Undergraduate Academic Catalog 2012-2013

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.

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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 2012

2 August	Thurs	New Student Orientation
15 August	Wed	Classes Begin
3 September	Mon	Labor Day Holiday
21-25 November	Wed - Sun	Thanksgiving Holiday Students
3 December	Mon	Last Day of Classes
1-11 December	Wed-Tues	Final Exams
15 December	Sat	Commencement

Spring 2013

3 January	Thursday	New Student Orientation
7 January	Mon	First Day of Classes
21 January	Mon	Martin Luther King, Jr. Holiday
4-10 March	Mon - Sat	Spring Break
29 April	Mon	Last Day of Classes for Spring
1 -7 May	Wed-Tues	Final Exams
11 May	Sat	Commencement

Summer 2013

16 May	Thur	New Student Orientation
20 May	Mon	First Day of Classes
27 May	Mon	Memorial day Holiday
4 July	Thurs	Holiday

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

Directory for Correspondence

For additional information on the following topics, please address inquiries as follows:

Admissions
VP, Student & Enrollment Services
Dr. Ron Koger

Athletics
Director of Athletics
Mr. Karl Staber

Career Services
Director of Career and Counseling
Ms. Phyllis Weatherly

Cooperative Education Program
Director of Career and Counseling
Ms. Phyllis Weatherly

Health Services
Director of Wellness
Position Vacant

Joint Enrollment and General Studies Advising
Director of the ATTIC
Dr. Jeff Orr

International Program Services
Coordinator of International Services
Dr. Jeff Orr

Registration
Registrar
Mr. Stephen Hamrick

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 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

Counseling Services
Director of Career and Counseling
Ms. Phyllis Weatherly

Credit by Examination
Director of Admissions
Mr. Gary Bush

Disability Services
Disability Services Coordinator
Dr. Jeff Orr

Financial Aid
Director of Financial Aid
Mr. Gary Mann

Greek Affairs
Student Life
Mr. Ron Lunk

Student Activities
Dean of Students
Mr. Barry Birckhead

Student Records
Registrar
Mr. Stephen Hamrick

Testing Services
Coordinator of Testing
Dr. Jeff Orr

Transcripts
Registrar
Mr. Stephen Hamrick

Veteran Affairs
VA Coordinator
Mr. Greg Osborne

Student Rules and Regulations

The rules and regulations for Southern Polytechnic State University students are comprised of the catalog sections on Academic Regulations and Student Life Regulations. These regulations are intended to set forth the requirements of the faculty to the end that a large student body may live and work together harmoniously with a minimum of friction and misunderstanding. Each student is expected to be familiar with these catalog sections. 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 that 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, which is under the control of the Board of Regents of the University System of Georgia, and on any public or private property within five hundreds yards of property under the control of the Board of Regents.

Our officers conduct preventive patrols on campus including the residence halls; are responsible for the security of 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 campus. Our program complies with The Jeanne Clery Disclosure of Campus Security Policy and Crime Statistics Act. Our disclosure report can be found on the police department web page at http://police.spsu.edu.

Accreditation

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

Southern Polytechnic State University is **regionally accredited by the Commission on Colleges of the Southern Association of Colleges and Schools** (1866 Southern Lane, Decatur, GA 30033-4097, Telephone: 404-679-4501).

The Civil, Computer, Electrical, Industrial, Mechanical, and Telecommunications Engineering Technology programs are accredited by the Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, Telephone: 410-347-7700

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

The Bachelor of Science program in Construction Management is accredited by The American Council for Construction Education (ACCE) (www.acce-hq.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)

The Bachelor of Science with major in Computer Science and the Bachelor of Science with a major in Information Technology are accredited by the Computing Accreditation Commission of ABET, Inc. 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, Telephone: 410-347-7700; email accreditation@abet.org, website: http://www.abet.org.

The Bachelor of Science with major in Surveying and Mapping is accredited by the Applied Science Accreditation Commission of ABET, Inc. 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, Telephone: 410-347-7700; email accreditation@abet.org, website: http://www.abet.org.

