to 21 Semester Hours **21 Credits**

Major Courses

| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MGNT 4151 - Operations Management **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Technical Electives

Choose any two courses

| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| ECET 3000 - Electrical Principles **4 Credits**
| MET 1311 - Manufacturing Processes **3 Credits**
| MET 2322 - Metrology and CNC Machining **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**

Degree Program Total: 120
Supply Chain Logisitics, BAS

The Bachelor of Applied Science in Supply Chain Logistics has been specifically designed for students who have completed an Associate of Applied Science Degree from a Technical College System of Georgia institution.

The goal of the partnership between SPSU and the TCSG schools is to provide the opportunity for degreed graduates from the technical schools of Georgia to complete a Bachelor's degree in approximately 60 semester credits which in equivalent to about two years as a full time student.

All required major courses to complete the BAS in Supply Chain Logistics are offered totally online by SPSU faculty. All general education requirements are also offered on-line through the university system called E-core.

The BAS Supply Chain Logistics prepares students for careers in managing raw materials, work-in-process and finished goods inventories and how to efficiently control the movement of those inventories.

Graduates in this type program are engaged in challenging and demanding careers in responsible positions such as Logistics Manager, Demand Planning Analyst, Senior Buyer, Purchasing Agent and Supply Chain Manager.

Companies traditionally who hire SPSU graduates include such leaders as Shaw Industries, Delta Airlines, Georgia Power, Mohawk Industries, Lockheed Martin and UPS.

Since each TCSG program is different, the website iet.spsu.edu/BASSC.html outlines the articulation of each program to SPSU.

Further information on the TCSG and SPSU program can also be found at tcsg.spsu.edu.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| Technical Block - Up to 17 Semester Hours **17 Credits**
| Major Technical Block - Up to 21 Semester Hours **21 Credits**

Major Courses

| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**

| IET 3424 - Engineering Economy **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 3135 - Principles of Marketing **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Degree Program Total: 120

Bachelor of Science

Biology, B.S.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
Take any 2 of the courses below (with labs) for a total of 8 hours:
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**

Note:

PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L may be taken instead of PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

Take any 4 courses (with labs) from the list below for a total of 18 hours*. (*Includes 2 carry-over credits from Area A and Area D.) Courses used as Area D requirements may not be selected.

| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**

Note:

PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L may be taken instead of PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L

Common Biology Major Requirements

A grade of "C" or better must be earned in all courses (excluding core areas A-E and free electives).

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| BIOL 3000K - Genetics **4 Credits**

| BIOC 3111K - Biochemistry I **4 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| A Biology major must complete one program track (see below).

General Biology Track Requirements

| BIOL 3300K - Ecology **4 Credits**
| BIOL 4480 - Evolution **3 Credits**
| At least 5 additional BIOL or BIOC courses above 2199 (excluding track requirements), with **at least one course** from each of the **Cellular Form and Function group** and the **Organismal Form and Function group 17-21 Credits**
| Free Electives **9-13 Credits**

Cellular Form and Function group

| BIOL 3100K - Microbiology **4 Credits**
| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4410 - Immunology **3 Credits**
| BIOL 4470 - Plant Physiology **3 Credits**

Organismal Form and Function group

| BIOL 3700K - Ichthyology **4 Credits**
| BIOL 4100K - Entomology **4 Credits**
| BIOL 4110 - Parasitology **3 Credits**
| BIOL 4200K - Zoology **4 Credits**
| BIOL 4400K - Human Physiology **4 Credits**
| BIOL 4440K - Botany **4 Credits**
| BIOL 4460K - Human Anatomy **4 Credits**

Biochemistry & Molecular Biology Track Requirements

| BIOL 3200K - Applied Molecular Biology Laboratory **4 Credits**
| BIOL 3310K - Molecular Biology **4 Credits**
| BIOC 3112K - Biochemistry II **4 Credits**
| At Least 4 additional BIOL or BIOC courses above 2199 (excluding track requirements) **12-16 Credits**
| Free Electives 9 – **13 Credits**

Bioinformatics Track Requirements

| | BIOL 2500K - Bioinformatics I - Tools & Databases **4 Credits**
| | BIOL 3310K - Molecular Biology **4 Credits**
| | BIOL 4510K - Bioinformatics II **4 Credits**
| | CSE 1301J - Programming & Problem Solving I **4 Credits**
| | CSE 1302J - Programming & Problem Solving II **4 Credits**
| | CSE 3153 - Database Systems **3 Credits**
| | At least 3 additional BIOL or BIOC courses above 2199 (excluding track requirements) **9 – 12 Credits**
| | Free Electives **2 – 5 Credits**

Biotechnology Track Requirements

| | BIOL 3100K - Microbiology **4 Credits**
| | BIOL 3310K - Molecular Biology **4 Credits**
| | BIOL 3400K - Cell Physiology **4 Credits**
| | BIOL 4350K - Cell and Tissue Culture **4 Credits**
| | BIOL 4600K - Biotechnology **4 Credits**
| | At Least 3 additional BIOL or BIOC courses above 2199 (excluding track requirements) **9-11 Credits**
| | Free electives **6-8 Credits**

Pre-Health Professional Track Requirements

| | BIOL 3400K - Cell Physiology **4 Credits**
| | BIOL 4400K - Human Physiology **4 Credits**
| | BIOL 4460K - Human Anatomy **4 Credits**
| | At Least 4 additional BIOL or BIOC Courses Above 2199 (excluding track requirements) **12-16 Credits**
| | Free Electives **9-13 Credits**

Degree Program Total: 120

Biology, Education Track, BS

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the

middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**
| BIOL 3000K - Genetics **4 Credits**
| BIOL 3300K - Ecology **4 Credits**
| BIOL 3400K - Cell Physiology **4 Credits**
| BIOL 4200K - Zoology **4 Credits**
| BIOL 4440K - Botany **4 Credits**
| BIOL 4480 - Evolution **3 Credits**
Elective Credits **8 Credits** (Choose 2 from following)
| BIOL 3310K - Molecular Biology
| BIOL 4400K - Human Physiology
| BIOL 4460K - Human Anatomy
| BIOL 4600K - Biotechnology

Education Courses

| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 126

Chemistry, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits**
Take any 2 of the courses below (with labs):
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

Take any 4 courses (with labs) from the list below. Courses used as Area D requirements may not be selected.

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| NOTE: 1 credit each from Area A and Area D Math will be used to add to the 18 hours required in Area F.

Chemistry Major Requirements

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| CHEM 2601 - Chemical Literature **2 Credits**
| CHEM 3100K - Analytical Chemistry **5 Credits**
| CHEM 3300K - Instrumental Analysis **4 Credits**
| CHEM 4411 - Inorganic Chemistry **3 Credits**
| CHEM 4111K - Physical Chemistry I **4 Credits**
| CHEM 4112 - Physical Chemistry II **3 Credits**
| CHEM 4112L - Physical Chemistry II Lab **1 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| A Chemistry major must complete one program track (see below).
| 1 Hour from Area A Math and Area D Math will be added to the total hours in the major.

General Chemistry Track

| Four additional BIOC, CHEM, MATH, or Science electives at the 3000 level or higher. **12-16 Credits**
| Free electives **11-15 Credits**

Materials Science Track

| MSCI 3101K - Introduction to Material Science **4 Credits**
| CHEM 4412 - Main Group Inorganic Chemistry **3 Credits**
| CHEM 4415 - Solid State Chemistry **3 Credits**
| Upper-level CHEM elective **3-4 Credits**
| Free electives **13-14 Credits**

Total Hours: 120 Hours

Chemistry, Education Track, BS

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits***
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| CHEM 3100K - Analytical Chemistry **5 Credits**
| CHEM 3300K - Instrumental Analysis **4 Credits**

| CHEM 4111K - Physical Chemistry I **4 Credits**
| CHEM 4112 - Physical Chemistry II **3 Credits**
| CHEM 4112L - Physical Chemistry II Lab **1 Credits**
| CHEM 4411 - Inorganic Chemistry **3 Credits**
| BIOC 3111K - Biochemistry I **4 Credits**

Education Courses

| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 120
*NOTE

The following Physics sequences are recommentend to satisfy AREA D

PHYS 1111 /PHYS 1111L & PHYS 1112 /PHYS 1112L OR

PHYS 1211/PHYS 2211L & PHYS 2212 /PHYS 2212L

Civil Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

***Note**: 1 hour from Area A MATH 1113 will be used to satisfy Area F 18 hour requirement.

| CET 2110 - Problem Solving Methods in CET **3 Credits**
| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| ENGT 2124 - Statics with Applications **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| SURV 2221 - Surveying I **4 Credits**

Requirements

| CET 1001 - Orientation to the Civil ET, Environmental ET, and Geospatial Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CET 3410 - Soil Properties and Site Exploration **3 Credits**
| CET 3410L - Soil Properties Lab **1 Credits**
| CET 3110 - Construction Materials and Sustainability **3 Credits**
| CET 3110L - Construction Materials Lab **1 Credits**
| CET 3120 - Cost Estimating and Scheduling in CET **3 Credits**
| CET 3120L - Plan Reading and Take Offs Lab **1 Credits**
| CET 3210 - Structural Mechanics **3 Credits**
| CET 3510 - Traffic Analysis and Road Design **2 Credits**
| CET 3510L - Traffic Analysis and Road Design Lab **1 Credits**
| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CET 3130L - Fluids and Hydraulics Lab **1 Credits**
| CET 3310 - Water Treatment and Distribution **2 Credits**
| CET 3310L - Water Treatment and Distribution Lab **1 Credits**
| CET 3320 - Wastewater Collection and Treatment **2 Credits**
| CET 3320L - Wastewater Collection and Treatment Lab **1 Credits**
| CET 3220 - Applied Structural Steel Design **3 Credits**
| CET 3230 - Concrete Infrastructure Design **3 Credits**

| CET 3430L - Site Exploration and Field Testing Lab **1 Credits**
| CET 4110 - Ethics of Engineering **1 Credits**
| CET 4120 - Senior Design and Engineering Documentation **3 Credits**
| CET 4130 - Special Inspections **2 Credits**
| CET 4240L - Structural Detailing Lab **1 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4310L - Erosion Control Lab **1 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| ENGT 3124 - Strength of Materials with Applications **3 Credits**
| ENGT 3124L - Strength of Materials Lab **1 Credits**
| CET Electives **9 Credits**
| MATH 2253 (Area D Carryover) **1 Credit**

Degree Program Total: 124

CET students are required to earn a grade of "C" or better in all courses required in the major and all courses used as electives.

Civil Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**

Area D

| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| MATH 2254 - Calculus II **4 Credits**

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| SURV 2221 - Surveying I **4 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**

Requirements

| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ENVS 2202 - Environmental Science (ECORE) **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3324 - Project Cost Analysis **4 Credits**
| ENGR 3305 - Data Collection and Analysis in Engineering **3 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| CE 3201 - Structural Analysis **3 Credits**
| CE 3202 - Design of Concrete Structures **3 Credits**
| CE 3501 - Materials for Civil & Construction Engineering **3 Credits**
| CE 3502 - Materials for Civil & Construction Engineering Lab **1 Credits**
| CE 3701 - Geotechnical Engineering **3 Credits**
| CE 3708 - Geotechnical Engineering Lab **1 Credits**
| CE 3702 - Environmental Engineering **3 Credits**
| CE 3703 - Environmental Engineering II **3 Credits**
| CE 3704 - Environmental Engineering Lab I **1 Credits**
| CE 4103 - Design of Steel Structures **3 Credits**
| CE 4105 - Foundation Design **3 Credits**
| CE 4177 - Transportation Engineering **3 Credits**
| CE 4179 - Transportation Engineering Lab **1 Credits**
| CE 4178 - Highway Design and Construction **3 Credits**
| CE 4703 - Engineering Hydrology **3 Credits**
| CE 4800 - Senior Project **3 Credits**
| SURV 4470 - Land Development Design **4 Credits**
| CE XXXX Technical Electives **6 Credits**

Degree Program Total: 130

The Civil Engineering degree requires a grade of "C" or better in all CE, SURV, and ENGR courses applied to degree requirements.

CE Technical Electives: (6 hrs)

| CE 4704 - Engineering Hydraulic Analysis and Design **3 Credits**
| CE 4705 - Advanced Soil Mechanics **3 Credits**
| CE 4706 - Pavement Engineering **3 Credits**
| CE 4707 - Design of Wood Structures **3 Credits**
| CE 4708 - Hazardous Waste Engineering **3 Credits**
| CE 4709 - Advanced Structural Analysis **3 Credits**

Computer Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C Group 1 - Literature of the World **3 Credits**
| Area C Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits** *
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits** *
| PHYS 2212 - Principles of Physics II **3 Credits** *
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits** *

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**

| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| ECET 1101 - Circuits I **4 Credits**
| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2335 - Numerical Methods I **3 Credits**
Note that the carryover credits from Area A Math and Area D Math will be added to Area F to total 18 hours.

Major Courses

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits ****
| ECET 1001 - Orientation **1 Credits**
| ECET 1012 - Design Fundamentals **2 Credits**
| ECET 1200 - Digital I **4 Credits**
| ECET 2111 - Circuits II **4 Credits**
| ECET 2210 - Digital II **4 Credits**
| ECET 2300 - Electronics I **4 Credits**
| ECET 2310 - Electronics II **4 Credits**
| ECET 3220 - Digital III **4 Credits**
| ECET 3400 - Data Communications **4 Credits**
| ECET 3410 - High Frequency Systems **4 Credits**
| ECET 3600 - Test Engineering **4 Credits**
| ECET 3701 - Embedded PCs **4 Credits**
| ECET 3710 - Hardware Programming and Interfacing **4 Credits**
| ECET 3810 - Applications of C++, JAVA and HTML **3 Credits**
| ECET 4610 - Control Systems **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| CpET Electives **11**

Degree Program Total: 129

Note:

* PHYS 1111/PHYS 1111L and PHYS 1112 /PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L .

** SPSU 1001 does not count towards the 128 total credit hours required for the degree program.

CpET majors are required to earn a "C" or better in their ECET courses, except one "D" in a 3000 or 4000 level non-prerequisite course may be used for graduation purposes. A grade of "C" or better is required in the project-based capstone course.

CpET Electives

Embedded Systems (take 2 of the following courses)

Graduate will specialize in the design and implementation of smart devices used in products ranging from audio to medical to security systems. Both hardware design and programming at the system level will be stressed. The specialist will gain resume skills such as DSP and VHDL design, embedded micro-controller and embedded PC interfacing and programming.

| ECET 3640 - Introduction to Systems Engineering and Robotics **4 Credits**
| ECET 4630 - Digital Signal Processing **4 Credits**
| ECET 4720 - Distributed Microcontrollers and PCs **4 Credits**
| ECET 4730 - VHDL and Field Programmable Gate Arrays **4 Credits**

Networks (take 2 of the following courses)

Graduate will specialize in the development and implementation of networks of computers and micro-controllers. Applications include Telemedicine, factory automation systems, point-of-sales systems, and robotics. There will be heavy emphasis of high-level programming using C, Visual C++, JAVA, Visual BASIC, HTML, Windows, LINUX, TCP/IP, etc. Hardware will emphasize PCs and embedded PCs, smart devices, LAN technologies, and remote sensing and control.

| ECET 4710 - Network Programming and Interfacing **4 Credits**
| ECET 4720 - Distributed Microcontrollers and PCs **4 Credits**
| ECET 48XX - BS Telecom 3000-4000 course
| ECET 48XX - BS Telecom 3000-4000 course
Note: *ECET 4830 cannot be used as an elective.*

Computer Game Design and Development, BS

Students must earn a C or better in all the major courses (CSE, CS, SWE, and CGDD).

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2254 - Calculus II
| Take any 2 of the courses below (with labs):

| ASTR 1000K - Introduction to the Universe **4 credits**
| ASTR 1010K - Introduction to the Universe II **4 credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107K - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108K - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211K - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II **3 Credits**
| CHEM 1212K - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112K - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 credits**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

AREA F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits**
| CGDD 2002 - Fundamentals of Game Design **2 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
One credit from MATH 2253 & MATH 2254 will be added to Area F to complete the 18 hour requirement.

Requirements

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| CS 3424 - Data Structures **4 Credits**
| CS 4413 - Algorithm Analysis **3 Credits**
| CS 4363 - Computer Graphics and Multimedia **3 Credits**
| CS 4523 - Artificial Intelligence **3 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| SWE 3643 - Software Testing and Quality Assurance **3 Credits**
| SWE 4324 - User-Centered Design **4 Credits**

Advanced Topics:

| CGDD 3103 - Application Extension and Scripting **3 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**
| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| CGDD 4303 - Educational and Serious Game Design **3 Credits**
| CGDD 4803 - Studio **3 Credits**
| CGDD 4814 - Capstone **4 Credits**
| Free Electives **6 Credits**
| Concentration (listed below): **9-10 Credits**

Note:

Students are strongly recommended to take at least one Physics course for their Area D because some later courses in this program (in particular the CGDD 4113 and CGDD 4603) may rely upon Physics. Students who are interested in the Simulation-Informatics concentration (see below) may find Biology or Chemistry beneficial instead of Physics.

Students taking the Educational-Serious or Planning Management concentration should consult with their advisor to ensure they have the required prerequisite courses needed (using free elective) since some of these concentration courses require specific electives that must be taken prior to the concentration courses.

BS CGDD Upper-level Concentration

While the required courses in the degree ensure students are exposed to the breadth of the field of computer game design and development, it is also imperative that students are given flexibility to customize their experience and apply the knowledge gained in their required courses. To this end, the degree requires students select a concentration in which they may gain a depth of knowledge within their chosen area.

The following are suggested concentrations, but students may select a customized plan of study and set of courses under with their advisor's approval.