Degrees Offered

Southern Polytechnic State University offers a broad range of programs of study:

Associates Degree Programs

General Studies (Associate of Science Transfer Program)

Bachelors Degree Programs

Apparel and Textiles (Bachelor of Apparel and Textiles)

Applied Science (Bachelor of Applied Science)

Accounting (Bachelor of Science)

Architecture (Bachelor of Architecture)

Biology (Bachelor of Science)

Biotechnology (Bachelor of Science) **Pending Board of Regents Approval**

Business Administration (Bachelor of Arts)

Business Administration (Bachelor of Science)

Chemistry (Bachelor of Science)

Civil Engineering (Bachelor of Science, Civil Engineering)

Civil Engineering Technology (Bachelor of Science)

Computer Science (Bachelor of Arts)

Computer Science (Bachelor of Science)

Computer Engineering Technology (Bachelor of Science)

Construction Engineering (Bachelor of Science)

Construction Management (Bachelor of Science)

Electrical Engineering (Bachelor of Science, Electrical Engineering)

Electrical Engineering Technology (Bachelor of Science)

English and Professional Communication (Bachelor of Arts)

Environmental Science (Bachelor of Science) **Pending Board of Regents Approval**

Industrial Engineering Technology (Bachelor of Science)

Information Technology (Bachelor of Science)

International Studies (Bachelor of Science)

Mathematics (Bachelor of Science)

Mechanical Engineering (Bachelor of Science, Mechanical Engineering)

Mechanical Engineering Technology (Bachelor of Science)

Mechatronics Engineering (Bachelor of Science)

New Media Arts (Bachelor of Arts)

Physics (Bachelor of Arts)

Physics (Bachelor of Science)

Political Science (Bachelor of Science)

Psychology (Bachelor of Science)

Software Engineering (Bachelor of Science)

Surveying and Mapping (Bachelor of Science)

Systems Engineering (Bachelor of Science)

Teacher Education in Chemistry, Math and Physics (Bachelor of Science)

Technical Communication (Bachelor of Science)

Telecommunications Engineering TechnologyNew Media Arts (Bachelor of Science)

Masters Degree Programs

(See the Graduate Catalog)

Accounting (Master of Science)

Master of Business Administration (MBA)

Computer Science (Master of Science)

Construction Management (Master of Science)

Engineering Technology (Electrical Concentration) (Master of Science)

Information and Instructional Design (Master of Science)

Information Technology (Master of Science)

Instructional Design and Communication (Master of Science)

Quality Assurance (Master of Science)

Software Engineering (Master of Science)

Systems Engineering (Master of Science)

Certificates

In addition to the above degree programs, SPSU also offers certificates in the following areas. The offering department is listed in parentheses. Admissions requirements vary, depending on the certificate.

Apparel Product Development (Industrial Engineering Technology)

Business Administration (Business Administration)

Business Continuity (Information Technology)

Communication Management (English, Technical Communications, and Arts)

Computer Science (Computer Science)

Computer Science Transition Certificate (Computer Science

Content Strategy (English, Technical Communications, and Arts)

Engineering Sales (ETM or Business Administration)

Facilities Management (Construction Management)

Geographical Information Systems (GIS) Certificate (Civil Engineering Technology)

Instructional Design (English, Technical Communications, and Arts)

Information Security and Assurance (Information Technology)

Information Technology (Information Technology)

Information Technology Transition Certificate (Information Technology)

Land Development (Construction Management)

Land Surveying (Civil Engineering Technology)

Logistics (Industrial Engineering Technology)

Production Design (Industrial Engineering Technology)

Programming (Software Engineering)

Professional Spanish (International Studies)

Project Management: Construction (Construction Management)

Quality Assurance (Industrial Engineering Technology)

Quality Principles (Industrial Engineering Technology)

Specialty Construction (Construction Management)

Software Engineering (Software Engineering)

Systems Engineering (Industrial Engineering Technology)

Technical Communication (English, Technical Communications, and Arts)

User Experience (English, Technical Communications, and Arts)

Visual Communications (English, Technical Communications, and Arts)

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

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.

Admissions Information

General Information

Admission to Southern Polytechnic State University is made without regard to race, nationality, sex, or religion. Admission to Southern Polytechnic State University 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

Formal appeals of the University's admission decision may be filed with SPSU's Director of Admissions. Contact the Office of Admissions 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 Admissions 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	July 1
Spring	November 1

All international applicants are required to submit all admissions documents to the Office of Admissions 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 Admissions (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 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 Wellness Center prior to enrollment

Special Accommodations

Upon acceptance and before enrollment, any student with a documented disability or special need must notify the Disability Services Coordinator in the Advising, Tutoring, Testing, and International Center (ATTIC) of any particular accommodations required.

Admission from High School

The College Preparatory Curriculum (CPC), SAT/ACT scores, and the high school academic grade point average are all key factors considered in freshman admission decisions.

College Preparatory Curriculum

In order to be admitted, freshmen are required to complete the University System of Georgia's College Preparatory Curriculum requirements at either:

Course	Units	Required Course Emphasis
English	4	Literature (American, English, World) integrated with Grammar and Usage and Advanced Composition Skills
Mathematics	4	Algebra I and II, Geometry 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	3	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

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

A minimum of 16 CPC units are required in the following subject areas:

** Two additional academic units are required, in addition to the above 16 units.*

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 16 required CPC units, plus two additional academic 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 Admissions

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 16 required CPC units
- Have an academic High School GPA of at least a 2.5
- Minimum scores on the SAT or ACT as follows:

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 Admissions 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 CPC requirement in an alternative way. These students should submit a portfolio of high school level work that substantiates completion of college preparatory courses equivalent to those listed in the CPC 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 2008-2009 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
  500 on the SAT I Critical Reading (21 ACT-English)
  500 on the SAT I Math (21 ACT-Math)
- Minimum academic high school GPA of 3.0
- On-track for completion of CPC requirements by the end of the senior year in high school
- Written consent of the parent or guardian (if student is a minor)

A college course may not be used to fulfill the University System of Georgia's CPC requirements except:

- English Minimum required score of 530 on the SAT I Critical Reading (23 ACT-English)
- Social Studies Minimum required score of 530 on the SAT I Critical Reading (23 ACT – English)
- Mathematics Minimum required score of 530 on the SAT I Math (22 ACT-Math)

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)

College Level Examination Program (CLEP)

Students may receive college credit for certain courses based on scores on the College Level Examination Program offered by the College Entrance Examination Board. The criteria for credit awarded under this program are as follows:

CLEP Exam	Minimum Score	SPSU Course for Credit	Hours
American Government	50	POLS 1101*	3
American History	50	HIST 2111 or 2112*	3

American Literature	50	ENGL 2103	3
Analyzing & Interpreting Literature	50	ENGL 1102	3
Biology I	50	BIOL 2107K	4
College Algebra	50	MATH 1111	3
English Composition (Essay Edition) General Exam	50	ENGL 1101	3
English Literature	50	ENGL 2120	3
Introduction to Psychology	50	PSYC 1101	3
Introductory Business Law	50	MGNT 3145	3
Introductory Calculus	50	MATH 2253	4
Introductory Micro/ Macro Economics	50	ECON 1101	3
Introduction to Sociology	50	SOCI 1101	3
Humanities	50	Area C, Group 2	3
Natural Science	50	BIOL 2107K	3
Pre-calculus	50	MATH 1113	3
Principles of Management	50	MGNT 3105	3
Principles of Marketing	50	MGNT 3135	3
Principles of Macroeconomics	50	ECON 2105	3
Principles of Microeconomics	50	ECON 2106	3
Trigonometry	50	MATH 1113	4
Western Civilization I	50	Area E, Group 2	3
Western Civilization II	50	Area E, Group 2	3
French Language	50	FREN 1001, 1002	3
French Language	59	FREN 1001, 1002, 2001, 2002	3
German Language	50	GERM 1001, 1002	3
German Language	60	GERM 1001, 1002, 2001, 2002	3
Spanish Language	50	SPAN 1001, 1002	3
Spanish Language	63	SPAN 1001, 1002, 2001, 2002	3

**In order to receive credit for HIST 2111 or 2112, or POLS 1101 and satisfy the constitution requirement for graduation, the student must also complete HIST 2911 with a grade of "C" or better.*

Advanced Placement Program

Students may receive college credit for certain courses based on scores of the Advanced Placement (AP) Exam as follows:

AP Exam	Minimum Score	SPSU Course for Credit	Hours
Art History	3	ARTS 2001	3
AB Calculus Test	3	MATH 1111, 1113, and (2253 or 2240)	10 or 11
BC Calculus Test	3	MATH 1111, 1113, (2253 or 2240), and 2254	14 or 15
Biology (with proof of lab)	3	Biology 2107K and 2108K	8
Computer Science A	3	CS 1301	4
Chemistry (with proof of lab)	3	CHEM 1211, CHEM 1211L and 1212, 1212L	8
Comparative Government & Politics	3	POLS 2801	3
Computer Science AB	3	CS 1301 and 1302	8
Economics/Macro	3	ECON 2105	3
Economics/Micro	3	ECON 2106	3
English-Language/ Composition	3	ENGL 1101	3
English-Literature/ Composition	3	ENGL 1101	3
English-Literature/ Composition	5	ENGL 1101 and 1102	6
Environmental Science	3	STS 2400	2
European History	3	History Elective	3
French Language Exam (Depending on Student Status)	3	FREN 1002	6
French Language Exam (Depending on Student Status)	5	FREN 1002 and FREN 2001	6

Human Geography	3	GEOG 1101	3
German Language Exam (Depending on Student Status)	3	GRMN 1002	6
Chinese Language and Culture OR Italian Language and Culture OR Japanese Language and Culture	3	Area C, Group 2	3
German Language Exam (Depending on Student Status)	5	GRMN 1002 and GRMN 2001	6
Government & Politics: United States	3	POLS 1101*	3
Physics B (with proof of lab)	4	PHYS 1111, 1111L and 1112, 1112L	8
Physics C – Mechanics	4	PHYS 2211, 2211L	4
Physics C – E&M	4	PHYS 2211, 2211L	4
Psychology	3	PSYC 1101	3
Spanish Language	5	SPAN 1002 and 2001	9
Spanish Language	3	SPAN 1002	6
Statistics	3	IET 2227 or MATH 2260	3
United States History	3	Area E, Group 1	3
Western Civilization	3	Area E, Group 2	3
World History	3	Area E, Group 2	3

**In order to receive credit for HIST 2111, HIST 2112, or POLS 1101 and satisfy the constitution requirement for graduation, the student must also complete HIST 2911 with a grade of "C" or better.*

Official results must be sent directly from the Admissions Testing Board of the College Board to SPSU for credit to be awarded.

International Baccalaureate Program

Students may receive college credit for certain courses based on scores of the International Baccalaureate Exam as follows:

Subject Taken at the Higher Level	Minimum Score	SPSU Course for Credit	Hours
American History	4	HIST 2111 and 2112	6
Biology	4	BIOL 2107K or 2108K	4
Biology	5	BIOL 2107K and 2108K	8
Chemistry	5	CHEM 1211, 1211L and 1212, 1212L	8
Economics	5	ECON 1101	3
English	4	ENGL 1101	3
Foreign Language (A or B Level)	5	Area C Group 2 (Foreign Language)	3
Geography or Social & Cultural Anthropology	5	Area E, Group 4	3
History (any focus)	5	Area E, Group 2	3
Mathematics	4	MATH 1111, 1113, and (2253 or 2240)	10 or 11
Mathematics	5	MATH 1111, 1113, (2253 or 2240), 2254 and four additional credit hours based on exam content	18 or 19
Physics	5	(PHYS 1111, 1111L and 1112, 1112L) or (PHYS 2211, 2211L and 2212, 2212L)	8
Psychology	5	Area E, Group 3	3

Official results must be sent directly from the Admissions Testing Board of the College Board to SPSU for credit to be awarded.

D.S.S.T. (DANTES Subject Standardized Test) Exams

Students can receive credit for completion of a DANTES exam with a minimum score as recommended in the ACE guide in most cases. DANTES exams already approved appear below. Before you take a DANTES exam that is not on this list, be sure the academic department that sponsors the course has approved the exam for credit.

Courses that have already been approved include:

Introduction to Computing	45	CS 1002	2
Principles of Public Speaking	47	COMM 2400	2
College Algebra	47	MATH 1111	3
Management Information Systems	46	MGNT 3205	3
Principles of Statistics	48	IET 2227 or MATH 2260	3
Human/Cultural Geography	48	GEOG 1101	3

General Anthropology	47	ANTH 1102	3
Introduction to World Religions	48	RELG 1200	3
Environment and Humanity	48	STS 2400	2
Introduction to the Modern Middle East	48	Area E, Group 4	3
Life Span Developmental Psychology	46	PSYC 3305	3

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	July 1
Spring	November 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 Admissions (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 $20.00 non-refundable application processing fee (check 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 Admissions

Transfer Freshman Admissions 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 not be on dismissal from their previous institution.
- Applicants must have at least a 2.0 cumulative college GPA.