Media-Production

| MATH 3312 - Linear Algebra **4 Credits**
| CGDD 4113 - 3D Modeling and Animation **3 Credits**
| CGDD 4603 - Production Pipeline and Asset Management **3 Credits**

Distributed-Mobile

| SWE 3683 - Embedded Systems Analysis & Design **3 Credits**
| CS 4253 - Distributed Computing **3 Credits**
| CS 4263 - Computer Networks **3 Credits**

Educational-Serious

| 6 hours of approved TCOM courses

| CGDD 4313 - Designing Online Learning Content and Environments **3 Credits**

Planning-Management (pick 3 of 4)

| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 4185 - Technology Management **3 Credits**
| SWE 3623 - Software Systems Requirements **3 Credits**
| SWE 4663 - Software Project Management **3 Credits**

Simulation-Informatics

| CSE 3153 - Database Systems **3 Credits**
| CS 4253 - Distributed Computing **3 Credits**
| CGDD 4703 - Data Modeling and Simulation **3 Credits**

BS CGDD Program Objectives

Meet the educational needs of students and prepare them for careers within the discipline

Expand the visibility of SPSU and the University System of Georgia (USG) in the field of game design and development

Create a strong community of students and alumni

Serve the community and industry

BS CGDD Learning Outcomes

Upon graduation, students will be able to:

| Decompose and solve complex problems through artifacts of computing such as hardware, software specifications, code and other written documents
| Demonstrate an understanding of computing principles in the areas of programming, data structures, architecture, systems, graphics, and artificial intelligence and how they relate to computer game design and development
| Utilize mathematics and science in game design and development
| Apply principles of game design and development to generate a portfolio showcasing their successful industrial experience, research, and/or creative works
| Demonstrate a breadth of knowledge in historic and emerging domains and genres of computer gaming and interaction
| Demonstrate an understanding of social, professional global, and ethical issues related to computing
| Work effectively in teams on system development projects
| Demonstrate effective oral and written communication skills

Degree Program Total: 121

Computer Science, BS

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| STS 2400 - Science, Technology, and Society **2 Credits**
| COMM 2400 - Public Speaking **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2253 - Calculus I **4 Credits**
Take any two courses (plus labs) from the following for a total of 8 hours:
| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

AREA F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**

| CSE 1302C - Programming & Problem Solving II **4 Credits**
OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| 1 hour each from Areas A & D **(2 credit hours)**
| Free Elective **(1 credit hour)**

Required Courses

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
OR
| MATH 1401 - Intro to Statistics **3 Credits**
| CSE 3153 - Database Systems **3 Credits**
| CS 3123 - Programming Language Concepts **3 Credits**
| CS 3224 - Computer Organization & Architecture **4 Credits**
| CS 3243 - Operating Systems **3 Credits**
| CS 3424 - Data Structures **4 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| CS 4253 - Distributed Computing **3 Credits**
| CS 4413 - Algorithm Analysis **3 Credits**
| CS 4893 - Computer Science Capstone **3 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| SWE 3613 - Software System Engineering **3 Credits**
| Approved Math Elective (MATH 2255, 2306, 2335, 3000 level or 4000 level) **3 Credits**
| Upper Level CS Electives (See approved list below) **9 Credits**
| Free Electives (Except MATH 1111) **5 Credits**

Approved Courses for CS Upper Level Electives

| IT 4153 - Advanced Database **3 Credits**
| IT 4203 - Advanced Web Development **3 Credits**
| IT 4823 - Information Security Administration & Privacy **3 Credits**
| IT 4833 - Wireless Security **3 Credits**
| IT 4843 - Ethical Hacking for Effective Defense **3 Credits**
| IT 4853 - Computer Forensics **3 Credits**
| SWE 3623 - Software Systems Requirements **3 Credits**
| SWE 3633 - Software Architecture & Design **3 Credits**
| SWE 3643 - Software Testing and Quality Assurance **3 Credits**
| SWE 3683 - Embedded Systems Analysis & Design **3 Credits**
| SWE 3843 - Embedded Systems Construction and Testing **3 Credits**
| SWE 4324 - User-Centered Design **4 Credits**
| SWE 4633 - Component-Based Software Development **3 Credits**
| SWE 4743 - Object-Oriented Development **3 Credits**
| SWE 4783 - User Interaction Engineering **3 Credits**

| CGDD 3103 - Application Extension and Scripting **3 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**
| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| CGDD 4313 - Designing Online Learning Content and Environments **3 Credits**
| CGDD 4703 - Data Modeling and Simulation **3 Credits**

Degree Program Total: 122

Construction Engineering, BS

Requirements

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2335 - Numerical Methods I **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**
| Area E1 - Course in History: American Perspective **3 Credits**
| Area E2 - World History **3 Credits**
| Area E3 - Course in Behavioral Science **3 Credits**
| Area E4 - Cultures and Societies **3 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3305 - Data Collection and Analysis in Engineering **3 Credits**
| ENGR 3324 - Project Cost Analysis **4 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CE 3201 - Structural Analysis **3 Credits**
| CE 3501 - Materials for Civil & Construction Engineering **3 Credits**

| CE 3502 - Materials for Civil & Construction Engineering Lab **1 Credits**
| CE 3701 - Geotechnical Engineering **3 Credits**
| CE 3702 - Environmental Engineering **3 Credits**
| CE 4177 - Transportation Engineering **3 Credits**
| CE 4178 - Highway Design and Construction **3 Credits**
| CE 4703 - Engineering Hydrology **3 Credits**
| CE 4800 - Senior Project **3 Credits**
| CM 3160 - Construction Equipment **3 Credits**
| CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
| CM 4510 - Construction Scheduling **3 Credits**
| CM 4560 - Construction Project Management **3 Credits**
| SURV 2221 - Surveying I **4 Credits**
| CE 4202 - Steel and Concrete Design **4 Credits**
| CM 4710 - Construction Safety **4 Credits**
| CM 4760 - Construction and Real Estate Property Law **3 Credits**

Degree Program Total: 130

The Construction Engineering degree requires a grade of "C" or better in all CE, SURV, ENGR and CM courses applied to degree requirements.

Construction Management, BS

Area A:

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B:

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C:

| Group 1 - Take One Course from the Literature Group **3 Credits**
| Group 2 - Take One Course from the Art and Culture Group **3 Credits**

Area D: Laboratory Sciences

| Group 1 - Any Two Lab Sciences (PHYS 1111, PHYS 1111L required and CHEM 1211, CHEM 1211L recommended) *See Note 2 for PHYS 1111, PHYS 1111L **8 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits** recommended for Area D– **See Note 2**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| Group 2 - MATH 2240 - Survey of Calculus **3 Credits**

Area E: Social Sciences

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits** recommended for Area E– **See Note 1**
| Group 4 - Cultures and Societies **3 Credits**

Area F:

| MGNT 3145 - Legal Environment of Business **3 Credits**
| CET 2200 - Introduction to Structures **4 Credits**
| SURV 2200 - Construction Measurements **4 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MGNT 3205 - Management Information Systems **3 Credits**

Major-CM Courses

| ECON 1101 - Introduction to Economics **3 Credits** (if needed)
| PHYS 1111 - Introductory Physics I **3 Credits** (If Needed)
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits** (If Needed)
| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| CM 1000 - Orientation to Construction and Development **2 Credits**
| CM 2000 - Construction Graphics **3 Credits**
| CM 3000 - Computer Applications in Construction **3 Credits**
| CM 3040 - Building Information Modeling Applications I **3 Credits**
| CM 3110 - Residential and Light Construction Methods **3 Credits**
| CM 3180 - Mechanical and Electrical Building Systems **4 Credits**
| CM 3410 - Construction Quantity Surveying **3 Credits**
| CM 3500 - Building Codes **2 Credits**
| CM 4510 - Construction Scheduling **3 Credits**
| CM 4710 - Construction Safety **4 Credits**
| CM 4760 - Construction and Real Estate Property Law **3 Credits**
| CM 4900 - Capstone Project **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| Concentration required (see choices below) **21-22 Credits**

General Concentration

- CM 3210 - Applied Structures **4 Credits**
- CM 3260 - Temporary Structures **3 Credits**
- CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
- CM 3620 - Construction Finance and Feasibility **4 Credits**
- CM 4560 - Construction Project Management **3 Credits**
- CM 4800 - Construction Management Technique **3 Credits**

Land Development Concentration

- CM 3310 - Introduction to Development **3 Credits**
- CM 3430 - Construction Estimating for Development **3 Credits**
- CM 3620 - Construction Finance and Feasibility **4 Credits**
- CM 3710 - Site Planning **4 Credits**
- CM 4570 - Development Process I **4 Credits**
- CM 4620 - Development Process II **3 Credits**

Specialty Concentration

- CM 3280 - Building Mechanical and Electrical Codes and Loads **4 Credits**
- CM 3480 - Mechanical and Electrical Systems Estimating **4 Credits**
- CM 4560 - Construction Project Management **3 Credits**
- CM 3190 - Sustainable Construction **3 Credits**
- CM 4480 - Design/Build MEP Systems **4 Credits**

Facilities Management

- CM 3190 - Sustainable Construction **3 Credits**
- CM 3290 - Facilities Management **4 Credits**
- CM 3620 - Construction Finance and Feasibility **4 Credits**
- CM 4190 - Sustainable Operation & Maintenance **4 Credits**
- CM 4560 - Construction Project Management **3 Credits**
- CM 4620 - Development Process II **3 Credits**

Heavy Construction Management Concentration

| CM 3160 - Construction Equipment **3 Credits**
| CM 3170 - Heavy Construction Practices **4 Credits**
| CM 3230 - Heavy Materials & Temporary Structures **4 Credits**
| CM 3440 - Heavy Estimating **4 Credits**
| CM 4230 - Soils & Earthmoving **4 Credits**
| CM 4560 - Construction Project Management **3 Credits**

Degree Program Total: 128

Note:

Note 1: *If ECON 1101 was taken to satisfy Area E, Group 3, a 3-hour Construction Elective can be substituted.*

Note 2: *If PHYS 1111 , PHYS 1111L were taken to satisfy Area D, Lab Science, a 4-hour Construction Elective can be substituted.*

Electrical Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C Group 1 - Literature of the World **3 Credits**
| Area C Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits** *
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits** *
| PHYS 2212 - Principles of Physics II **3 Credits** *
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits** *

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
  or
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits** and
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
  or
| BIOL 2107 - Principles of Biology I **3 Credits** and
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**

Major Courses

| ECET 1001 - Orientation **1 Credits**
| ECET 1012 - Design Fundamentals **2 Credits**
| ECET 1101 - Circuits I **4 Credits**
| ECET 1200 - Digital I **4 Credits**
| ECET 2111 - Circuits II **4 Credits**
| ECET 2210 - Digital II **4 Credits**
| ECET 2300 - Electronics I **4 Credits**
| ECET 2310 - Electronics II **4 Credits**
| ECET 3220 - Digital III **4 Credits**
| ECET 3400 - Data Communications **4 Credits**
| ECET 3410 - High Frequency Systems **4 Credits**
| ECET 3500 - Survey of Electric Machines **4 Credits**
| ECET 3600 - Test Engineering **4 Credits**
| ECET 3620 - Signals and Systems Analysis **4 Credits**
| ECET 4610 - Control Systems **4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits** **
| EET Electives **13 Credits**

Degree Program Total: 128

Note:

* *PHYS 1111, PHYS 1111L and PHYS 1112/PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L*

** *SPSU 1001 does not count towards the 128 total credit hours required for the degree program.*

EET majors are required to earn a "C" or better in their ECET courses, except one "D" in a 3000 or 4000 level non-prerequisite course may be used for graduation purposes. A grade of "C" or better is required in the project-based capstone course.

EET Electives

Students may wish to focus their EET electives in a particular area of Electrical Engineering Technology. Suggested choices in the areas of biomedical, communications, digital, power, and telecommunications are listed below:

Biomedical

- | ECET 3020 - Biomedical Instrumentation **4 Credits**
- | ECET 3030 - Biomechanics **4 Credits**
- | ECET 4010 - Virtual Biomedical Instrumentation **4 Credits**
- | ECET 4020 - Biomedical Imaging **4 Credits**
- | ECET 4030 - Bioinformatics and Telemedicine **4 Credits**
- | ECET 4040 - Biometrics **4 Credits**
- | ECET 4050 - BMET Capstone **4 Credits**

Communications

- | ECET 4320 - Active Filters **4 Credits**
- | ECET 4330 - Audio Technology **4 Credits**
- | ECET 4420 - Communications Circuit Applications **4 Credits**
- | ECET 4431 - Wireless Communications Systems **4 Credits**
- | ECET 4432 - Fiber-optic Communications Systems **4 Credits**
- | ECET 4450 - RF Electronics **4 Credits**
- | ECET 4820 - Communications Networks and the Internet **4 Credits**

Digital

- | ECET 3640 - Introduction to Systems Engineering and Robotics **4 Credits**
- | ECET 3701 - Embedded PCs **4 Credits**
- | ECET 4630 - Digital Signal Processing **4 Credits**
- | ECET 4710 - Network Programming and Interfacing **4 Credits**
- | ECET 4720 - Distributed Microcontrollers and PCs **4 Credits**
- | ECET 4730 - VHDL and Field Programmable Gate Arrays **4 Credits**
- | ECET 4820 - Communications Networks and the Internet **4 Credits**

Power

| ECET 4510 - Power System Analysis **4 Credits**
| ECET 4520 - Industrial Distribution Systems, Illumination, and the NEC **4 Credits**
| ECET 4530 - Industrial Motor Control **4 Credits**
| ECET 4540 - Introduction to Power Electronics **4 Credits**
| ECET 4560 - Electric Drives **4 Credits**

Telecommunications

| ECET 3810 - Applications of C++, JAVA and HTML **3 Credits**
| ECET 4820 - Communications Networks and the Internet **4 Credits**
| ECET 4840 - Advanced Telecommunications **4 Credits**
| ECET 4850 - Telecommunications Project **4 Credits**
| ECET 4860 - Network Security **4 Credits**

Electrical Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**

Area D

| MATH 2254 - Calculus II **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| One hour from Area A Math
| One hour from Area D Math

Requirements

| EE 1000 - Foundations of Electrical Engineering **2 Credits**
| CSE 1301E - C++ Programming for Engineers **4 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| EE 2302 - Circuit Analysis II **3 Credits**
| EE 2401 - Semiconductor Devices **3 Credits**
| EE 2501 - Digital Logic Design **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| EE 3501 - Embedded Systems **4 Credits**
| EE 3605 - Electromagnetics **3 Credits**
| EE 3701 - Signals and Systems **3 Credits**
| ENGR 4402 - Engineering Ethics **1 Credits**
| EE 3401 - Engineering Electronics **4 Credits**
| EE 3702 - Communication Systems **3 Credits**
| EE 3601 - Electric Machines **4 Credits**
| EE 4201 - Control Systems **4 Credits**
| EE 4701 - Professional Practice **3 Credits**
| EE 3/4XXX - Technical Electives **9 Credits**
| EE 3/4XXX - Engineering Science Elective **3 Credits**
| EE 4800 - Senior Project **4 Credits**
| Math Elective - Math above 2335 **3 Credits**

Degree Program Total: 129

The Electrical Engineering degree requires a grade of "C" or better in all EE and ENGR courses applied to degree requirements.

Environmental Engineering Technology, BS

Requirements

Area A:

- | ENGL 1101 - English Composition I **3 Credits**
- | ENGL 1102 - English Composition II **3 Credits**
- | MATH 1113 - Pre-calculus **4 Credits**

Area B:

- | COMM 2400 - Public Speaking **2 Credits**
- | STS 2400 - Science, Technology, and Society **2 Credits**

Area C:

- | Group 1 - Literature of the World **3 Credits**
- | Group 2 - Art and Culture of the World **3 Credits**

Area D

- | CHEM 1211 - Principles of Chemistry I **3 Credits**
- | CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
- | CHEM 1212 - Principles of Chemistry II **3 Credits**
- | CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
- | MATH 2253 - Calculus I **4 Credits**

Area E:

- | Group 1 - American Context **3 Credits**
- | Group 2 - World History **3 Credits**
- | Group 3 - Behavioral Science **3 Credits**
- | Group 4 - Cultures and Societies **3 Credits**

Area F:

Core related to major.

| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| CET 2110 - Problem Solving Methods in CET **3 Credits**
| SURV 2110 - Introduction to Mapping **4 Credits**

Additional Requirements

| CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CET 2200 - Introduction to Structures **4 Credits**
| CET 3110 - Construction Materials and Sustainability **3 Credits**
| CET 3110L - Construction Materials Lab **1 Credits**
| CET 3120 - Cost Estimating and Scheduling in CET **3 Credits**
| CET 3120L - Plan Reading and Take Offs Lab **1 Credits**
| CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| CET 3130L - Fluids and Hydraulics Lab **1 Credits**
| CET 3310 - Water Treatment and Distribution **2 Credits**
| CET 3310L - Water Treatment and Distribution Lab **1 Credits**
| CET 3320 - Wastewater Collection and Treatment **2 Credits**
| CET 3320L - Wastewater Collection and Treatment Lab **1 Credits**
| CET 3410 - Soil Properties and Site Exploration **3 Credits**
| CET 3410L - Soil Properties Lab **1 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4310L - Erosion Control Lab **1 Credits**
| CET 4320 - Unit Operations in Environmental Engineering **4 Credits**
| CET 4330 - Solid Waste Management **3 Credits**
| CET 4110 - Ethics of Engineering **1 Credits**
| CET 4120 - Senior Design and Engineering Documentation **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| MATH MAJOR COURSES: Excess from AREA A AND D **2 Credits**
| CM 4710 - Construction Safety **4 Credits**
| ENVS 3100K - Soil & Water Science **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**

Major Electives:

Take minimum of 6 hours from major electives listed below:

| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MET 3400 - Thermodynamics and Heat Transfer **3 Credits**
| SET 3240 - Hydraulic Structures **3 Credits**
| BIOL 3300K - Ecology **4 Credits**
| CHEM 3150K - Environmental Chemistry **4 Credits**
| CET 4340 - Air Pollution Control **3 Credits**

Degree Program Total: 123

EvET students are required to earn a grade of "C" or better in all courses required in the major and all courses used as electives.

Environmental Science, B.S.

Core Requirements

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| STS 2400 - Science, Technology, and Society **2 Credits**
| COMM 2400 - Public Speaking **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

Environmental Science majors MUST take the courses listed below to satisfy prerequisites for the major courses.

| MATH 2253 - Calculus I **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**

Area E

| Group 1 - American Context **3 Credits**

- | Group 2 - World History **3 Credits**
- | Group 3 - Behavioral Science **3 Credits**
- | Group 4 - Cultures and Societies **3 Credits**

Area F

- | CHEM 1211 - Principles of Chemistry I **3 Credits**
- | CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
- | CHEM 1212 - Principles of Chemistry II **3 Credits**
- | CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
- | PHYS 1111 - Introductory Physics I **3 Credits**
- | PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
- | GEOL 1101K - Introduction to Geosciences **4 Credits**
  One credit from MATH 1113 & MATH 2253 will be added to Area F to complete the 18 hour requirement.