Transfer Admissions 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 not be on dismissal from their previous institution
- Applicants must have at least a 2.0 cumulative college GPA

Award of Transfer Credit

See Academic Regulations and Administrative Procedures for the policy on acceptance of transfer credit.

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 College Preparatory Curriculum requirements; however, all other admission requirements must be met. These students will be required to take the COMPASS Exam and score 74 on the Reading, 60 on the Writing and 37 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 Admissions Office:

- An application
- 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 $20 nonrefundable application processing fee (check 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:

- An application for admission
- The $20 non-refundable application processing fee
- 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:

- An application form
- A $20 nonrefundable application processing fee
- 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.

Regents Engineering Transfer Program (RETP)

SPSU offers several engineering program which can be found in this catalog. However, students who choose to pursue the Regents Engineering Transfer Program (RETP) path, may begin course work at SPSU and later transfer to Georgia Institute of Technology. At this time, there are no stipulations regarding the major an RETP student selects at SPSU prior to transfer. Courses available include the University System core (areas A-E) and selected engineering courses. For additional information contact the RETP coordinator, Jessica Williamson at (678) 915-3028.

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
AND	
COMPASS	74 Reading 60 Writing 37 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 Admissions 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 Admissions 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

First-time-full-time Cost of Attendance for dorm student 2012-2013

Cost of Tuition and Mandatory Fees:

Tuition and Fees $6,678

Room and Board $7,280

Cost determined by Lifestyle:

Books and Supplies $1,700

Personal Expenses $1,700

Transportation $1,200

Loan Fees $60

Total Estimated Cost of Attendance: $18,618

Types of Financial Aid

Types of aid for which one might be eligible include:

- 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 2.00 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 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 registrar's web site.

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 fees as early as possible to avoid potential problems.

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 http://www.spsu.edu/fiscalaffairs/BusinessOffice.html and follow the appropriate link. 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 Police Department.

Graduation Fee

Every student receiving a degree must pay a graduation fee of $40.
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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 Office of Business and Finance 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 Registrar's web site.

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 entitled 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:

http://www.usg.edu/regents/policymanual/400.phtml

62 Years Old 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 matriculation and 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

Student Affairs

The student affairs areas at Southern Polytechnic State University include:

- Student Life
- Student Center
- Student Health Services
- Recreation Sports and Intercollegiate Athletics
- Career & Counseling Center

The Dean of Students supervises a professional staff who are responsible for providing these services and activities for students. In addition, the Dean of Students may be contacted by students who are encountering problems or issues on campus for which they need assistance.

Student Life

There is more to college life than classrooms and tests...getting involved in Student Life includes countless other recreational activities, special events, and opportunities for learning, leadership and service. Participating in campus life outside the classroom offers students the opportunity to learn the lessons, make the memories, and forge the relationships that will inspire and sustain them for a lifetime.

Through Campus Activities Board (CAB), Greek Life, and over 120 Student Organizations, you can connect the dots between circuit boards and business plans and becoming the kind of team member, leader, and community member you would like to become.

Emergency Locator Service

Emergency assistance in locating a student is provided by the Dean of Students Office (678-915-4102) 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 (678-915-5555).

If campus security officials 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.

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 8 full-time professionals along with 38 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.

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 wanting to live on campus at Southern Poly must submit a housing application, which can be found online in Banner. Since space is limited, 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. 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 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.

Career and Counseling Center

Counseling Services

The Career and Counseling Center offers a variety of counseling services to students, including help with 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 environment 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 develop 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. The Center also offers an online mental health screening that helps determine the need for additional evaluation and/or services.

Counselors provide outreach programs on many topics, including stress management, assertiveness training, depression, deciding on a major, relationship building, and special student concerns (a detailed list can be found on the Center's website at www.spsu.edu/cccenter).

All counseling services are **free of charge**, confidential, and **are available by appointment**. Counseling staff members are also available for consultation to 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.**

<u>On-Campus Employment</u>

There are three main kinds of on-campus positions for students: College Work Study (from funds awarded by the Financial Aid Office), Student Assistants (depends on funds that are allocated to the department) and Graduate Assistants (should check with the department based on your major). 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 is also offered through the Career and Counseling Center. Employment opportunities for alumni are posted in the **CAREER LINK** database on the Center's web page. Alumni may attend career fairs and skillshop sessions offered by the Center.

Experiential Education (Cooperative Education and Internship)

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
- 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
- Improving opportunities for post-graduate jobs
- An opportunity to work with professionals in your field
- Learning to work with colleagues

Cooperative Education

Southern Polytechnic State University offers its students the opportunity to gain valuable work experience related to their academic majors through a university-work sponsored cooperative education program. The co-op program is provided on an alternating-semester basis in most bachelor degree programs. Co-op is founded on the principle that learning takes place through practical experience as well as through academic achievement. In addition, co-op helps students in their career decision making process and provides substantial support for education expenses.

Undergraduate Students wishing to apply for the co-op program must:

- Have completed at least 24 semester hours of academic credit toward their degree
- Must have completed at least one semester at SPSU
- **Be full-time (carry at least 12 hours) the semester before going to work as a co-op**
- **Have and maintain a minimum 2.00 GPA (many employers require higher averages)**
- **Commit to participate in a minimum of three (3) alternating co-op work terms**
- Attend an orientation session and meet with the program coordinator

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 company co-op requirements. 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.

A co-op program can be started with industry in a number of ways:

- University referral
- Student contact
- Industry initiation

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 applicant 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 that company for a minimum of three (3) co-op work terms.

Co-op salaries are determined by the employer and normally increase with job responsibilities. Board and lodging during work terms are the responsibility of the student, but in most cases co-op employers can provide assistance in locating suitable accommodations. 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, 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 Southern Polytechnic State University 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. Students interested in the co-op program should attend a co-op orientation session (dates posted on the Career and Counseling Center's website).

Internship Program

The Southern Polytechnic State University Internship program is a short-term work experience in a professional environment where the emphasis is on learning versus earnings. 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, or 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.

Internship Eligibility and Requirements:

- Be a registered, full-time student at the time of application to the program and during the semester prior to going to work
- Have at least a 2.0 GPA **(many employers require higher averages)**
- Must 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 and meet with the program coordinator

<u>International Students:</u>

International students must meet all internship eligibility requirements to participate in the program and they 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 Office to complete additional paper work. International students failing to do so will be DROPPED from the Internship Program.

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.

Post Office

The Southern Polytechnic State University 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.

Athletics and Recreational Sports

Southern Polytechnic State University is a member of the NAIA and the Southern States Athletic Conference. The University competes in four different intercollegiate sports: Men's basketball, women's basketball, men's soccer, and baseball.

The Recreational Sports program maintains a comprehensive program of activities that appeal to the leisure time interests and needs of the campus community.

Activities available through the intramural sports program include competitive team sports leagues such as:

- Flag football
- Volleyball
- Basketball
- Softball

There are also individual competitive tournaments such as:

- Billiards
- Golf
- Racquetball
- Badminton

In addition to the intramural sports program, the department offers:

- A club sport program
- A wellness and fitness program
- Special events

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.

Athletic Facilities

SPSU competes in the NAIA (National Association of Intercollegiate Athletics) Division I and is a member of the Southern States Athletic Conference. The University has four intercollegiate sports teams:

- Men's Basketball
- Woman's Basketball
- Baseball
- Men's Soccer

The Athletic Department offices are located in the Athletic Gymnasium.

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 (http://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 Web.

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 http://www.spsu.edu/attic.

Disability Services

The Disability Services Advisor coordinates academic support services for students who have a permanent or temporary disability. Individuals eligible for services include, but are not limited to, those with mobility, hearing, learning, visual, speech, or specific neurological disabilities. Services are available free of charge on a self-referral basis.

Students at Southern Polytechnic State University who have a disabling condition and need academic accommodations have the responsibility to voluntarily self-identify by scheduling an appointment with the Disability Services Advisor as soon as possible.

The ATTIC is responsible for providing special assistance for students diagnosed as having specific learning disabilities. To become eligible for special services at Southern Polytechnic State University, students must verify the specific learning disability by having a psychological evaluation on file in the ATTIC.

If you believe you have a specific learning disability, visit the ATTIC for more information.