Environmental Science Major Requirements

- | SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
- | MATH 2260 - Introduction to Probability and Statistics **3 Credits**
- | ENVS 2202K - Introduction to Environmental Science **4 Credits**
- | BIOL 3000K - Genetics **4 Credits**
- | BIOL 3300K - Ecology **4 Credits**
- | BIOL 4200K - Zoology OR BIOL 4440K - Botany **4 Credits**
- | CHEM 2511K - Organic Chemistry I **4 Credits**
- | CHEM 2512K - Organic Chemistry II **4 Credits**
- | CHEM 3150K - Environmental Chemistry **4 Credits**
- | POLS 3401 - Environmental Law and Policy **3 Credits**
- | ENVS 4300 - Environmental Ethics **3 Credits**
- | SURV 3421 - Geographic Information Systems I **4 Credits**
- | ENVS 3100K - Soil & Water Science **4 Credits**
- | ENVS 4500 - Environmental Science Internship **3 Credits**
- | Environmental Science Electives (see approved courses below) **12 Credits**

Environmental Science Electives (12 semester hours from the list below)

- | BIOL 3100K - Microbiology **4 Credits**
- | BIOL 3250K - Ecosystem Ecology **4 Credits**
- | BIOL 3500 - Biostatistics **3 Credits**
- | BIOL 3600 - Freshwater Biology **3 Credits**
- | BIOL 3700K - Ichthyology **4 Credits**
- | CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
- | CET 3310 - Water Treatment and Distribution **2 Credits**
- | CET 3320 - Wastewater Collection and Treatment **2 Credits**

| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4330 - Solid Waste Management **3 Credits**
| CHEM 3100K - Analytical Chemistry **5 Credits**
| CHEM 3200K - Atmospheric Chemistry **3 Credits**
| CHEM 3300K - Instrumental Analysis **4 Credits**
| SURV 2110 - Introduction to Mapping **4 Credits**
| ENVS 3150K - Environmental Toxicology **4 Credits**
| ENVS 3250 - Natural Resource Management **3 Credits**
| ENVS 3450 - Conservation Biology **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**

Degree Program Total: 121

Industrial Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

Area D

| Sciences - Lab Science* Note 1 **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CHEM 1211 - Principles of Chemistry I **3 Credits** * Note 2
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| IT 1113 - Programming Principles **3 Credits**
| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
    One credit from MATH 1113 & MATH 2253 will be added to Area F to complete the 18 hour requirement.

Major Courses

| IET 1000 - Orientation **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3433 - Product and Process Costing **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**
| IET 4451 - Systems Simulation **3 Credits**
| IET 4475 - Senior Project **3 Credits**
| IET 4810 - Ethics and Safety **1 Credits**
| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**
| Free Electives **6 Credits**

IET Electives (9 semester hours from the list below)

| IET 3320 - Advanced Logistics **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**
| IET 4111 - Design of Experiments **3 Credits**
| IET 4121 - Advanced Topics in Quality Assurance **3 Credits**
| IET 4478 - Senior Internship **3 Credits**

Degree Program Total: 128

Note 1 - Physics I and Physics II are preferred Area D Sciences, however, any Lab Sciences from the approved list is permissible.

Note 2 – Chemistry I is the preferred Area F Science, however, any Lab Science from the approved list is permissible.

A grade of "C" or better is required in all courses used in the major prescribed for the bachelor degree program.

Concentration in Logistics

The primary objective of the Concentration in Logistics is to provide training and education to students interested in entering the Supply Chain industry.

Required Courses

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**

| IET 3511 - Sustainability Engineering **3 Credits** or
| IET 3620 - Warehousing Systems **3 Credits**

| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Total: 21

Students who successfully complete the Concentration with a grade of "C" or better in each course will be awarded a Green Belt Certificate.

Concentration in Quality Principles

The primary objective of the Concentration in Quality Principles is to provide training and education to students interested in quality system principles, methodology, elements and standards.

Required Courses:

| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Total: 21

Students who successfully complete the Concentration with a grade of "C" or better in each course will be awarded a Green Belt Certificate.

Information Technology, BS

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

AREA C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2240 - Survey of Calculus or MATH 2253 - Calculus I **3 Credits**
| Take any 2 of the courses below (with labs):

| ASTR 1000K - Introduction to the Universe **4 credits**
| ASTR 1010K - Introduction to the Universe II **4 credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107K - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108K - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211K - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II **3 Credits**
| CHEM 1212K - Principles of Chemistry II Lab **1 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112K - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 credits**

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**

| Group 4 - Cultures and Societies **3 Credits**

Area F

| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits** OR
| IET 2227 - Introduction to Statistics **3 Credits**
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| IT 1324 - Advanced Programming Principles **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits** OR
| MATH 2345 - Discrete Mathematics **3 Credits**
| Carryover credit from Area A Math **1 Credit**

Requirements

| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| CSE 3153 - Database Systems **3 Credits**
| IT 3123 - Hardware/Software Concepts **3 Credits**
| IT 3203 - Introduction to Web Development **3 Credits**
| IT 3223 - Software Acquisition and Project Management **3 Credits**
| IT 3423 - Operating Systems Concepts & Administration **3 Credits**
| IT 3883 - Advanced Applications Development **3 Credits**
| IT 4123 - Electronic Commerce **3 Credits**
| IT 4323 - Data Communications & Networks **3 Credits**
| IT 4423 - Unix/Linux **3 Credits**
| IT 4683 - Management of Information Technology and Human Computer Interaction **3 Credits**
| IT 4723 - IT Policy and Law **3 Credits**
| IT 4823 - Information Security Administration & Privacy **3 Credits**
| IT 4983 - IT Capstone **3 Credits**
| Free Electives **7 Credits**
| Concentration or Technical Electives (see listing below) **12 Credits**

Degree Program Total: 122

Tracks

Choose one of the tracks below and complete 3 of their courses. The 4th elective can be from the same or different track.

Enterprise Systems Track

| IT 4203 - Advanced Web Development **3 Credits**
| IT 4153 - Advanced Database **3 Credits**
| IT 4333 - Network Configuration & Administration **3 Credits**
| IT 4673 - Virtual IT Systems **3 Credits**
| IT 4713 - Business Intelligence Systems **3 Credits**

| IT 4903 - Special Topics in Information Technology **3 Credits**

Information Assurance & Security Track

| IT 4833 - Wireless Security **3 Credits**
| IT 4843 - Ethical Hacking for Effective Defense **3 Credits**
| IT 4853 - Computer Forensics **3 Credits**
| IT 4903 - Special Topics in Information Technology **3 Credits**

Health Information Technology Track

| IT 3503 - Foundations of Health Information Technology **3 Credits**
| IT 4513 - Electronic Health Record Systems **3 Credits**
| IT 4523 - Clinical Processes and Workflows: Analysis and Redesign **3 Credits**
| IT 4533 - Health Information Security and Privacy **3 Credits**
| IT 4903 - Special Topics in Information Technology **3 Credits**

Mobile and Web Track

| CSE 3203 - Overview of Mobile Systems **3 Credits**
| IT 4203 - Advanced Web Development **3 Credits**
| IT 4213 - Mobile Web Development **3 Credits**
| CGDD 4203 - Mobile and Casual Game Development **3 Credits**
| IT 4903 - Special Topics in Information Technology **3 Credits**

Information Technology, BS (Online) WebBSIT

WebBSIT Curriculum

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take one course from the Literature Group **3 Credits**
| Area C Group 2 - Take one course from the Art and Culture Group **3 Credits**
| Area D - Any two lab-based science courses **8 Credits**

| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Science **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**

Area F (18 Credits)

| WBIT 1100 - Introduction to Information Technology **3 Credits**
| WBIT 1310 - Programming and Problem Solving **3 Credits**
| MATH 1401 - Intro to Statistics **3 Credits** (Available from WebBSIT participating institutions or through eCore®)
| WBIT 2000 - The Enterprise and IT **3 Credits**
| WBIT 2300 - Discrete Mathematics for IT **3 Credits**
| WBIT 2311 - Programming and Problem Solving II **3 Credits**

Required Core Courses (42 Credits)

| WBIT 3010 - Technical Communication **3 Credits**
| WBIT 3110 - Systems Analysis and Design **3 Credits**
| WBIT 3111 - Information Technology Project Management **3 Credits**
| WBIT 3200 - Database Design, Development and Deployment **3 Credits**
| WBIT 3400 - Introduction to Multimedia **3 Credits**
| WBIT 3410 - Web Applications Development **3 Credits**
| WBIT 3500 - Architecture and Operating Systems **3 Credits**
| WBIT 3510 - Data Communications and Networking **3 Credits**
| WBIT 3600 - Introduction to E-Commerce **3 Credits**
| WBIT 4020 - Professional Practices and Ethics **3 Credits**
| WBIT 4030 - Senior Project **3 Credits**
| WBIT 4112 - Systems Acquisition, Integration and Implementation **3 Credits**
| WBIT 4120 - Human-Computer Interaction **3 Credits**
| WBIT 4520 - Information Security **3 Credits**

Concentration/Electives (18 Credits)

| WBIT 4601 - Customer Relationship Management **3 Credits**
| WBIT 4602 - IT Strategy Seminar **3 Credits**
| WBIT 4610 - IT Policy and Law **3 Credits**
| Free Electives (not within the WebBSIT) - **9 Credits**

Total Required Hours: 120 Credits

International Studies, BS

By offering an International Studies degree with a required minor, SPSU seeks to produce graduates who not only understand the political and economic processes of globalization, but also possess field-specific skills and knowledge that will allow them to deal with the new demands of the global economy. Companies that will employ our graduates will be global ones, so it is necessary for their employees to understand the political, economic, cultural, as well as technical contexts in which their companies function. The International Studies degree will prepare graduates for graduate study in a number of possible fields and for employment in:

| Government
| Intelligence
| International business
| Pre-law
| Public policy
| The military
| The non-profit sector
| The transportation industry
| The travel industry

Requirements

Core Areas A through E

Area A: Essential Skills (9 credits)

Grade of C or better requied in the courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
  (or other math as specified in the SPSU core)

Area B: Institutional Options (4 credits)

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

C-1: Literature (3 credits)

Choose ONE of the following:

| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

C-2: Humanities (3 credits)

Choose ONE of the following (language course recommended):
| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**

Area D: Science and Math (11-12 credits)
D-1: Lab Science (8 credits)

You must take two semesters of lab science *and lab* (lecture = 3 credits; lab = 1 credit; K-course=4 credits, including lab).

Choose TWO science courses with lab:
| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**

| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

D-2: Math (minimum of 3 credits)

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E: Social Sciences (12 credits)

E-1: American Perspectives (3 credits)

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia History and Constitution. Students who fulfill this requirement with transfer credit from outside the USG will need to take HIST 2911 U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation.

Choose ONE of the following:
| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

E-2: Historical Perspectives (3 credits)

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

E-3: Behavioral Science Perspectives (3 credits)

Choose ONE of the following (ECON 1101 Introduction to Economics is required in Area F and may not be used here):

| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

E-4: Global Perspectives (3 credits)

Satisfies the Global Perspectives overlay. Choose ONE of the following (POLS 2401 is required in Area F and may not be used here):

| ANTH 1102 - Introduction to Anthropology **3 Credits**

| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Core Area F (18 credits):

Take ALL of the following:
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**
Or 6 credit hours of any non-English language at an equivalent level.
| COMM 2030 - Research for the Humanities & Social Sciences **3 Credits**
| ECON 1101 - Introduction to Economics **3 Credits**
| POLS 2100 - Introduction to Research Methods **3 Credits**
| POLS 2401 - Global Issues **3 Credits**

Required Courses in Major (29 credits):

Grade of C or better required. Take ALL of the following:

| IS 1000 - International Studies Orientation **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| HIST 3801 - Contemporary World History since 1945 **3 Credits**
| POLS 3001 - Comparative Politics **3 Credits**
| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**
| POLS 4301 - International Political Economy **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**
Choose ONE Regional Studies Course:
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**
To be taken in one of the last two terms before graduation (taught Spring only):
| IS 4800 - International Studies Capstone **3 Credits**

Directed International Electives (9 credits):

Grade of C or better required. Choose THREE of the following:

Take THREE of the following:
| ECON 2106 - Principles of Microeconomics **3 Credits**
| GEOG 3101 - World Regional Geography **3 Credits**
| HIST 3200 - History of Science Survey **3 Credits**

| HIST 3301 - Diplomatic and Military History since 1815 **3 Credits**
| HIST 3401 - Modern Social and Cultural History Twentieth Century **3 Credits**
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| HIST 3601 - History of the Pacific Rim **3 Credits**
| IS 3600 - Comparative Culture **3 Credits**
| IS 4600 - International Studies Internship **3 Credits**
| IS 4000 - Regional Studies - General **3 Credits**
   or any Regional Studies (IS 400X) not used to satisfy Required Courses in the Major
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3601 - Contemporary World Politics **3 Credits**
| POLS 4063 - Political Issues in Electronic Government **3 Credits**
| POLS 4101 - Political Economy of Post-Communist Transformation **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**
| RELG 1200 - World Religion **3 Credits**
| SPAN 3001 - Advanced Conversation **3 Credits**
   or any 3000- or 4000- level SPAN
| STS 4400 - Topical Studies in Science and Technology **3 Credits**
   OR any IS special topics course. Special topics courses in HIST, POLS, PSYC may be used with topic-specific departmental approval.

Minor 15-18 Hours

International Studies majors must complete at leat one of the minors offered at SPSU (in any department or program). Department policy requires that at least 9 hours in a minor not be used to meet any other reqirement *except free electives*. University policy requires that no hours used in Core Areas A-E may used toward any other requirement.

Free Electives

Additional credit hours to bring the minimum total credits to bring the total hours up to the 120 required for graduation. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Degree Program Total: 120

Mathematics, BS

Requirements

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take One Course From the Literature Group **3 Credits**
| Area C Group 2 - Take One Course From the Art and Culture Group **3 Credits**
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Science **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| CSE 1301 - Computer Science I **4 Credits**
| CSE 1302 - Computer Science II **4 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
| MATH 2253 - Calculus I **4 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 3310 - Introduction to Advanced Mathematics **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| MATH 3320 - Introductory Real Analysis I **4 Credits**
| MATH 3321 - Introductory Real Analysis II **4 Credits**
| MATH 4407 - Vector Analysis **3 Credits**
| MATH 4440 - Abstract Algebra **4 Credits**
| MATH 4451 - Capstone Mathematics Project **3 Credits**

Mathematics Electives (9 Credits)

Any mathematics course numbered 2300 or above, excluding those for which dual credit is not allowed.

Guided Electives (20 Credits)

May include additional mathematics courses or other courses chosen in consultation with an advisor. May not include mathematics courses numbered less than 2000, or courses for which dual credit is not allowed.

Degree Program Total: 121

Mathematics Second Major

A student completing the B.S. degree in a field other than Mathematics may receive a second major in Mathematics at the same time to accompany that degree by completing the following courses. Note that additional courses, which are the prerequisites to these courses, are required by implication.

Mathematics Second Major Requirements

| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**

| MATH 2345 - Discrete Mathematics **3 Credits**
| MATH 3310 - Introduction to Advanced Mathematics **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| MATH 3320 - Introductory Real Analysis I **4 Credits**
| MATH 3321 - Introductory Real Analysis II **4 Credits**
| MATH 4407 - Vector Analysis **3 Credits**
| MATH 4440 - Abstract Algebra **4 Credits**
| MATH 4451 - Capstone Mathematics Project **3 Credits**

Second Degree in Mathematics

Students who receive a degree from SPSU in a field other than Mathematics may receive a B.S. with a major in Mathematics by completing all the requirements for the Mathematics degree. The same courses may be used to fulfill requirements for both degrees, but there must be at least 30 semester hours used to fulfill the requirements for the Mathematics degree which are not used to fulfill the requirements for any other degree.

Mechanical Engineering Technology, BS

Requirements

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| ECON 2107 - Introduction to Economic Analysis **3 Credits** (Recommended for Area E-3)
| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (the extra hour is applied to area F)
| MATH 2254 - Calculus II **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2253 - Calculus I **4 Credits** (the extra hour is applied to Major Req.)
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**
| Area C Group 1 - Take One Course From the Literature Group **3 Credits**
| Area C Group 2 - Take One Course From the Art and Culture Group **3 Credits**
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| ECET 3000 - Electrical Principles **4 Credits**
| EDG 1211 - Engineering Graphics I **3 Credits**
| EDG 1212 - Engineering Graphics II **4 Credits**
| ENGT 2124 - Statics with Applications **3 Credits**

| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**

| MET 3126 - Engineering Dynamics with Applications **3 Credits**

| ENGR 3122 - Dynamics **3 Credits**
| ENGT 3124 - Strength of Materials with Applications **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**

| ENGR 3131 - Strength of Materials **3 Credits**
| MET 3101 - Fluid Mechanics Principles & Applications **4 Credits**
| MET 1000 - Mechanical Engineering Technology Orientation **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MET 1311 - Manufacturing Processes **3 Credits**
| MET 1321 - Machining and Welding **2 Credits**
| MET 2322 - Metrology and CNC Machining **3 Credits**
| MET 3132 - Engineering Materials **4 Credits**
| MET 3401 - Thermodynamics I **3 Credits**
| MET 4141 - Machine Design I **4 Credits**
| MET 4421 - Instruments and Controls **4 Credits**
| MET 3501 - Engineering Computation Using MATLab **3 Credits**

Select one of the following four courses (3 Credits)

| MET 3123 - Dynamics of Machines **3 Credits**
| MET 3331 - Tool Design **3 Credits**
| MET 3402 - Thermodynamics II **3 Credits**
| MET 4112 - Computer Aided Engineering & Analysis **3 Credits**
| MET XXXX - Major Electives (For Concentration) **12 Credits**
| Free Elective **3 Credits**

Degree Program Total: 129

Note:

Note 1. MET majors are required to earn an overall 2.0 average in all courses designated as MET and ENGR.

Note 2. PHYS 1111, PHYS 1111L and PHYS 1112, PHYS 1112L may be substituted for PHYS 2211, PHYS 2211L and PHYS 2212, PHYS 2212L .

Note 3. The Free Elective may not be MATH 1111 .

Mechanical Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**

| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World - 3 credits
| Group 2 - Art and Culture of the World - 3 credits

Area D

| MATH 2254 - Calculus II **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits** ***ECON 2107 is recommended**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| EDG 1211 - Engineering Graphics I **3 Credits**
One credit from MATH 1113 & MATH 2253 will be added to Area F to complete the 18 hour requirement.