Under the Americans with Disabilities Act (ADA), special services are available through the ATTIC to any learning-disabled student at Southern Polytechnic State University. All such services are offered based on individual needs.

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.

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 http://tap.spsu.edu.

The University Honors Program

The University Honors Program of Southern Polytechnic State 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. 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. 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 State University, students must complete 18 credit hours of Honors course-work 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 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 http://police.spsu.edu.

Library

General Information – The Lawrence V. Johnson Library collection consists of some 118,000 cataloged volumes and more than 1,300 periodical and serials titles. Other formats include: Microforms, U.S. Geological Survey Maps for the State of Georgia; Professor Reserves; and Text Reserves. An increasingly popular service is e-Reserves whereby journal articles, sample tests, plus syllabi are delivered electronically to the students.

GALILEO – Georgia Library Learning online, popularly known as GALILEO, is an initiative funded by the University System that allows access to online databases, including full-text and full-image files. Faculty and students have access to more than 100 indexing and abstracting services and to the Internet. 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 http://www.spsu.edu/library/library.html; or, patrons may place queries on email at 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.

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 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. 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:

- A+/Net+ Certificate
- AutoCAD User Certification
- CISCO Certified Network Associate (CCNA)
- E-Business Solutions in Java Certificate
- Linux+ Certificate Program
- Oracle 10g Database Certificate
- Professional Project Management Certificate Program
- Six Sigma Certification Training
- Roadmap to Certified Professional Facilitator (CPF)
- Lean Enterprise Certification
- (CQIA) Certified Quality Improvement Associate
- (CMQ/OE) Certified Manager of Quality/Organizational Excellence

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

Applied Research Center (SPARC)

The mission of the Southern Polytechnic Applied Research Center (SPARC) is to support 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 Center 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: http://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 678-915-3156, visit the web site at http://www.spsu.edu/sponsoredprograms or stop by rooms J-354 and J-356.

The Usability Center (UC)

Since 1995, The Usability Center at Southern Polytechnic has been helping clients apply usability concepts to products in the development process. This allows the user's experience to improve the product before it reaches market. The Usability Center provides usability testing, consultation, lab management, cognitive walk-through, heuristic evaluations, usability research, as well as participant recruitment and selection, and other customized usability related services. For more information go to: http://www.spsu.edu/usability

ICAPP Program Development

ICAPP Advantage prepares people to be knowledge workers (workers who generate value for others by creating, sharing or using ideas) in occupations that are in high demand and short supply in specific regional labor markets. ICAPP Advantage is directly tied to specific job commitments by employers.

- ICAPP was created to help employers succeed in Georgia. ICAPP is company-focused, and is not intended to create new degree programs at institutions.
- ICAPP Advantage can be used as an economic development incentive to encourage a company or other employer to either expand in or relocate to Georgia.
- ICAPP Advantage students earn credit hours that can count toward earning a degree. Students may also earn career-related certificates with the academic credit earned.

For more information go to: http://www.icapp.org

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. We provide full-time daily classes year-round in four-week terms. In addition, we offer specialized programs that are customized to fit your needs. For more information go to: http://www.els.edu/atlanta.

Academic Regulations and Administrative Procedures

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, a student who is within a year of graduating should review the graduation section and comply with the time table for petitioning to graduate. Frequently, the phrase "nobody told me" is used as justification for an appeal to a specific rule. Such justification is not acceptable.

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.

Definitions

Full-time Student – Full-time status is defined in the table below. Remember that other agencies (such as federal financial aid) may have different definitions of full-time. The definitions below are used when enrollment verifications are produced by SPSU.

	Part-Time	Half-Time	¾ Time	Full-Time
Undergraduate	Less than 6 Hours	6, 7, or 8 Hours	9, 10, or 11 hours	12 Hours or More

NOTE: Most forms of financial aid (except HOPE and PELL) require that a student be registered for at least 6 hours without regard to the institutional definition of a full-time student.

Part-time Student – See table above.

Good Standing – An undergraduate student is in good standing who has a cumulative GPA of 2.00 or higher.

Grade Point Average – The grade point average 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 are excluded. Additional information is available on the registrar's web pages.

Phase One Registration – The first period of open registration for a term. Dates are determined by the registrar and posted to the academic calendar. The purpose of the phase one registration is to allow current students in good standing the opportunity to secure needed classes and to provide an indicator of course needs for the university. In order to remain registered, students are required to secure their classes by paying for them either through financial aid, or with legal tender.