Major Courses

| ME 1001 - Introduction to Mechanical Engineering **2 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ME 1311 - MATLAB for Engineers with Applications **3 Credits**
| Math or Science Electives **3-4 Credits**

- | EE 2301 - Circuit Analysis I **4 Credits**
- | ME 3101 - Materials Science and Engineering **3 Credits**
- | ENGR 3122 - Dynamics **3 Credits**
- | ENGR 3131 - Strength of Materials **3 Credits**
- | ENGR 3132 - Strength of Materials Lab **1 Credits**
- | ENGR 3343 - Fluid Mechanics **3 Credits**
- | ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
- | ME 4250 - Computer Aided Engineering **3 Credits**
- | ENGR 4402 - Engineering Ethics **1 Credits**
- | ME 4403 - Heat Transfer and Thermodynamics Lab **1 Credits**
- | ME 3410 - Thermodynamics **3 Credits**
- | ME 3201 - Product Realization **2 Credits**
- | ME 3440 - Heat Transfer **3 Credits**
- | ME 3501 - Dynamic Systems & Control Theory **3 Credits**
- | ENGR 3125 - Machine Dynamics & Vibrations **3 Credits**
- | ME 4141 - Machine Design I **3 Credits**
- | ME 4201 - Senior Design I **1 Credits**
- | ME 4202 - Senior Design II **3 Credits**
- | ME 4501 - Vibrations & Controls Lab **1 Credits**
- | MATH 2255 - Calculus III **4 Credits**
- | Approved Technical Electives **9 Credits**

Degree Program Total: 130

The Mechanical Engineering degree requires a grade of "C" or better in all ME and ENGR courses applied to degree requirements.

Technical Electives

Technical Electives can be any non-required 3000 and/or 4000 level courses from ME, including Special Topics (ME 3903 or ME 4903) and Undergraduate Research (ME 4801, ME 4802, and ME 4803). Additionally MTRE 3710 and SYE 3320 are allowed. Students may focus their technical electives in Aerospace Engineering (SYE 3801, SYE 3802, SYE 3803, SYE 4801, SYE 4802, SYE 4803) or Nuclear Engineering (SYE 3501, SYE 3502, SYE 4501, SYE 4502, or SYE 4503).

Some ENGR, EE, MTRE, or SYE may be approved for technical electives by the program coordinator or the department chair.

**If student does not take ECON 2107 for Core E-3, the student must take SYE 3320 - Engineering Economics and Decision Analysis as a Technical Elective.

Mechatronics Engineering, BS

Area A

- | ENGL 1101 - English Composition I **3 Credits**
- | ENGL 1102 - English Composition II **3 Credits**

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C1 - Course in English Literature **3 Credits**
| Area C2 - Course in Art and Culture **3 Credits**

Area D

| MATH 2254 - Calculus II **4 Credits** (extra hour is applied to Area F)
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

One hour from Area A Math

One hour from Area D Math

| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**

Requirements

| MTRE 1000 - Introduction to Mechatronics Engineering **1 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| CSE 1301E - C++ Programming for Engineers **4 Credits**
| Math Elective **3 Credits**

| EDG 1211 - Engineering Graphics I **3 Credits**
| MTRE 2610 - Engineering Algorithms and Visualization **3 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| EE 3401 - Engineering Electronics **4 Credits**
| EE 2501 - Digital Logic Design **4 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| MTRE 3710 - Mechatronics Engineering Fundamentals **4 Credits**
| ECON 2107 - Introduction to Economic Analysis **3 Credits** (Recommended Area E-3)
| EE 4201 - Control Systems **4 Credits**
| MTRE 4000 - Advanced Controls **3 Credits**
| MTRE 4200 - Robotics Analysis and Synthesis **4 Credits**
| MTRE 4400 - Mechatronics System Design **4 Credits**

Degree Program Total Hours: 131

The Mechatronics Engineering degree requires a grade of "C" or better in all MTRE, EE, ME and ENGR courses applied to degree requirements.

Physics, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Choose One Course from the Literature Group **3 Credits**
| Group 2- Choose One Course from the Art and Culture Group **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits**
Choose Any Two Lab Science Courses for a total of **8 Credits**
| ASTR 1000K - Introduction to the Universe **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**

| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science   **3 Credits**
| Group 4- Cultures and Societies   **3 Credits**

Area F

| PHYS 1211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| PHYS 2213 - Introduction to Thermal and Modern Physics **2 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**

Requirements

| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| PHYS 3210 - Mechanics I **4 Credits**
| PHYS 3410K - Electronics Laboratory **2 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4410K - Advanced Physics Laboratory **2 Credits**
| PHYS 4430 - Capstone Physics Project **1 Credits**
| PHYS 4250 - Quantum Theory of Two-State Systems **2 Credits**
| Directed Electives approved by the program **9 - 15 Credits**
| Upper Division Physics Electives/Concentrations **4 - 10 Credits**

Degree Program Total: 121

A Second Degree in Physics

Students who are earning B.S. degrees in other fields at Southern Polytechnic State University may also earn a second major in Physics.

SPSU students who wish to earn a second major in physics will be required to take the following 22 hours of course work:

Second Degree Requirements

| PHYS 3210 - Mechanics I **4 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3410K - **2 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4410K - Advanced Physics Laboratory **2 Credits**

Physics, Electrical Engineering Concentration, BS

Area A
| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1- American Context **3 credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies   **3 Credits**

Area F

| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| PHYS 1211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Requirements

| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4240 - Solid State Physics **3 Credits**
| EE 3301 - Circuits Analysis I **4 Credits**
| EE 2501 - Digital Logic Design **4 Credits**
| EE 2401 - Semiconductor Devices **3 Credits**
| EE 3705 - Signals and Systems **3 Credits**
| EE 3401 - Engineering Electronics **4 Credits**
| EE 4201 - Control Systems **4 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| Free Electives **4 Credits**

Degree Program Total: 121

Physics, Mechanical Engineering Concentration, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies **3 Credits**

Area F

| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Requirements

| TCOM 2010 - Technical Writing **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2255 - Calculus III **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**

| PHYS 2213 - Introduction to Thermal and Modern Physics **2 Credits**
| PHYS 3410K - Electronics Laboratory **2 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4240 - Solid State Physics **3 Credits**
| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| ENGR 2501 - Material Science **3 Credits**
| ME 3201 - Product Realization **2 Credits**
| ENGR 3125 - Machine Dynamics & Vibrations **3 Credits**
| Free Electives **2 Credits**
| ME 3501 - Dynamic Systems & Control Theory **3 Credits**
| ME 4501 - Vibrations & Controls Lab **1 Credits**

Degree Program Total: 121

Concentration in Mechanical Engineering

| EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
| ENGR 3131 - Strength of Materials **3 Credits**
| ENGR 3132 - Strength of Materials Lab **1 Credits**
| ENGR 3343 - Fluid Mechanics **3 Credits**
| ENGR 3345 - Fluid Mechanics Laboratory **1 Credits**
| ENGR 2501 - Material Science **3 Credits**
| ME 3201 - Product Realization **2 Credits**
| ENGR 3125 - Machine Dynamics & Vibrations **3 Credits**
| ME 3501 - Dynamic Systems & Control Theory **3 Credits**
| ME 4501 - Vibrations & Controls Lab **1 Credits**

Physics, Teacher Education Concentration, BS

The bachelor's degrees in mathematics or science with the Teacher Education track provides students with a strong foundation in the discipline, giving them maximum flexibility with their degrees. Adding the Teacher Education track can give students immediate job possibilities.

The Teacher Education Program at SPSU provides students with strong, mentored experiences in the schools, a thorough knowledge of the teaching strategies and research on learning science and mathematics, and a nationally renowned teacher preparation program. This program allows students to build confidence in working with a variety of students in multiple school settings, and prepares them for a successful career in teaching mathematics or science in the middle school or high school.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4- Cultures and Societies **3 Credits**

Area F

*NOTE: To complete the required 18 credit hrs, 1 credit hr from the MATH in Area A & Area D will be applied

| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**
| MATH 2254 - Calculus II **4 Credits**

| MATH 2255 - Calculus III **4 Credits**

Major Program of Study

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| PHYS 2213 - Introduction to Thermal and Modern Physics **2 Credits**
| PHYS 3210 - Mechanics I **4 Credits**
| PHYS 3220 - Electromagnetism I **3 Credits**
| PHYS 3410 - Electronics Laboratory **2 Credits**
| PHYS 3500K - Introduction to Computational Physics **3 Credits**
| PHYS 3710 - Modern Physics **4 Credits**
| PHYS 3720L - Modern Physics Laboratory **1 Credits**
| PHYS 4210 - Quantum Physics **4 Credits**
| PHYS 4230 - Thermal Physics **4 Credits**
| PHYS 4410K - Advanced Physics Laboratory **2 Credits**
| Physics Electives **4 Credits**

Education Courses

| EDUC 1101 - UTeach Step 1 **1 Credits**
| EDUC 1102 - UTeach Step 2 **1 Credits**
| EDUC 1103 - UTeach Integrated Steps 1 and 2 **2 Credits**
| EDUC 2010 - Knowing and Learning **3 Credits**
| EDUC 2020 - Classroom Interactions **3 Credits**
| EDUC 4030 - Project Based Instruction **3 Credits**
| RSCH 3610 - Research Methods **3 Credits**
| STS 3347 - Perspectives on Science and Math **3 Credits**
| EDUC 4401 - Apprentice Teaching Seminar **1 Credits**
| EDUC 4406 - Apprentice Teaching **6 Credits**

Degree Program Total: 120

Political Science, BS

There is a growing need for graduates in political science. The acquisition of methodological skills, coupled with an understanding of the political process at local, state, national and international levels, allows for employment in a variety of public and private venues where research techniques are highly prized. As well, the communication, analysis, and critical reasoning skills that our graduates obtain place them well in a competitive job market, where continual learning is essential and interpersonal and cross-cultural competencies are greatly needed.

While there are other political science programs offered in Georgia, SPSU's program will be unique in several respects:

| The SPSU program is highly quantitative in focus, offering students three additional quantitative courses in political science research methods and analysis beyond the norm required in other political science programs.

| The SPSU program offers students various inter-disciplinary course options through its Directed International

Electives module.

| The SPSU program further establishes a strong international focus by encouraging students to become proficient in a second language.

Students who complete the program have the knowledge, skills, and real-world context to be productive and flexible in a rapidly changing workplace. Graduates with a bachelor's degree in political science find positions as committee staffers, budget analysts, communications consultants, research/policy analysts, corporate public affairs advisors, foreign service officers, writers/authors/political commentators, journalists, foundation staffers, lobbyists, marketing analysts, or public opinion analysts. Additionally, SPSU's program's training in the development of research, critical thinking, and communication skills will open opportunities in for-profit/non-profit business settings, international and U.S.-based non-governmental organizations and foundations. Graduates of SPSU's BS in Political Science will be more than qualified to take advantage of the local, regional, national, and international employment opportunities offered by

metro Atlanta and the State of Georgia, as well as to pursue post-baccalaureate educational opportunities in either political science or the field of law.

Requirements

All students must take:

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Core Areas A-E

Area A: Essential Skills (9 credits)

Grade of C or better required in courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
(or other math as specified in the SPSU core)

Area B: Institutional Options (4 credits)

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

C-1: Literature (3 credits)

Choose ONE of the following:

| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

C-2: Humanities (3 credits)

Choose ONE of the following (language recommended):

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**

Area D: Science and Math (12 credits)

D-1: Lab Science (8 credits)

You must take two semesters of lab science *and lab* (lecture=3 credits; lab=1 credit; K-courses=4 credits, lab is included)

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**

| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

D-2: Math (Minimum of 3 credits)

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E: Social Sciences (12 credits)

E-1: American Perspectives (3 credits)

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia Constitution and History. Students who fulfill this requirement with transfer credit from outside the USG *may* need to take HIST 2911: U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation. Please check with your advisor.

Choose ONE of the following (POLS 1101 American Government is required in Area F and may not be used here):

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**

E-2: Historical Perspectives (3 credits)

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

E-3: Behavioral Science Perspectives (3 credits)

Choose ONE of the following (ECON 1101 Introduction to Economics is required in Area F and may not be used here):

| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

E-4: Global Perspectives (3 credits)

Satisfies Global Perspectives overlay. Choose ONE of the following (POLS 2401 is required in Area F and may not be used here):

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Core Area F (18 credits)

| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**
  or 6 credits of any non-English language at an equivalent level
| ECON 1101 - Introduction to Economics **3 Credits**
| POLS 1101 - American Government **3 Credits**
| POLS 2100 - Introduction to Research Methods **3 Credits**
| POLS 2401 - Global Issues **3 Credits**

Required Courses in Major (36 credits):

Grade of C or better required.

| POLS 3001 - Comparative Politics **3 Credits**
| POLS 2800 - Research Design **3 Credits**
| POLS 3209 - U.S. Constitutional Law **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3601 - Contemporary World Politics **3 Credits**
| POLS 3701 - Seminar in American Politics **3 Credits**
| POLS 3801 - Political Behavior **3 Credits**
| POLS 4100 - Applied Methodology **3 Credits**
| POLS 4301 - International Political Economy **3 Credits**
  Choose ONE of the following:
| GEOG 4101 - Geographic Information Systems **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
  Choose ONE Regional Studies Course:
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**
  In one of final two semesters:
| POLS 4801 - Capstone: Political Science Practicum **3 Credits**

Directed International Electives: (12 credits)

Grade of C or better required. Take any FOUR of the following courses:

| GEOG 3101 - World Regional Geography **3 Credits**
| HIST 3200 - History of Science Survey **3 Credits**
| HIST 3301 - Diplomatic and Military History since 1815 **3 Credits**
| HIST 3401 - Modern Social and Cultural History Twentieth Century **3 Credits**
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| HIST 3601 - History of the Pacific Rim **3 Credits**
| HIST 3801 - Contemporary World History since 1945 **3 Credits**
| IS 3600 - Comparative Culture **3 Credits**
| IS 4800 - International Studies Capstone **3 Credits**
| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| POLS 3501 - Intellectual Property Issues **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**
| POLS 4063 - Political Issues in Electronic Government **3 Credits**
| POLS 4101 - Political Economy of Post-Communist Transformation **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**
| SPAN 3001 - Advanced Conversation **3 Credits**
| SPAN 3002 - Grammar and Composition **3 Credits**
| SPAN 3003 - Hispanic Cultures and Civilizations **3 Credits**
| STS 4000 - International Issues in Science and Technology **3 Credits**
| STS 4400 - Topical Studies in Science and Technology **3 Credits**
  Up to 6 additional credits in Regional Studies:
| IS 4000 - Regional Studies - General **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| IS 4002 - Regional Studies/Asia:China **3 Credits**
| IS 4003 - Regional Studies/Asia:Japan **3 Credits**
| IS 4004 - Regional Studies/Middle East **3 Credits**
| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
| IS 4006 - Regional Studies/Western Europe **3 Credits**
| IS 4007 - Regional Studies/Africa **3 Credits**

Free Electives (12 credits):

Any college-level credit not used above may be applied here. *Free electives may be used toward a minor and are exempt from the 9 hour rule.*

Degree Program Total: 121

Psychology, BS

Southern Polytechnic State University's Bachelor of Science degree in Psychology provides students a program of

study in modern psychology. Specifically, the program embraces a strong international component with a multi-disciplinary curriculum that provides a balanced, career-based education in psychology with a wide range of skills and practical knowledge. The concentrations offered cover the subject matter from seventeen major subfields coupling science and practice. This broad spectrum provides a rich context so that students who complete the program have the knowledge, skills, and real-world context to be productive and flexible in a rapidly changing workplace.

Career opportunities for graduates with a B.S. in Psychology include: employment counselors, corporate counselor trainees, interviewers, personnel analysts, systems analysts, rehabilitation assistants, mental health assistants, probation officers and writers. Additionally, training in the development of research and writing skills will open opportunities in profit/non-profit business settings, public affairs, public health, sales and administrative support.

The concentrations offered are:

- Engineering Psychology (involves the science of applying an understanding of human behavior interacting with the design of systems and products that improve human performance)
- Industrial/Organizational Psychology (involves the science of applying an understanding of human behavior with improving productivity and the workplace quality)
- Clinical and Counseling Psychology (involves the science of applying an understanding of human behavior with an emphasis on mental disorders and their treatment)

Requirements

Core Areas A-E

Area A: Essential Skills (9 credits)

Grade of C or better required in the courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

- ENGL 1101 - English Composition I **3 Credits**
- ENGL 1102 - English Composition II **3 Credits**
- MATH 1111 - College Algebra **3 Credits**
  (or other math as specified in the SPSU core)

Area B: Institutional Options (4 credits)
- COMM 2400 - Public Speaking **2 Credits**
- STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

C-1: Literature (3 credits)

Choose ONE of the following:

- ENGL 2111 - Early World Literature **3 Credits**
- ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**

| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

C-2: Humanities (3 credits)

Choose ONE of the following:

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| FREN 2001 - Intermediate French I **3 Credits**
| FREN 2002 - Intermediate French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| GRMN 2001 - Intermediate German I **3 Credits**
| GRMN 2002 - Intermediate German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

Area D: Science and Math (11-12 credits)
D-1: Lab Science (8 credits)

You must take two semesters of lab science *and lab* (lecture=3 credits; lab=1 credit; K courses=4 credits, including lab). Biology recommended.

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**

| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

D-2: Math (Minimum of 3 credits)

| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E: Social Sciences (12 credits)

E-1: American Perspectives (3 credits)

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia History and Constitution. Students who fulfill this

requirement with transfer credit from outside the USG will need to take U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation.

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

E-2: Historical Perspectives (3 credits)

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

E-3: Behavioral Science Perspectives (3 credits)

Choose ONE course (sociology recommended):

| ECON 1101 - Introduction to Economics **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

E-4: Global Perspectives (3 credits)

Satisfies the Global Perspectives overlay. Choose ONE of the following:

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Core Area F (18 credits)

| COMM 2030 - Research for the Humanities & Social Sciences **3 Credits**
| PSYC 2273 - Foresic Psychology **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**
(or 3 hours of PSYC 1XXX or 2XXX elective credit if PSYC 1101 has been used in Area E-3)
| PSYC 2011 - Cognitive Psychology **3 Credits**
| PSYC 2270 - Engineering Psychology **3 Credits**
| PSYC 2271 - Clinical and Counseling Psychology **3 Credits**

Required Courses in Major (32 credits):

Grade of C or better required; take all of the following:

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| PSYC 1000 - Orientation to Psychology **2 Credits**
| PSYC 2100 - Basic Quantitative Research Methods for Psychology **3 Credits**
| PSYC 2401 - Psychology of Diversity **3 Credits**
| PSYC 3000 - Junior Seminar **3 Credits**
| PSYC 3020 - Physiological Psychology **3 Credits**
| PSYC 3031 - Experimental Psychology **4 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
| PSYC 4050 - History and Systems of Psychology **3 Credits**
| PSYC 4800 - Psychology Capstone Seminar **3 Credits**

Concentrations

Choose and complete one of the concentrations below:

Engineering Psychology (28 credits)

Required Courses (22 credits):

Grade of C or better required; take all of the following:

| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**

| IET 3322 - Work Measurement and Ergonomics **4 Credits**
The following must be taken in the order listed:

| CSE 1301J - Programming & Problem Solving I **4 Credits**
(be sure it's 1301**J**)

| IT 1324 - Advanced Programming Principles **4 Credits**
| SWE 4324 - User-Centered Design **4 Credits**
| SWE 4783 - User Interaction Engineering **3 Credits**

Free Electives (6 credits)

Credit from any college-level course may be applied here. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Industrial / Organizational Psychology (28 credits)

Required Courses (12 credits):

Grade of C or better required; take all of the following:

| MGNT 4115 - Human Resource Management **3 Credits**
| PSYC 3301 - Psychological Testing **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**

Concentration Electives (9 credits):

Grade of C or better required; choose THREE of the following:

| PSYC 3010 - Educational Psychology **3 Credits**
| PSYC 3015 - Theories of Personality **3 Credits**
| PSYC 3040 - Motivation and Emotion **Credits**
| PSYC 4130 - Psychology of Aging **3 Credits**
| PSYC 4220 - Psychoactive Drugs, Behavior, and Society **3 Credits**

Free Electives (7 credits)

Credit from any college-level course may be applied here. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Clinical and Counseling Psychology (28 credits)

Required Courses:

Grade of C or better required; take all of the following:

| PSYC 3015 - Theories of Personality **3 Credits**
| PSYC 3230 - Abnormal Psychology **3 Credits**

| PSYC 3301 - Psychological Testing **3 Credits**

Concentration Electives (9 credits):

Grade of C or better required; choose THREE from the following:

| PSYC 2273 - Foresic Psychology **3 Credits**
| PSYC 3010 - Educational Psychology **3 Credits**
| PSYC 3040 - Motivation and Emotion **Credits**
| PSYC 3305 - Developmental Psychology **3 Credits**
| PSYC 4000 - International Psychology **3 Credits**
| PSYC 4130 - Psychology of Aging **3 Credits**
| PSYC 4220 - Psychoactive Drugs, Behavior, and Society **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**

Free Electives (10 credits)

Credit from any college-level course may be applied here. *Free elective hours may be used toward an additional minor and are exempt from the 9 hours rule.*

Degree Program Total: 120

Software Engineering, BS

AREA A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits**

AREA B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World **3 Credits**
| Group 2 - Art and Culture of the World **3 Credits**

AREA D

| MATH 2254 - Calculus I **4 Credits**
| Take any 2 of the courses below (with labs):

| ASTR 1000K - Introduction to the Universe **4 credits**

| ASTR 1010K - Introduction to the Universe II **4 credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107K - Principles of Biology I Laboratory **1 Credits**
| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108K - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211K - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II **3 Credits**
| CHEM 1212K - Principles of Chemistry II Lab **1 Credits**
| GEOL 1101K - Introduction to Geosciences **4 credits**
| PHYS 2211 - Principles of Physics I **3 credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 credit**
| PHYS 2212K - Principles of Physics II **3 credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 credit**

NO CREDIT FOR PHYS 1111K or PHYS 1112K.

In lieu of PHYS 2211, 2211L, an additional lab science course may be taken to form a sequence with one of the science courses in area D.

AREA E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| ECON 2107 - Introduction to Economic Analysis **3 credits** (Note: If area E is transferred, student must take ECON 2107 in lieu of free electives.)
| Group 4 - Cultures and Societies **3 Credits**

AREA F

| CSE 1301C - Programming & Problem Solving I **4 Credits**
OR
| CSE 1301J - Programming & Problem Solving I **4 Credits**
| CSE 1302C - Programming & Problem Solving II **4 Credits**
OR
| CSE 1302J - Programming & Problem Solving II **4 Credits**
| CSE 2300 - Discrete Structures for Computing **3 Credits**
| CSE 3642 - Professional Practices and Ethics **2 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Required Courses

| TCOM 2010 - Technical Writing **3 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits** (see note below)
| Area E Group 1 - American Context **3 Credits**
| Area E Group 2 - World History **3 Credits**
| Area E Group 3 - Behavioral Sciences **3 Credits**
| Area E Group 4 - Cultures and Societies **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| CSE 1002 - Introduction to the Computing Disciplines **2 Credits**

- CSE 1301C or CSE 1301J - Programming & Problem Solving I **4 Credits**
- CSE 1302C or CSE 1302J - Programming & Problem Solving II **4 Credits**
- CSE 3153 - Database Systems **3 Credits**
- CS 3224 - Computer Organization & Architecture **4 Credits**
- CS 3424 - Data Structures **4 Credits**
- CS 3243 - Operating Systems **3 Credits**
- SWE 2313 - Introduction to Software Engineering **3 Credits**
- SWE 3623 - Software Systems Requirements **3 Credits**
- SWE 3633 - Software Architecture & Design **3 Credits**
- SWE 3643 - Software Testing and Quality Assurance **3 Credits**
- SWE 4324 - User-Centered Design **4 Credits**
- SWE 4663 - Software Project Management **3 Credits**
- SWE 4713 - SWE Application Domain **3 Credits**
- SWE 4724 - Software Engineering Project **4 Credits**
- SWE Upper Level Electives - Choose 2 courses from the approved list, at least one must be an SWE course **6 Credits**
- Free Electives - (Excludes MATH 1111, PHYS 1111, 1111L and PHYS 1112, 1112L) **5 Credits**

Free Electives

Excludes Math 1111, PHYS 111K and PHYS 1112K.

Note:

A grade of "C" or better must be earned in all CSE, CS, SWE, CGDD, and IT courses applied to degree requirement.

Upper Level Electives

Choose any 2 courses - at least one must be an SWE course.

- SWE 3683 - Embedded Systems Analysis & Design **3 Credits**
- SWE 3843 - Embedded Systems Construction and Testing **3 Credits**
- SWE 4633 - Component-Based Software Development **3 Credits**
- SWE 4743 - Object-Oriented Development **3 Credits**
- SWE 4783 - User Interaction Engineering **3 Credits**
- CS 4243 - Systems Programming **3 Credits**
- CS 4253 - Distributed Computing **3 Credits**
- CS 4263 - Computer Networks **3 Credits**
- CS 4283 - Real-Time Systems **3 Credits**
- CS 4363 - Computer Graphics and Multimedia **3 Credits**
- CS 4523 - Artificial Intelligence **3 Credits**
- CS 4533 - Digital Image Processing **3 Credits**
- CGDD 4003 - Digital Media and Interaction **3 Credits**
- CGDD 4203 - Mobile and Casual Game Development **3 Credits**
- IT 4123 - Electronic Commerce **3 Credits**
- IT 4823 - Information Security Administration & Privacy **3 Credits**
- IT 4833 - Wireless Security **3 Credits**
- IT 4843 - Ethical Hacking for Effective Defense **3 Credits**

Degree Program Total: 127

Surveying and Mapping, BS

Requirements:

| | ENGL 1101 - English Composition I **3 Credits**
| | ENGL 1102 - English Composition II **3 Credits**
| | MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to area F)
| | COMM 2400 - Public Speaking **2 Credits**
| | STS 2400 - Science, Technology, and Society **2 Credits**
| | Area C Group 1 - Take One Course From the Literature Group **3 Credits**
| | Area C Group 2 - Take One Course From the Art and Culture Group **3 Credits**
| | MATH 2253 - Calculus I **4 Credits** (extra hour is applied to area F)
| | MATH 2254 - Calculus II **4 Credits**
| | MATH 2260 - Introduction to Probability and Statistics **3 Credits**
| | Math Elective - **3 Credits**
| | Area D - Any Two Lab Sciences **8 Credits**
| | PHYS 1111 - Introductory Physics I **3 Credits**
| | PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| | Area E Group 1 - American Context **3 Credits**
| | Area E Group 2 - World History **3 Credits**
| | Area E Group 3 - Behavioral Science **3 Credits**
| | Area E Group 4 - Cultures and Societies **3 Credits**
| | PHYS 1112 - Introductory Physics II **3 Credits**
| | PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| | TCOM 2010 - Technical Writing **3 Credits**
| | IT 1113 - Programming Principles **3 Credits** or

| | CET 3130 - Applied Fluid Mechanics and Hydraulics **2 Credits**
| | CE 1000 - Orientation to Engineering and Surveying Professions **1 Credits**
| | SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| | MGNT 3105 - Management and Organizational Behavior **3 Credits**
| | EDG 2160 - Civil Graphics and Computer Aided Drafting **3 Credits**
| | CET 2200 - Introduction to Structures **4 Credits**
| | CET 3510 - Traffic Analysis and Road Design **2 Credits**
| | CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| | CET 3120 - Cost Estimating and Scheduling in CET **3 Credits**
| | SURV 2221 - Surveying I **4 Credits**
| | SURV 3222 - Surveying II **4 Credits**
| | SURV 4410 - Surveying Computations and Adjustments **4 Credits**
| | SURV 3421 - Geographic Information Systems I **4 Credits**
| | SURV 4465 - Legal Aspects of Land Surveying **4 Credits**
| | SURV 4470 - Land Development Design **4 Credits**
| | SURV 4415 - Geodetic Surveying Methods **4 Credits**
| | SURV 4475 - Land Surveying Practice **2 Credits**

| SURV Electives **4 Credits**
| Free Elective **3 Credits**

Degree Program Total: 129 hours

Note:

Surveying students are required to earn a grade of "C" or better in all courses required in the major and all courses used as electives.

PHYS 1111 and PHYS 1112 are required.

If you use PHYS 1111/PHYS 1112 in Area D then you may use 4 hours of either CET or SURV 1-2000 level courses or any Lab Science to fulfill the Area F requirement.

If you use PHYS 1111/PHYS 1112 in Area D then you may use 4 hours of either CET or SURV 3-4000 level courses or any Lab Science to fulfill the major requirement.

Systems Engineering, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 2253 - Calculus I **4 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1 - Literature of the World - **3 credits**
| Group 2 - Art and Culture of the World - **3 credits**

Area D

| MATH 2254 - Calculus II **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Area E

| Group 1 - American Context **3 Credits**
| Group 2 - World History **3 Credits**
| Group 3 - Behavioral Science **3 Credits**
| Group 4 - Cultures and Societies **3 Credits**

Area F

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CSE 1301E - C++ Programming for Engineers **4 Credits**
| CSE 1302E - Object Oriented C++ Programming for Engineers **4 Credits**
| MATH 2255 - Calculus III **4 Credits**

Systems Engineering Major

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 3312 - Linear Algebra **4 Credits**
| EE 2301 - Circuit Analysis I **4 Credits**
| ENGR 2214 - Engineering Mechanics – Statics **3 Credits**
| ENGR 3122 - Dynamics **3 Credits**
  or
| ME 3410 - Thermodynamics **3 Credits**
| SYE 2100 - Systems Analysis and Design **3 Credits**
| SYE 3320 - Engineering Economics and Decision Analysis **3 Credits**
| SYE 2600 - Applications of Probability **3 Credits**
| SYE 3100 - Systems Reliability and Maintainability **3 Credits**
| SYE 3120 - Contemporary Technological Systems: Design, Analysis, and Architecture **3 Credits**
| SYE 3200 - Human Machine Systems **3 Credits**
| SYE 3300 - Program Management **3 Credits**
| SYE 3400 - Engineering Optimization I: Deterministic Decision Models **3 Credits**
| SYE 3600 - Statistics with Applications **3 Credits**
| SYE 3700 - Manufacturing and Production Systems **3 Credits**
  or
| SYE 3710 - Logistics and Supply Chain Systems **3 Credits**
| SYE 4400 - Engineering Optimization II: Stochastic Decision Models **3 Credits**
| SYE 4500 - System Modeling and Simulation **3 Credits**
| SYE 4900 - System Design Project **3 Credits**
  or
| SYE 4803 - Aeronautics Project **3 Credits**
  Approved Technical Electives: **12 Credits**

Technical Electives

Technical Electives can be 3000 and/or 4000 level courses from SYE, SWE, MTRE, ME, CE, EE or MATH. Other courses may be approved by the department chair. Students may focus their technical electives in Aerospace

Engineering or Nuclear Engineering.

Degree Program Total: 129

The Systems Engineering degree requires a grade of 'C' or better for any course with an ENGR or SYE prefix and ENGL 1101. A 'D' or better is required for any other course.

Technical Communication, BS

With our TCOM degree, you will learn much more than just how to use words effectively—you will have opportunities to learn document design, graphics, multimedia, web design, and video production as well as science and environmental writing, proposal writing, and medical communication.

Students in other majors can minor in technical communication through a range of campus-based and online course offerings.

Many TCOM courses are taught using a combination of on-site and online sessions that students with jobs especially appreciate. We make sure we offer enough late-afternoon and evening courses so that working students can make steady progress toward their degree.

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Group 1- Literature of the World **3 Credits**
| Group 2- Art and Culture **3 Credits**

Area D

| Any Two Lab Sciences **8 Credits**
| MATH 1113 - Pre-calculus **4 Credits**
OR
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Area E

| Group 1- American Context **3 Credits**
| Group 2- World History   **3 Credits**
| Group 3- Behavioral Science **3 Credits**
| Group 4-Cultures and Societies **3 Credits**

Area F

Required Courses- 9 Credits

| TCOM 2010 - Technical Writing **3 Credits**

| TCOM 2020 - Introduction to the Professions **3 Credits**

| TCOM 2030 - Research in Technical Communication **3 Credits**
Choose Three- 9 Credits

| ARTS 2010 - Introduction to Drawing **3 Credits**

| COMM 2000 - Business Communication **3 Credits**

| COMM 2065 - Cross-Cultural Communication **3 Credits**

| COMM 2150 - Ethics and Communication **3 Credits**

| COMM 2170 - Introduction to Media Studies **3 Credits**
Any programming language (recommended CSE 1301J)

Major Requirements

Upper Level Required Courses in the Major (18 Credits)

| ENGL 3100 - Rhetoric: History, Theory, and Practice **3 Credits**

| ENGL 4110 - Writing in Collaborative Environments **3 Credits**

| TCOM 3120 - Technical Communication: Theory and Practice **3-0-3 Credits**

| TCOM 3400 - Foundations of Design for the Web **3 Credits**

| TCOM 3430 - Foundations of Graphics **3 Credits**

| TCOM 4800 - Project Portfolio **3 Credits**

Additional Courses in Major (12 Credits)

| Take any ARTS, COMM, ENGL, or TCOM Course

| No more than 6 credits may be at the 2000 level.

| Up to 6 credits outside of the Department with departmental approval.

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Major Concentrations

Choose one concentration from the following: (Information Design or Digital Media and Graphics)

Information Design (15 Credits)

| TCOM 3020 - Proposal Writing **3 Credits**

| TCOM 3030 - Instructional Design **3 Credits**

| TCOM 3045 - Fundamentals of Information Design **3 Credits**

| TCOM 3070 - User Assistance **3 Credits**

| TCOM 3145 - Social Media Integration **3 Credits**
| TCOM 3245 - Analytics and Search Engine Optimization (SEO) for Communicators **3 Credits**
| TCOM 4000 - Professional Editing **3 Credits**
| TCOM 4045 - Foundations of Multimedia **3 Credits**
| TCOM 4120 - Usability Testing **3 Credits**

Digital Media and Graphics (15 Credits)

| ARTS 2010 - Introduction to Drawing **3 Credits**
| ARTS 3000 - Visual Thinking **3 Credits**
| ARTS 3170 - Digital Photography **3 Credits**
| TCOM 3145 - Social Media Integration **3 Credits**
| TCOM 4045 - Foundations of Multimedia **3 Credits**
| TCOM 4040 - Applied Graphics **3 Credits**
| TCOM 4170 - Film and Video Production **3 Credits**
| TCOM 4175 - Animation Design, 2D **3 Credits**
| TCOM 4400 - Advanced Design for the Web **3 Credits**

Degree Program Total: 121

For additional information about the B.S. program, contact the Digital Writing and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu. You can also visit our website at etcma.spsu.edu.

Telecommunications Engineering Technology, BS

Area A

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1113 - Pre-calculus **4 Credits** (extra hour is applied to Area F)

Area B

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C

| Area C Group 1 - Literature of the World **3 Credits**
| Area C Group 2 - Art and Culture of the World **3 Credits**

Area D

| MATH 2253 - Calculus I **4 Credits** (extra hour is applied to Area F)

| PHYS 2211 - Principles of Physics I **3 Credits** *
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits** *
| PHYS 2212 - Principles of Physics II **3 Credits** *
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits** *

Area E

| Area E Group 1 American Context **3 Credits**
| Area E Group 2 World History **3 Credits**
| Area E Group 3 Behavioral Science **3 Credits**
| Area E Group 4 Cultures and Societies **3 Credits**

Area F

| ECET 1101 - Circuits I **4 Credits**
| EDG 1210 - Survey of Engineering Graphics **2 Credits**
| TCOM 2010 - Technical Writing **3 Credits**
| MATH 2254 - Calculus II **4 Credits**
| MATH 2260 - Introduction to Probability and Statistics **3 Credits**

Major Courses

| ECET 1001 - Orientation **1 Credits**
| ECET 1012 - Design Fundamentals **2 Credits**
| ECET 1200 - Digital I **4 Credits**
| ECET 2111 - Circuits II **4 Credits**
| ECET 2300 - Electronics I **4 Credits**
| ECET 2210 - Digital II **4 Credits**
| ECET 2310 - Electronics II **4 Credits**
| ECET 3400 - Data Communications **4 Credits**
| ECET 3410 - High Frequency Systems **4 Credits**
| ECET 3810 - Applications of C++, JAVA and HTML **3 Credits**
| ECET 4820 - Communications Networks and the Internet **4 Credits**
| ECET 4830 - Telecommunications Management **3 Credits**
| ECET 4840 - Advanced Telecommunications **4 Credits**
| ECET 4850 - Telecommunications Project **4 Credits**
| ECET 4860 - Network Security **4 Credits**
| MATH 2306 - Ordinary Differential Equations **3 Credits**
| MGNT 3105 - Management and Organizational Behavior **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits** **
| TCET Electives **6 Credits**

Degree Program Total: 128

Note:

* PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L .

** SPSU 1001 does not count towards the 128 total credit hours required for the degree program.

TCET majors are required to earn a "C" or better in their ECET courses, except one "D" in a 3000 or 4000 level non-prerequisite course may be used for graduation purposes. A grade of "C" or better is required in the project-based capstone course.

TCET Electives

Students may take any *non-required* 3000 or 4000 level ECET or MGNT course to satisfy the TCET elective requirement of 6 credit hours.

Associate of Science Transfer Degree

General Studies, A.S.

The Associate of Science General Studies Transfer Program is designed for students who wish to complete the core at SPSU and then transfer to another institution.

All students must take:

| SPSU 1001 - Hitchhiker's Guide to SPSU **1 Credits**

Area A: Essential Skills (9 credits)

Grade of C or better required in the courses used to satisfy this requirement. Freshmen must complete Area A by the time they have attempted 30 semester hours of course work.

| ENGL 1101 - English Composition I **3 Credits**
| ENGL 1102 - English Composition II **3 Credits**
| MATH 1111 - College Algebra **3 Credits**
   (or other math as specified in the University core)

Area B: Institutional Options (4 credits)

| COMM 2400 - Public Speaking **2 Credits**
| STS 2400 - Science, Technology, and Society **2 Credits**

Area C: Humanities / Fine Arts (6 credits)

Choose ONE Literature Course:

| ENGL 2111 - Early World Literature **3 Credits**
| ENGL 2112 - World Literature Mid-1600s to Present **3 Credits**
| ENGL 2120 - British Literature Early to Present **3 Credits**
| ENGL 2121 - Early British Literature **3 Credits**
| ENGL 2122 - British Literature Late 1700s to Present **3 Credits**
| ENGL 2130 - American Literature Early to Present **3 Credits**
| ENGL 2131 - Early American Literature **3 Credits**
| ENGL 2132 - American Literature Mid 1800s to Present **3 Credits**
| ENGL 2141 - Early Western Literature **3 Credits**
| ENGL 2142 - Western Literature 1600s to Present **3 Credits**
| ENGL 2300 - African-American Literature and Culture **3 Credits**

Choose ONE Arts or Language Course:

| ARTS 2001 - Art Appreciation **3 Credits**
| ARTS 2002 - Drama Appreciation **3 Credits**
| ARTS 2003 - Music Appreciation **3 Credits**
| ARTS 2004 - History of Contemporary American Music **3 Credits**
| FREN 1002 - Elementary French II **3 Credits**
| FREN 2001 - Intermediate French I **3 Credits**
| FREN 2002 - Intermediate French II **3 Credits**
| GRMN 1002 - Elementary German II **3 Credits**
| GRMN 2001 - Intermediate German I **3 Credits**
| GRMN 2002 - Intermediate German II **3 Credits**
| SPAN 1002 - Elementary Spanish II **3 Credits**
| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

Area D: Science and Math (11-12 credits)

8 hours science (two courses with labs):

You must take two semesters of lab science *and lab* (lecture=3 credits; lab=1 credit; K-courses=4 credits, lab is included)

| ASTR 1000K - Introduction to the Universe **4 Credits**
| ASTR 1010K - Introduction to the Universe II **4 Credits**
| BIOL 2107 - Principles of Biology I **3 Credits**
| BIOL 2107L - Principles of Biology I Laboratory **1 Credits**

| BIOL 2108 - Principles of Biology II **3 Credits**
| BIOL 2108L - Principles of Biology II Laboratory **1 Credits**
| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1211K - Principles of Chemistry (ECORE) **4 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 1212K - Principles of Chemistry II (ECORE) **4 Credits**
| ENVS 2200K - Geology **4 Credits**
| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| GEOL 1101K - Introduction to Geosciences **4 Credits**
| PHYS 1111 - Introductory Physics I **3 Credits**
| PHYS 1111L - Introductory Physics Laboratory I **1 Credits**
| PHYS 1112 - Introductory Physics II **3 Credits**
| PHYS 1112L - Introductory Physics Laboratory II **1 Credits**
| PHYS 1211K - Principles of Physics I (ECORE) **4 Credits**
| PHYS 2211 - Principles of Physics I **3 Credits**
| PHYS 2211L - Principles of Physics Laboratory I **1 Credits**
| PHYS 2212 - Principles of Physics II **3 Credits**
| PHYS 2212L - Principles of Physics Laboratory II **1 Credits**

Math:

| MATH 1113 - Pre-calculus **4 Credits**
(or other math as specified in the University core)

Area E: Social Sciences (12 credits)

Group 1 Amerian Perspectives- (3 credits):

Satisfies the American Perspectives overlay. Any one of these courses, taken within the University System of Georgia, also satisfies the Legislative Requirement for US and Georgia Constitution and History. Students who fulfill this requirement with transfer credit from outside the USG will need to take HIST 2911 U.S. and Georgia Constitution and History to satisfy the Legislative Requirement for graduation.

Choose ONE of the following:

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

Group 2 Historical Perspectives (3 credits):

Choose ONE of the following:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

Group 3 Behavioral Science Perspectives (3 credits):

Choose ONE of the following:

| ECON 1101 - Introduction to Economics **3 Credits**
| PSYC 1101 - Introduction to General Psychology **3 Credits**
| SOCI 1101 - Introduction to Sociology **3 Credits**

Group 4 Global Perspectives (3 credits):

Satisfies the Global Perspectives overlay.

Choose ONE of the following:

| ANTH 1102 - Introduction to Anthropology **3 Credits**
| ES 1100 - Ethnic Studies **3 Credits**
| GEOG 1101 - Introduction to Human Geography **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| RELG 1200 - World Religion **3 Credits**

Elective Courses:

| At least one additional course in humanities (Area C) **3 Credits**
| At least one additional course in social sciences (Area E) **3 Credits**
| Any humanities, social science, math, lab science or any area F course from any program. **11-12 Credits**

Total Program Hours: 60

Non-Degree

Aerospace Engineering Minor

Requirements

| SYE 3801 - Aerodynamics (Aeronautic Elective) **3 Credits**
| SYE 4803 - Aeronautics Project **3 Credits**
Choose 3 courses from the following:

| SYE 3802 - Aircraft Design and Performance (Aeronautic Elective) **3 Credits**
| SYE 3803 - Fundamentals of Avionics **3 Credits**
| SYE 4801 - Aircraft Propulsion **3 Credits**
| SYE 4802 - Helicopter Theory **3 Credits**

Minor Program Total: 15

Apparel and Textiles Minor

To be eligible for a minor in Apparel and Textile Technology, the student must complete 15 credit hours from the following courses with at least 9 hours of upper division course work.

Requirements

| ATT 1200 - Apparel Design Graphics **2 Credits**
| ATT 1300 - International Sourcing **3 Credits**
| ATT 1400 - Principles of Merchandising **3 Credits**
| ATT 2301 - Apparel Computer-Aided Technical Design I **4 Credits**
| ATT 3100 - Fashion Merchandising **3 Credits**
| ATT 3505 - Fabric Formation and Design **3 Credits**
| ATT 3600 - Apparel Analysis and Product Development **3 Credits**
| ATT 3602 - Apparel Computer-Aided Technical Design II **4 Credits**
| ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends **3 Credits**
| ATT 4444 - Quality Assurance for Textiles and Apparel **4 Credits**
| ATT 4670 - Apparel/Textile Business Practices **3 Credits**
| ATT 4750 - Advanced Design and Product Development **3 Credits**

Minor Program Total: 15

Architecture Minor

Minor in Architecture for non-architecture majors, provides a focused exposure to the varied dimensions of design, critical thinking and application while exercising restraint on time to complete. Students who change their major from Architecture to another major or discipline of their choice can get a Minor in Architecture after fulfilling it's course requirements. Students complete a major in a Program to be awarded with a Minor in Architecture. Minor in Architecture will not be substituted with Certificate in Architectural Studies. All studio and lecture courses must be passed with a minimum grade of "C". All studios should be taken in sequence.

Architecture Minor

| ARCH 1001 - Design Foundation I **4 Credits**
| ARCH 1002 - Design Foundation II **4 Credits**

| ARCH 1241 - Design Communication I **2 Credits**
| ARCH 2003 - Design Foundation III **4 Credits**
| ARCH 2004 - Design Foundation IV **4 Credits**
| ARCH 2242 - Design Communication II **2 Credits**
| ARCH 2311 - Environmental Tech I - Systems Selection and Materials **3 Credits**
| ARCH 2112 - Architecture Culture II - The Renaissance through 1850 **3 Credits**
| ARCH 2211 - Architecture Structures I - Introduction to Structures **3 Credits**

Minor Program Total: 29

Biology Minor

To be eligible for a minor in Biology, the student must complete:

| A minimum of 18 semester hours of BIOL or BIOC coursework
| 9 of the 18 hours in BIOL/BIOC must be above the 2199 level
| Students who use BIOL 2107/BIOL 2107L and/or BIOL 2108/BIOL 2108L to satisfy Core D requirements cannot use these courses to satisfy requirements of the minor

Chemistry Minor

Requirements

| CHEM 1211 - Principles of Chemistry I **3 Credits**
| CHEM 1211L - Principles of Chemistry I Lab **1 Credits**
| CHEM 1212 - Principles of Chemistry II **3 Credits**
| CHEM 1212L - Principles of Chemistry II Lab **1 Credits**
| CHEM 2511K - Organic Chemistry I **4 Credits**
| CHEM 2512K - Organic Chemistry II **4 Credits**
| 10 additional hours of upper division (3000 level or higher) Chemistry or Biochemistry courses.

Total Hours: 26

Computer Game Design and Development Minor

To be eligible for a minor in Computer Game Design and Development, the student must complete the following courses with a grade of "C" or better. Any upper level (3000+) courses that are required in the major may not be used as credit for the minor. Other upper level CGDD courses may be used as substituted. Students must have at least 9 upper level CGDD hours not required for their major (CGDD courses taken as electives for your major bachelor degree can be used to complete the minor).

Minor in Game Design and Development Program Objectives:

| Provide students with game design and development knowledge that can be applied in their major area of

study

| Provide students with fundamental game design and development skills

Minor in Game Design and Development Learning Outcomes

| Demonstrate skills fundamental to game design and development

| Demonstrate knowledge in at least two subfields of game design and development

Required Courses

| CSE 1301 -Any 1301 courses (C, J or E) Programming and Problem Solving 1 **4 Credits**
| CGDD 2002 - Fundamentals of Game Design **2 Credits**
| CGDD 4003 - Digital Media and Interaction **3 Credits**
| Three additional upper-level CGDD courses **9+ Credits**

Minor Program Total: 18+ Credits

Computer Science Minor

To be eligible for a minor in Computer Science, the student must complete the following courses with a grade of "C" or better. Students must have at least 9 upper level CS hours out of the 18 required credit hours.

Requirements:

| CSE 1301 - Any CSE 1301 (C, J or E) Programming & Problem Solving I **4 credits**
| CSE 1302 - Any CSE 1302 (C, J or E) Programming & Problem Solving II **4 Credits**
| CS 3424 - Data Structures **4 Credits**
| Two additional upper-level CS courses 6+
NOTE: CS 3424 requires MATH 2345 - Discrete Mathematics as a pre-requisite.

Total Hours: 18 Credits

Construction Management Minor

Requirements

To be eligible for a minor in Construction Management, the student must complete the following courses:

| CM 2000 - Construction Graphics **3 Credits** *
| CM 3000 - Computer Applications in Construction **3 Credits** *
| CM 3110 - Residential and Light Construction Methods **3 Credits**
| CM 3410 - Construction Quantity Surveying **3 Credits**

| CM 4510 - Construction Scheduling **3 Credits**

Total Hours: 15 Credits

NOTE: Students who have the prerequisite knowledge in these courses may substitute courses of greater or equal credit from the following list with the consent of the CM Department Chair:

| CM 3411 - Construction Estimating Software **2 Credits**
| CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
| CM 4511 - Construction Scheduling Software **2 Credits**
| CM 4560 - Construction Project Management **3 Credits**

Engineering Design Graphics Minor

Students who wish to receive a minor in Engineering Design Graphics must take:

| EDG 1212 - Engineering Graphics II **4 credits**
Select four additional courses from the following:

| EDG 3112 - Advanced Engineering Graphics **3 credits**
| EDG 4111 - Surface Modeling **3 credits**
| EDG 4222 - CAD Customization and Standards **3 credits**
| EDG 4224 - Engineering Design Graphics for Custom Manufacturing **3 credits**
| MET 3332 - Rapid Design and Manufacture **3 credits**
| MET 4112 - Computer Aided Engineering & Analysis **3 credits**
| OR
| ME 4250 - Computer Aided Engineering **3 credits**
Minor Program Total: 16

Not available to MET students with a concentration in Engineering Design Graphics.

Environmental Science Minor

Requirements

| ENVS 2202K - Introduction to Environmental Science **4 Credits**
| BIOL 3300K - Ecology **4 Credits**

Electives - Choose 7+ credits from the list below

| BIOL 3600 - Freshwater Biology **3 Credits**
| BIOL 3650 - Marine Biology **3 Credits**
| BIOL 4400K - Human Physiology **4 Credits**
| CHEM 3150K - Environmental Chemistry **4 Credits**
| ENGL 3015 - Environmental Writing **3 Credits**
| ENVS 3100K - Soil & Water Science **4 Credits**
| ENVS 3350 - Oceanography **3 Credits**

| ENVS 3000 - Environmental Science Seminar **1 Credits**
| GEOG 4101 - Geographic Information Systems **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| ENVS 4300 - Environmental Ethics **3 Credits**

Minor Program Total: 15-18 Credits

Geographical Information Systems Minor

Minor in Geographical Information Systems

Required Courses

| SURV 2110 - Introduction to Mapping **4 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| SURV 4420 - Remote Sensing **4 Credits**
| SURV 4422 - Geographic Information Systems II **4 Credits**

Total Hours: 16 Credits

History Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

World History (3 credits):

Choose ONE course not used to satisfy core Area E-2:

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**
| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

US History (6 credits):

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
   If HIST 2111 or HIST 2112 has been used to satisfy Core Area E-1, any 3-hour HIST course may be substituted.

Upper-Division History courses (9 credits):

Any **9 credits** of 3000- or 4000-level HIST courses.

Total Program Hours: 18

Industrial Engineering Technology Minor

To be eligible for a minor in Industrial Engineering Technology,

Students must complete the following three courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2305 - The Role of Industrial Engineering Technology in Industrial Systems **4 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**

And choose two courses from the following list:

| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 3424 - Engineering Economy **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**

Minor Program Total: 16-18

Note:

An overall 2.0 GPA is required in the courses for the IET Minor (excluding the international studies minor courses).

Information Technology Minor

To be eligible for a minor in Information Technology, the student must complete the following courses with a grade of "C" or better:

Information Technology Minor Requirements

    | IT 1324 - Advanced Programming Principles **4 Credits** or
        CSE 1302J - Programming & Problem Solving II **4 credits**

    | IT 3123 - Hardware/Software Concepts **3 Credits** or
    | CS 3224 - Computer Organization & Architecture **4 Credits**

    | IT 3203 - Introduction to Web Development **3 Credits** or
    | CSE 3153 - Database Systems **3 Credits**

And one of the Following:

    | IT 4123 - Electronic Commerce **3 Credits**
    | IT 4323 - Data Communications & Networks **3 Credits**
    | IT 4823 - Information Security Administration & Privacy **3 Credits**

Total Hours: 14-15 Credits

International Studies Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor *except free electives*. No courses used to satisfy Core Areas A-E may be used in a minor.

Regional Studies (3 credits):

Choose ONE of the following:

    | IS 4000 - Regional Studies - General **3 Credits**
    | IS 4001 - Regional Studies/Latin America **3 Credits**
    | IS 4002 - Regional Studies/Asia:China **3 Credits**
    | IS 4003 - Regional Studies/Asia:Japan **3 Credits**
    | IS 4004 - Regional Studies/Middle East **3 Credits**
    | IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**
    | IS 4006 - Regional Studies/Western Europe **3 Credits**
    | IS 4007 - Regional Studies/Africa **3 Credits**

Language Requirement:

Student must complete FREN 1002, GRMN 1002, or SPAN 1002 OR demonstrate proficiency in a non-English langage at an equivalent level.

Electives (12 credits):

Choose FOUR courses from the following list NOT used to satisfy core requirements in Areas A-E. No more than TWO may be numbered below 3000.

| ANTH 1102 - Introduction to Anthropology **3 Credits**

| ECON 1101 - Introduction to Economics **3 Credits**

| ECON 2106 - Principles of Microeconomics **3 Credits**

| ES 1100 - Ethnic Studies **3 Credits**

| GEOG 1101 - Introduction to Human Geography **3 Credits**

| GEOG 3101 - World Regional Geography **3 Credits**

| HIST 1111 - Survey of World Civilization pre 1500 **3 Credits**

| HIST 1112 - Survey of World Civilization post 1500 **3 Credits**

| HIST 3200 - History of Science Survey **3 Credits**

| HIST 3301 - Diplomatic and Military History since 1815 **3 Credits**

| HIST 3401 - Modern Social and Cultural History Twentieth Century **3 Credits**

| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**

| HIST 3601 - History of the Pacific Rim **3 Credits**

| HIST 3801 - Contemporary World History since 1945 **3 Credits**

| IS 3600 - Comparative Culture **3 Credits**
Any regional studies course NOT used to satisfy the Regional Studies requirement above.

| IS 4000 - Regional Studies - General **3 Credits**

| IS 4001 - Regional Studies/Latin America **3 Credits**

| IS 4002 - Regional Studies/Asia:China **3 Credits**

| IS 4003 - Regional Studies/Asia:Japan **3 Credits**

| IS 4004 - Regional Studies/Middle East **3 Credits**

| IS 4005 - Regional Studies/Russia/Eastern Europe **3 Credits**

| IS 4006 - Regional Studies/Western Europe **3 Credits**

| IS 4007 - Regional Studies/Africa **3 Credits**

| IS 4600 - International Studies Internship **3 Credits**

| IS 4800 - International Studies Capstone **3 Credits**

| MGNT 4145 - International Management **3 Credits**

| POLS 2401 - Global Issues **3 Credits**

| POLS 3001 - Comparative Politics **3 Credits**

| POLS 3009 - Foundations of Public Policy **3 Credits**

| POLS 3301 - Modern Political Theory **3 Credits**

| POLS 3601 - Contemporary World Politics **3 Credits**

| POLS 4009 - Comparative Public Policy Analysis **3 Credits**

| POLS 4063 - Political Issues in Electronic Government **3 Credits**

| POLS 4101 - Political Economy of Post-Communist Transformation **3 Credits**

| POLS 4201 - International Relations in the Americas **3 Credits**

| POLS 4301 - International Political Economy **3 Credits**

| PSYC 3101 - International Social Psychology **3 Credits**

| PSYC 4000 - International Psychology **3 Credits**

| PSYC 4600 - Conflict Resolution **3 Credits**

| RELG 1200 - World Religion **3 Credits**

| SPAN 3001 - Advanced Conversation **3 Credits**

| SPAN 3002 - Grammar and Composition **3 Credits**

| SPAN 3003 - Hispanic Cultures and Civilizations **3 Credits**

| SPAN 4001 - Professional Spanish **3 Credits**

| SPAN 4002 - Techniques in Translation for Professional Spanish **3 Credits**

| SPAN 4003 - Service Learning Project **3 Credits**

| STS 4000 - International Issues in Science and Technology **3 Credits**

| STS 4400 - Topical Studies in Science and Technology **3 Credits**

Special topics courses in HIST, POLS, PSYC may be used as electives with topic-specific departmental approval.

Total Program Hours: 15

Latin American Studies Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses:

| ES 1100 - Ethnic Studies **3 Credits**
Latino / Hispanic Ethnic Studies ONLY; may not also be used to satisfy E-4 core
| HIST 3501 - Colonization and Rebellion in the Trans-Atlantic World **3 Credits**
| POLS 4201 - International Relations in the Americas **3 Credits**
| IS 4001 - Regional Studies/Latin America **3 Credits**
| SPAN 3003 - Hispanic Cultures and Civilizations **3 Credits**

Total Program Hours: 15

Logistics Minor

Students must complete the following courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**

Students choose one from the following:

| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 3511 - Sustainability Engineering **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**

| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Minor Program Total: 15

Manufacturing Engineering Technology Minor

Students who wish to receive a minor in Manufacturing Engineering Technology must take the following two courses:

| MET 1311 - Manufacturing Processes **3 credits**
| MET 2322 - Metrology and CNC Machining **3 credits**
Select three additional courses from the following:

| EDG 4224 - Engineering Design Graphics for Custom Manufacturing **3 credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 credits**
| MET 3331 - Tool Design **3 credits**
| MET 3332 - Rapid Design and Manufacture **3 credits**
| MET 4342 - Numerical Control of Machines **3 credits**
| MGNT 4135 - Project Management **3 credits**
Minor Program Total: 15

Note: Not available to MET students with a concentration in Manufacturing

Mathematics Minor

To obtain a minor in Mathematics, the student must complete:

| MATH 2255
| An additional 14 semester hours of Mathematics courses at the 2300 level or higher
At least 9 of these additional 14 hours must be at the 3000 level or higher.

Courses used to fill other requirements at SPSU (excluding core areas A through E) may also be used to obtain a minor in Mathematics.

For example, if you take MATH 2306 to fulfill a requirement in the Management curriculum, you may also use it in a math minor. However, you may not use MATH 1113 to fulfill the math minor because it is in area A of the core curriculum.

TOTAL HOURS: 18

Nuclear Engineering Minor

Requirements

| SYE 3501 - Fundamentals of Nuclear Engineering **3 Credits**
| SYE 3502 - Radiation Detection and Measurement **3 Credits**
| SYE 4501 - Nuclear Power Generation **3 Credits**
| SYE 4502 - Radiation Protection and Health Physics **3 Credits**
| SYE 4503 - Nuclear Fuel Cycle **3 Credits**

Minor Program Total: 15

Physics Minor

To be eligible for a minor in Physics, the student must complete at least 15 hours of course work in physics with at least 10 hours in upper division physics courses.

Political Science Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses:

| POLS 1101 - American Government **3 Credits**
| POLS 2401 - Global Issues **3 Credits**
| POLS 3001 - Comparative Politics **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
Choose ONE of the following:
| POLS 3601 - Contemporary World Politics **3 Credits**
OR
| POLS 4301 - International Political Economy **3 Credits**
Choose ONE of the following:
| POLS 3701 - Seminar in American Politics **3 Credits**
OR
| POLS 3801 - Political Behavior **3 Credits**

Total Program Hours: 18

Pre-Law Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses (6 credits):

Take TWO of the following courses NOT used to satisfy Core Area E-1:

| HIST 2111 - United States History to 1877 **3 Credits**
| HIST 2112 - United States History since 1877 **3 Credits**
| POLS 1101 - American Government **3 Credits**

Elective Courses (12 credits):

Pick any FOUR of the following:

| MGNT 3145 - Legal Environment of Business **3 Credits**
| POLS 3209 - U.S. Constitutional Law **3 Credits**
| POLS 3301 - Modern Political Theory **3 Credits**
| POLS 3401 - Environmental Law and Policy **3 Credits**
| POLS 3501 - Intellectual Property Issues **3 Credits**
| POLS 3701 - Seminar in American Politics **3 Credits**

Total Program Hours: 18

Professional Writing Minor

After taking COMM 2000, Business Communication, **take only 12 more hours**, 9 of which must be at the 3000 or 4000 level, to receive a Minor in Professional Writing. Your minor credential will be designated on your SPSU transcript provided you earn a C or better in each course.

Requirements

| COMM 2000 - Business Communication **3 Credits**

Additional Courses Choose Four of the Following (12 credits)

Students majoring in Business Administration are required to take COMM 2000 as part of their existing program of study. TCOM 2010 will serve as a blanket substitution for COMM 2000 for Business Administration students interested in Professional Writing minor.

This minor is not available to students majoring in either Technical Communication or English and Professional Communication.

| COMM 3035 - Organizational Communication **3 Credits**
| COMM 3040 - Health Communication **3 Credits**
| COMM 3050 - Journalism **3 Credits**
| ENGL 3010 - Science Writing **3 Credits**
| ENGL 3015 - Environmental Writing **3 Credits**
| ENGL 3020 - Proposal Writing **3 Credits**

| ENGL 3025 - Creative Writing Workshop **3 Credits**
| ENGL 3040 - Article and Essay Workshop **3 Credits**
| ENGL 4010 - Publishing for New Media **3 Credits**
| TCOM 4000 - Professional Editing **3 Credits**

Total Hours: 15

Psychology Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor *except free electives*. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses:

| PSYC 1101 - Introduction to General Psychology **3 Credits**
(If PSYC 1101 has been used for Core Area E-3, any 2000-Level PSYC course may be substituted in the minor)
| IET 2227 - Introduction to Statistics **3 Credits**
| PSYC 2100 - Basic Quantitative Research Methods for Psychology **3 Credits**
| PSYC 3101 - International Social Psychology **3 Credits**
AND **6 Credits** in any PSYC 3000- or 4000- level courses

18 Credits

Public Policy Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

Required Courses (6 credits):

| POLS 3009 - Foundations of Public Policy **3 Credits**
| POLS 4009 - Comparative Public Policy Analysis **3 Credits**

Electives (9 credits):

Choose THREE of the following:

| POLS 3401 - Environmental Law and Policy **3 Credits**
| POLS 3701 - Seminar in American Politics **3 Credits**
| PSYC 4600 - Conflict Resolution **3 Credits**

| STS 4000 - International Issues in Science and Technology **3 Credits**

Special Topics

Special Topics in POLS, STS, or IS may also be used as electives with topic-specific approval of the department.

Total Program Hours: 15

Quality Principles Minor

Students must complete the following courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3339 - Statistical Quality Control **3 Credits**
| IET 3356 - Quality Concepts and Systems Design **3 Credits**
| IET 3407 - Six Sigma and Lean Manufacturing **3 Credits**

Students choose one from the following:

| IET 3403 - Advanced Statistics with Application **3 Credits**
| IET 3410 - Principles of Team Dynamics **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4135 - Project Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Minor Program Total: 15

Renewable Energy Engineering Technology Minor

Renewable Energy Engineering Technology Minor

Required Course

| REET 3550 - Introduction to Alternate Energy **4 Credits**

Plus four additional courses from the following:

| REET 2020 - Engery Conversion **4 Credits**

| REET 3030 - Energy Storage Systems **3 Credits**
| REET 4100 - Solar Photovoltaics **3 Credits**
| REET 4110 - Solar Thermal Systems **3 Credits**
| REET 4200 - Wind Power Generation **3 Credits**
| REET 4210 - Oceanic and Hydropower Generation **3 Credits**
| REET 4500 - Environmental Aspects of Power Generation **3 Credits**
| REET 4510 - Sustainable Transportation Systems **3 Credits**

Minor Program Total: 16-17

Note:

An overall GPA of 2.0 is required in the courses for the Renewable Energy Engineering Technology (REET) Minor.

Software Engineering Minor

To be eligible for a minor in Software Engineering, the student must complete the following courses with a grade of "C" or better. Students must have at least 9 upper level SWE hours.

Program Objectives

Students earning a minor in Software Engineering will:

| Possess broad foundations in software engineering concepts and methodologies so they may contribute to the effective design and implementation of large scale software.

Learning Outcomes

Students earning a Software Engineering minor will have demonstrated the ability to:

| Apply SWE practices and process to software design and development.
| Demonstrate the ability to gather, analyze, develop, verify and/or validate artifacts of software engineering systems.
| Use software tools effectively in some phases of software development.

Minor Requirements

| CSE 1302 - Programming & Problem Solving II **4 Credits**
| SWE 2313 - Introduction to Software Engineering **3 Credits**
| Three additional upper-level SWE courses **9 Credits**

Note:

SWE 1302 has a pre-requisite of SWE 1301 .

Total Hours: 16 hours

Spanish Minor

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

2000-Level (6 credits):

May not also be used to satisfy Core Area C-2:

| SPAN 2001 - Intermediate Spanish I **3 Credits**
| SPAN 2002 - Intermediate Spanish II **3 Credits**

3000-Level (9 credits):

Any 9 credits in 3000-level SPAN courses.

Total Program Hours: 15

Consider the Certificate in Professional Spanish as well:

Requirements for Professional Certificate

Technical Communication Minor

After taking TCOM 2010 Technical Writing, you will take **only 12 more hours,** 9 of which must be at the 3000 or 4000 level. If you earn a grade of "C" or better in each course, your minor credential will be designated on your SPSU transcript.

Requirements (6 credits)

| TCOM 2010 - Technical Writing **3 Credits**
| TCOM 2020 - Introduction to the Professions **3 Credits**
  OR
| TCOM 2030 - Research in Technical Communication **3 Credits**

Students whose major already requires TCOM 2010 should take TCOM 2020 **and** TCOM 2030 (blanket substitution will apply).

Additional Courses for Minor (9 credits)

Choose any class with the TCOM course prefix, 3000-level or higher.

This minor is not available to students majoring in either Technical Communication or English and Professional Communication.

Total Hours: 15

Certificate

Apparel Product Development Certificate

The Fashion Design and Product Development program offers a Certificate in Apparel Product Development. The objective is to provide training and education to members of the apparel industry, graduates of fashion and design schools and other interested parties seeking to improve their skills. The courses may also be applied toward completing the Bachelor of Apparel and Textiles degree. All requirements for normal admissions are applicable. Certificate students must complete five courses from the following list:

Requirements

Certificate students must complete five classes from the following list:

| ATT 1300 - International Sourcing **3 Credits**
| ATT 1400 - Principles of Merchandising **3 Credits**
| ATT 2301 - Apparel Computer-Aided Technical Design I **4 Credits**
| ATT 3100 - Fashion Merchandising **3 Credits**
| ATT 3505 - Fabric Formation and Design **3 Credits**
| ATT 3600 - Apparel Analysis and Product Development **3 Credits**
| ATT 3602 - Apparel Computer-Aided Technical Design II **4 Credits**
| ATT 3800 - Fashion Forecasting, Data Analysis & Consumer Trends **3 Credits**
| ATT 4444 - Quality Assurance for Textiles and Apparel **4 Credits**
| ATT 4670 - Apparel/Textile Business Practices **3 Credits**
| ATT 4750 - Advanced Design and Product Development **3 Credits**

Certificate Program Total: 15

Geographical Information Systems Certificate

The Geographical Information Systems (GIS) Certificate program is designed to prepare students with a practical set of GIS marketable skills who have a background in GIS applications such as surveying, real estate, marketing, geography or business background. There are five courses required in the certificate program.

Required Courses (19 Credits)

| SURV 2110 - Introduction to Mapping **4 Credits**
  OR

| SURV 2221 - Surveying I **4 Credits**
| SURV 3421 - Geographic Information Systems I **4 Credits**
| SURV 4420 - Remote Sensing **4 Credits**
| SURV 4422 - Geographic Information Systems II **4 Credits**
| SURV 4110 - Geographical Information Systems (GIS) Practice **3 Credits**

Certificate Program Total: 19

Land Development Certificate

The Certificate in Land Development provides training and education to members of the real estate and land development field in construction and land development principles and practices. Students can complete the requirements in 3-4 semesters. These courses may also be applied toward completing a B.S. degree in Construction Management upon acceptance to SPSU.

Prerequisites must be met prior to enrollment in certain certificate courses.

Required Courses:

| CM 3310 - Introduction to Development **3 Credits**
| CM 3710 - Site Planning **4 Credits**
| CM 4570 - Development Process I **4 Credits**
| CM 3110 - Residential and Light Construction Methods **3 Credits**

Subtotal: 14 Credits

*may substitute courses from electives list if competency can be demonstrated

Elective Courses:

| CM 2000 - Construction Graphics **3 Credits**
| CM 3410 - Construction Quantity Surveying **3 Credits**
| CM 3430 - Construction Estimating for Development **3 Credits**
| CM 4510 - Construction Scheduling **3 Credits**
| CM 4620 - Development Process II **3 Credits**

Subtotal: 7 Credits (minimum)

Certificate Program Total: 21 Credits (minimum)

Land Surveying Certificate

The Land Surveying Certificate program is designed to prepare surveyors with the basic education necessary to take the Fundamentals of Land Surveying Exam and exceeds the State of Georgia academic registration requirements to become a Registered Land Surveyor. There are six courses required in the certificate program.

Required Courses (21 Credits)

| SURV 2221 - Surveying I **4 Credits**
| SURV 3222 - Surveying II **4 Credits**
| SURV 4465 - Legal Aspects of Land Surveying **4 Credits**
| SURV 4475 - Land Surveying Practice **2 Credits**
| SURV 4470 - Land Development Design **4 Credits**
| CET 4310 - Stormwater Management and Erosion Control **2 Credits**
| CET 4310L - Erosion Control Lab **1 Credits**

Certificate Program Total: 21
Logistics Certificate

The primary objective of the Certificate in Logistics is to provide training and education to members of the Supply Chain industry that need to improve skills and knowledge in the latest technology available in their field. Students can complete the requirements in 4-6 semesters. The courses may also be applied toward completing a B. S. degree in Industrial Engineering Technology. The program will be offered on campus, through distance learning, and over the Internet.

Admission Requirements:

Applicants must have earned a High School degree or GED and been out of high school for at least five years or have earned 30 college credits from an accredited institution of higher learning with a minimum GPA of 2.0.

Required Courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 2449 - Logistics and Supply Chain Management **3 Credits**
| IET 3320 - Advanced Logistics **3 Credits**
| IET 3620 - Warehousing Systems **3 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4115 - Human Resource Management **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Certificate Program Total: 21

Production Design Certificate

The primary objective of the Certificate in Production Design is to provide training and education to members of the Industrial Engineering field in the measurement and analysis of work and in the design or improvement of facilities. Students can complete the requirements in 3-4 semesters. These courses may also be applied toward completing a B.S. degree in Industrial Engineering Technology upon acceptance to SPSU.

Admission Requirements:

Applicants must meet all undergraduate admission requirements.

Required Courses:

| IET 2227 - Introduction to Statistics **3 Credits**
| IET 3322 - Work Measurement and Ergonomics **4 Credits**
| ACCT 2101 - Principles of Financial Accounting **3 Credits**
| IET 4422 - Facilities Design, Plant Layout, and Materials Handling **4 Credits**
| IET 4405 - Operations Research - Concepts, Models and Methods **3 Credits**
| MGNT 4151 - Operations Management **3 Credits**

Certificate Program Total: 20

Project Management Construction Certificate

The professional Certificate in Project management is designed for working professionals who wish to further their knowledge in Construction Project Management. The certificate will also be useful for those individuals who wish to make a career change to the construction industry, or to those people who find themselves in the construction industry without first gaining a background in construction.

Prerequisites must be met prior to enrollment in certain certificate courses.

Required Courses:

| CM 2000 - Construction Graphics **3 Credits**
| CM 3000 - Computer Applications in Construction **3 Credits**

| CM 3110 - Residential and Light Construction Methods **3 Credits** OR
| CM 3160 - Construction Equipment **3 Credits**

| CM 4560 - Construction Project Management **3 Credits**
| CM 3620 - Construction Finance and Feasibility **4 Credits**

Subtotal: 11-12 Credits

Elective Courses:

| | CM 3410 - Construction Quantity Surveying **3 Credits**
| | CM 3420 - Construction Estimating and Bid Preparation **4 Credits**
| | CM 4510 - Construction Scheduling **3 Credits**
| | CM 4760 - Construction and Real Estate Property Law **3 Credits**

Subtotal: 9+ Credits

Certificate Program Total: 20+ Credits

Quality Principles Certificate

The primary objective of the Certificate in Quality Principles is to provide training and education to members of the Industrial Engineering field in quality system principles, methodology, elements and standards. Students can complete the requirements in 3–4 semesters. These courses may also be applied toward completing a B.S. degree in Industrial Engineering technology upon acceptance to SPSU.

Admission Requirements:

Applicants must meet all undergraduate admission requirements.

Required Courses:

| | IET 2227 - Introduction to Statistics **3 Credits**
| | IET 3339 - Statistical Quality Control **3 Credits**
| | IET 3356 - Quality Concepts and Systems Design **3 Credits**
| | IET 3403 - Advanced Statistics with Application **3 Credits**
| | IET 3410 - Principles of Team Dynamics **3 Credits**
| | MGNT 4135 - Project Management **3 Credits**
| | MGNT 4151 - Operations Management **3 Credits**

Certificate Program Total: 21

Spanish Professional Certificate (Undergraduate)

All courses must be completed with grade of C or better. No more than 9 hours may also be used to satisfy requirements in a major or another minor except free electives. No courses used to satisfy Core Areas A-E may be used in a minor.

All Courses Required for the Spanish Minor

Requirements for Spanish Minor

4000-Level Electives (6 credits):

Chose SIX credits from the following:

| SPAN 4001 - Professional Spanish **3 Credits**
| SPAN 4002 - Techniques in Translation for Professional Spanish **3 Credits**
| SPAN 4003 - Service Learning Project **3 Credits**

Learning Project (3 credits):

| SPAN 4003 - Service Learning Project **3 Credits**

Oral Proficiency Interview (OPI):

After all coursework is completed, student must take the American Council on the Teaching of Foreign Language OPI.

Total Program Hours: 9 credits beyond the minor

Dining Services

There are four food service facilities on campus. Stingers Restaurant is the home of the University's board plan operation. There are 3 retail operations on campus The Grill (located on the lower level of the student center), Mondo's Sub Shop (located on the first floor of the Atrium Building), and Spork (located near the Housing Office). Catering and Concession services are provided by Chartwells Food Service.

For more information go to www.dineoncampus.com/spsu/

Emergency Locator Service

Emergency assistance in locating a student is provided by the Vice President of Student and Enrollment Services Office at 678/915-3720 from 8:00 a.m. until 5:00 p.m., Monday through Friday. The University Police Department provides emergency assistance in locating students on weekends and after 5:00 p.m. on weekdays at 678/915-5555.

If the University Police determine that a student (for whom a missing person report has been filed) has been missing for more than 24 hours, then within the next 24 hours they will:

| Notify the individual identified by the student to be contacted in this circumstance;
| If the student is under 18 years old, notify a parent or guardian; and
| In cases where the student is over 18 and has not identified a person to be contacted, notify appropriate law

enforcement officials.

Extended University

Extended University (EU) is an administrative unit reporting to the Vice President for Academic Affairs. The mission of EU is to provide services to SPSU, the business community and the community at large by extending, enhancing and expanding the traditional teaching, scholarship and service roles of the university to new clients, in new formats and through the infusion of new technologies. Extended University includes a variety of programs and service units that are described here below. For more information regarding these programs and services, contact the EU Dean's Office at 678/915.7338 or stop by J-377.

Continuing Education Center (CEC)

The Continuing Education Center is responsible for providing all non-credit professional continuing education instruction sponsored by the university. CEC sponsors open enrollment programs in computing, engineering, business, quality, and communications. CEC also offers customized corporate training. CEC Certificate Programs feature a sequential set of courses designed to provide a body of knowledge in selected areas. Currently available certificates include:

| Business Intelligence
| AutoCAD Professional Certification
| CISCO Certified Network Associate (CCNA)
| Professional Project Management Certificate Program
| Lean Six Sigma Certification Training
| Accelerated Training in Healthcare Information Technology

Call 678/915-7240 for additional information or check the CEC web site at www.spsu.edu/cec.

Southern Polytechnic Applied Research Corporation (SPARC)

The Southern Polytechnic Applied Research Corporation (SPARC) provides support to Southern Polytechnic faculty in research, development and the application of technology within their areas of expertise. This support includes the identification of opportunities, development of proposals and the administration of grants and contracts upon award. The Applied Research Corporation is committed to providing growth opportunities for faculty and students and establishing Southern Polytechnic State University as a leading center of applied technology. For more information go to www.spsu.edu/sparc.

Office of Sponsored Programs (OSP)

The Office of Sponsored Programs has overall responsibility for the administration of grants, contracts and sub-awards, as well as compliance with state and federal regulations. Pre-award services include identifying funding opportunities and working with faculty to prepare proposals for submission. Post-award activities include tracking expenses, supplying reports to faculty and interfacing with the business office. For more information call 678/915-3159, visit the web site at www.spsu.edu/sponsoredprograms or stop by J-354.

eCore

eCore -- short for electronic core-curriculum -- allows University System of Georgia (USG) students the opportunity to complete the first two years of their collegiate careers in an online environment. eCore courses are taught entirely online, except for the occasional proctored exam. eCore courses are designed, developed, taught and supported by faculty and staff from the USG. Extended University coordinates eCore for SPSU and is available to answer all eCore

questions. For more information go to www.spsu.edu/ecore.

English Language Services (ELS)

ELS Language Centers provide a unique opportunity for foreign students to learn English as a second language or to improve their English proficiency. ELS distinguishes itself as the finest in English language instruction by providing excellent customer service. ELS Language Centers have become the world's largest network of campus-based, English language instruction centers with over 30 locations throughout the United States. ELS provides full-time daily classes year-round in four-week terms. In addition, ELS offers specialized programs that are customized to fit your needs. For more information go to www.els.edu/atlanta.

Honor Society

Superior scholastic achievement in engineering technology is recognized by membership in the Tau Alpha Pi National Honor Society. The original chapter of this society was founded on the Southern Polytechnic State University campus in 1953, and its members have not only demonstrated high academic achievements, but have also maintained various leadership positions in campus organizations.

For further information on SPSU's local Tau Alpha Pi chapter, please visit the web site at tap.spsu.edu.

HornetCard

HornetCard is your university identification card. Every student, faculty and staff member at SPSU can get a HornetCard in the Campus Services office located on the 2nd floor of the student center. Your HornetCard is used for access to Univeristy facilities, events, and services. All privileges granted by the use of this card are provided solely for the person described on the card.

For more information about HornetCard and its services go to www.spsu.edu/hornetcard

Library

General Information – The Lawrence V. Johnson Library collection consists of 128,000 volumes and about 200 print and electronic journal titles. An increasingly popular service is access to over 8,000 e-books.

GALILEO – Georgia Library Learning Online, popularly known as GALILEO, is an initiative funded by the University System of Georgia that allows access to online databases, including full-text and full-image files. Faculty and students have access to more than 300 databases as well as library catalogs. Additionally, students who bring their laptops will be able to access GIL, GALILEO and the Internet for research purposes in any area of the Library which has wireless access.

GIL – The automated library union catalog, GIL, lists materials held by libraries throughout the state of Georgia. Materials from libraries nationwide may be obtained through the Interlibrary Loan service in the Reference Department. GILExpress is a self- initiated, free service to request materials from other University System of Georgia Libraries.

Additional information about services offered at the Johnson Library may be accessed at www.spsu.edu/library/library.html; or, patrons may enter queries via email to reference@spsu.edu.

Licensure of Professional Engineers

To protect public safety, each state establishes laws to license engineers who are responsible for decisions that affect public health and safety. The licensing process involves formal education, two written examinations, appropriate work experience, and recommendations by professionals in the field. The two written examinations consist of the

Fundamentals of Engineering (FE) and the Principles and Practices of Engineering (PE).

The requirements for a Professional Engineer vary by state, and not all states allow engineering technology graduates to seek licensure. However, it is possible for engineering technology graduates to become Professional Engineers in Georgia and many other states. In Georgia, students completing a bachelor's degree in engineering technology may take the Fundamentals of Engineering (FE) exam in the senior year of study. After accumulating the requisite number of years of appropriate work experience, an engineering technology graduate who has passed the FE exam is eligible to take the PE exam in Georgia or other states in which they are eligible for licensure.

Any student with a goal of becoming a Professional Engineer should contact their faculty advisor for additional information.

Post Office

The Southern Polytechnic Post Office is located next to the Bookstore and is open 9:00 a.m. to 5:00 p.m. Monday through Friday. Post Office boxes are available for rental by the term.

Recreational Sports

Mission

The Recreational Sports Department shares in the educational mission of the university by offering opportunities to experience interpersonal growth, social development, improve physical and mental health, and to develop lifetime leisure skills for a healthier lifestyle. The Department organizes, administers, and promotes a broad program of competitive, recreational, fitness, and wellness programs for students, faculty, and staff.

The Intramural Sports program provides students with the opportunity to compete on a competitive and recreational level. The program administers over 20 different leagues/tournaments throughout the academic year. Flag Football, Basketball, Soccer, Softball, Golf, and Bowling are just some of the intramural programs offered. Students also have an opportunity to learn new skills by officiating our leagues (and earn some extra money).

A wide range of fitness and wellness classes are also programed by the Recreational Sports Department. Aerobics, Yoga, abs, cycling, and swimming are just a few of the class offerings. Classes are free to all students.

Recreational Facilities

The Recreation and Wellness Center, offers many recreational opportunities to the student. A state of the art weight room that includes free weights, machine weights, plate loaded machines, and cardiovascular equipment highlights the facility. The facility also boasts a large multipurpose gym that accommodates 2 basketball courts, 2 volleyball courts, 4 badminton courts, and a perimeter jogging/walking area. The Recreation and Wellness Center also has 2 racquetball courts, locker rooms/showers, and a pool complete with an outdoor sunbathing area. The pool can be used for

recreation, lap, and competitive swimming. The Department of Recreational Sports and Campus Health Services are housed in the Recreation and Wellness Center.

The Southern Polytechnic Outdoor Recreation Complex provides 3 softball fields. The intramural sports program makes use of these fields throughout the year with flag football, soccer, and softball leagues. Also included in the complex is a half-mile jogging trail.

Student Center

The Joe Mack Wilson Student Center is located in the center of campus, just west of "the Globe". The Student Center houses many student services, including Student Government Association, the Game Room, Student Life, Campus

Services, the bookstore, the Grill, and the Post Office. There are also many spaces within the student center that are available for student groups to reserve for events and meetings.

For more information about the Student Center go to www.spsu.edu/studentcenter

Student Health Services

The school nurse, who is on duty Monday through Friday in the clinic located in the Recreation and Wellness Center, provides limited outpatient services for minor illnesses and injuries. If further treatment is necessary, she will refer the student to an urgent care facility located near the campus. Due to the limits on the health services provided by Southern Polytechnic State University, each student is encouraged to have adequate health and accident insurance through either a personal or family insurance policy. The University offers an optional medical insurance policy. Information is available at www.studentinsurance.com.

International students are required to have private health insurance protection. Southern Polytechnic State University is not responsible for any medical expenses incurred by international students beyond those that are covered by the Student Health Fee.

Student Housing

SPSU offers nearly 1800 on-campus student housing beds. In addition to providing a convenient and economical home for students, on-campus living also provides a great learning opportunity. Living on campus contributes to the educational development of each student through exposure to students of varied backgrounds, experiences, and personal philosophies. The Department of Housing and Residence Life is staffed by 9 full-time professionals along with 50 Resident Assistants. The primary function of the Housing and Residence Life staff is to create and maintain a desirable environment for all residents.

All students who have been accepted to Southern Polytechnic State University will need to visit the Housing and Residence Life website at www.spsu.edu/housing for application information. On-campus housing is required for all first-year students. However, this requirement may be waived if you will be living at home with a parent/guardian. Please contact our office for more information.

Howell Residence Hall and Hornet Village Suites are reserved for traditional first-year freshmen only. There is also a mandatory meal plan for all residence hall residents. Our on-campus apartments, University Courtyard and University Commons, are available to upperclassmen students. Consideration of a roommate request will be given providing the request is mutual and space is available.

For more information about student housing go to www.spsu.edu/housing.
Housing payments are due in full each semester. If you have any additional questions you may contact the Department of Housing and Residence Life by calling 678/915-7335 or by sending an email to housing@spsu.edu.

Application

Every student interested in living on campus at Southern Poly must submit a housing application, which can be found online in Banner. Space is limited, so it is important to submit your housing application early. A mandatory, non-refundable $200 application fee is required of everyone completing an application to live on-campus. The fee will be added to your student account and can be paid online or in person at the Business Office. Please understand that completing an application does not guarantee housing will be assigned. When the housing application and fee have been received, a notification of housing status will be sent by our office. In the case of space not being available, the reservation fee will be refunded. We will do our best to accommodate all preferences with regards to roommate requests and building placement. Roommate requests should be so marked on the housing application by all involved students.

Student Life

Mission

Student Life creates a sense of place as an academic support unit that empowers, prepares, and develops students at SPSU through high-quality social, leadership, educational, and service programs. Student Life aligns with the mission and vision of the university to help our students recognize and achieve their potential to transform their lives and impact their futures.

About Us

The Student Life Office is the hub of co-curricular activity on campus that includes Journey New Student Orientation, student organizations, campus activities, fraternities & sororities, student government, cultural programming, leadership development, and volunteer opportunities; we have something for everyone.

The events offered by the Student Life Office are sponsored by the Student Activity Fee that is paid by every student matriculated at Southern Polytechnic. Since the Student Activity Fee pays for these events, activities and outings, everything is FREE!

Student organizations allow our students to meet a variety of people, develop communication and leadership skills, practice the theories they learn in the classroom and create a wide web of networking possibilities that could lead to friendships, an internship, or even ultimately a job!

Our number one goal is to get each student connected, involved, develop a sense of community, and HAVE FUN!

For more information visit us at www.spsu.edu/studentlife

The University Honors Program

The University Honors Program of Southern Polytechnic builds upon the university's excellent reputation for providing both theoretical and applied approaches to learning. Honor students are given the opportunity to develop their talents

and skills in an expanded and enriched curriculum featuring seminar-size classes and independent research opportunities.

Admissions

All prospective Honors students must apply to the Honors Program. Incoming freshmen who have at least a 1200 SAT score or ACT equivalent and at least a 3.5 high school GPA will be guaranteed automatic admission to the Honors Program. Transfer students who have earned a 3.5 GPA for college-level coursework over 30 hours of credit also will be guaranteed automatic admission. Students who do not strictly meet these guidelines, but who have other achievements that show promise of academic excellence are encouraged to apply. Students may download an application from the web site www.spsu.edu/honors/. All prospective Honors students must apply to the Honors Program. Students who do not strictly meet these guidelines, but who have other achievements that show promise of academic excellence are encouraged to apply. Students may download an application from the web site www.spsu.edu/honors/.

Advantages

While the main advantage of participation in the Honors Program is the intellectual rigor of the curriculum, there are other advantages as well:

> Eligibility for Honors scholarships or out-of state tuition waivers as appropriate

- | Special Orientation Programs
- | Priority Registration
- | Honors course designation on student transcripts
- | Honors advising
- | Social and extracurricular opportunities
- | Recognition upon graduation: in the commencement program, on the diploma, and with an honorary symbol as part of the graduation regalia.

Program Guidelines

To earn the University Honors Scholar Diploma at Southern Polytechnic, students must complete 18 credit hours of Honors coursework and at least 6 of those hours must be upper division course-work. To earn the Departmental Honors Scholar Diploma, students must complete 6 hours of enriched upper division course-work or directed study.

The Honors Program offers several different types of honors courses so that students can meet the requirements.

- | Honors Core Courses
- | Honors Interdisciplinary Seminars
- | Honors Research Assistant and Independent Study Opportunities.

Students must have a minimum graduation GPA of 3.4. All students must complete an Honors Paper to be bound and placed in the library. An Honors Presentation of this paper is also required.

Probation and Dismissal

Students in the Honors program that fall below the required GPA are placed on probation for one semester. A student on probation whose GPA does not meet the requirements at the end of their next enrolled semester will be dismissed from the honors program. Students who commit acts of academic dishonesty may also be dismissed from the program.

Additional Information

For additional information contact the University Honors Program at 678/915-3931 or email us at honors@spsu.edu. You can also visit our website at honors.spsu.edu.

University Police

Southern Polytechnic is committed to a safe, healthy environment in which our students, faculty and staff can grow professionally and personally. The University promotes strong safety policies and prompt reporting and investigation of any actions or events that would harm the well being of any student, employee, or faculty member.

The University Police employs police officers who comply with certification, training, and all other requirements of the Peace Officers Standards and Training Council of Georgia. Our officers have arrest powers on Southern Polytechnic property and on any public or private property within five hundred yards of property under the control of the Board of Regents. Our officers conduct preventive patrols on campus including the residence halls, secure University-owned property, investigate reported crimes at the university, conduct educational programs and workshops to promote personal safety, and actively work to prevent and detect crime throughout the Southern Polytechnic community. Our disclosure report can be found at police.spsu.edu.

University Transportation

University Transportation manages all of the parking and transportation services at SPSU. Parking on campus is available by permit only. All students pay a mandatory University Transportation Fee each semester. Your parking permit is included as a part of this fee. Visitors must park in one of the two visitor parking lots, located adjacent to the

Student Center and on the first level of the parking deck. University Transportation also provides many other services including the Poly Trolley and ZipCar.

For more information about parking on campus or other University Transportation services go to www.spsu.edu/studentcenter.

The ATTIC

The ATTIC (Advising, Tutoring, Testing, International Center) provides academic support services to students at SPSU. Located in the Student Center (A-160), the ATTIC houses Advising, Testing, Tutoring, International Student Services, Disability Services, and Multi-Cultural Affairs. For more information, call 678/915-7361.

Joint Enrollment Advising

The Joint Enrollment Advisor/Move On When Ready Advisor guides Joint Enrollment and Move On When Ready students in selecting courses they need for their high school graduation and for their college careers. The Advisor also works with high school counselors.

Tutoring

The ATTIC provides individualized assistance and small-group study options to Southern Polytechnic students. Tutors help students with core courses in English, chemistry, biology, mathematics, and physics. Tutoring occurs in the

Student Center in rooms A-184 & A-185. The tutoring schedule can be viewed online at the ATTIC's website at www.spsu.edu/attic/tutoring.

* Please Note: The schedule may vary from semester to semester.

Testing

The ATTIC administers the following tests:

Math Advisory Test (MAT)

SPSU students take the math test to determine the level of math placement. The test consists of college algebra and pre- calculus. MAT scores will determine the appropriate starting point in SPSU's math sequence. Students may obtain MAT scores from their academic advisor or a program representative during an advising session, from the Testing Coordinator, the Coordinator of Disability Services, or from Banner.

Placement is based on the following scale:

If your score is	On this test	Start in this Mathematics Course
23 or lower	MAT 1+2	MATH 1111 College Algebra
24 or higher	MAT 1+2	MATH 1113 Pre-calculus
26 or higher	MAT 1+2	MATH 2253 Calculus
AND		Or

8 or higher	MAT 3	MATH 2240 Elements of Calculus
28 or higher	MAT 1+2	MATH 1113 Pre-calculus OR
AND		MATH 2253 Calculus I OR
630 or higher	SAT	
OR		MATH 2240 Survey of Calculus
28 or higher	ACT (Math)	(MATH 1113 is recommended)

Students are eligible to take any mathematics course at SPSU for which they have met all prerequisites. The ATTIC and the Mathematics Program offer math tutoring.

COMPASS

Non-traditional students-students should take COMPASS. The test consists of writing, reading, and math sections. A proctoring fee must be paid in advance of the test. Students may call 678/915 -7361 to make an appointment to take the COMPASS test. COMPASS testing can also be scheduled online via www.spsu.edu/attic.

Disability Services

SPSU does not discriminate on the basis of an individual's disability and is committed to providing students with full and equal enjoyment of services, facilities and goods on campus as required by law. If you are a student with a qualified disability and are in need of a reasonable accommodation, you must contact the Office of Disability Services. The Disability Services Advisor coordinates academic support services for students who have a permanent qualified disability.

International Student Services

International Student Services advises the University's international student body, faculty, and staff on Immigration and Naturalization regulations. The coordinator provides student assistance with banking, social security, insurance, housing, employment, practical and curricular practical training, travel regulations, income tax, and the lottery.

International Student Services provides cultural, social, and educational programs. Baptist Collegiate Ministries, Friends of Internationals and AMIS (American Ministry of International Students) sponsor family and community activities.