Phase Two Registration – The registration period immediately after phase one and before phase three. Phase two is intended to allow returning and new students the opportunity to make adjustments to class schedules including dropping and adding classes without penalty. In order to remain registered, students are required to secure their classes by paying for them either through financial aid, or with legal tender.

Phase Three Registration - Phase three registration includes a period of free registration that extends into the new term by several days. There is no implied or explicit intent to allow students to use regular registration and the drop/add period to "shop" for classes. The intended purpose of the drop/add period is to allow students ample time to develop a schedule and make necessary adjustments. Phase three is the final registration opportunity for a term and in order to remain registered, students are required to secure their classes by paying for them either through financial aid, or with legal tender.

Audit – Students who audit classes must declare their audit status during the drop/add period. Auditing provides students with the opportunity to attend a class without penalty or risk. The "V" 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. Courses taken under the audit status carry the same tuition and fees as courses taken in the normal mode. See "Registration" later in this chapter for details about auditing courses.

Withdrawal – Withdrawal is defined as the official act of discontinuing participation in a course or courses during a time in which withdrawal is permitted (usually after the drop/add period or regular registration, but before the mid-point of the term). Students who withdraw during the withdrawal period earn a grade of "W". See "Registration" later in this chapter for details about withdrawing.

Drop – The term "drop" refers to the removal of a course from a student's schedule during the official drop/add period. Dropping classes results in no grade being issued and no charge for tuition or fees.

Administrative Procedures – Administrative procedures are the steps and actions taken in order to follow established rules and regulations.

Term GPA – The term GPA is the pure GPA earned during any particular term of attendance at SPSU.

Cumulative GPA – The cumulative GPA is a student's GPA that includes all course work taken throughout all terms of attendance at SPSU. Grades from other institutions are not included in a student's SPSU cumulative GPA.

Administrative Changes

Students are expected to keep the university apprised of changes to their postal address, and phone number. The official means of communication with students is via email. All SPSU students are provided an email account free of charge and are responsible for information and notices that are posted for them.

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.

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. Check with the financial aid office for details about how renewal effects financial aid.

For complete details about this policy, see the Registrar's Office.

Academic Standing

In order to graduate an undergraduate student must achieve a cumulative GPA of 2.00

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.

Good Standing

To be considered in good academic standing an undergraduate student must have a cumulative GPA of 2.00 or better

Probation

A student whose cumulative GPA falls below 2.0 will be considered for placement on the probation list by the 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 as defined above.

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 Student Status Committee.

Transfer students admitted on "academic probation" who do not attain a 2.00 grade point average during their first term of attendance at Southern Polytechnic State University shall be academically suspended for unsatisfactory scholarship.

Reinstatement

Students who have been suspended may appeal for reinstatement to the 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.).

Appeals Procedure (also see grade appeals)

Appeals to academic regulations are properly initiated on a petition to the faculty form (visit the registrar's office for specific information about the appropriate form).

Appeal decisions are based on evidence that the student was treated unjustly or was not afforded the same opportunities as other students. It is not enough to simply claim "nobody told me". You must have quantitative proof that your were mis-advised or misinformed by someone on SPSU's staff, or that you were not treated as other students were treated. Your version of the series of events that led to this situation must be clearly articulated and credible. Your evidence does not have to be prima facie, but it must provide enough reasonable doubt that you were afforded proper guidance to make a policy exception for your case.

Appeals are considered by the appropriate faculty committee.

See the information in the grade appeal section and the "catalog and curriculum appeal" section.

Attendance

There are no formal institutional regulations regarding class attendance. Each classroom or laboratory instructor sets his or her own attendance policy. **However, instructors are required to 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.

Auditing Classes

The following rules apply to Audit courses:

- Audit courses count at full value in determining the number of credit hours for which the student is enrolled.
- No academic credit is granted for audited courses.
- Students may not change a class to or from audit status after the close of the drop-add period.
- The grade assigned for auditing is "V" (visited), and will have no effect upon the student's scholastic average.

Students will not be permitted to receive credit for their participation in a course as an auditor.

Additionally, students who audit a course will not be allowed to receive academic credit, including credit by examination for the same course.

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:

- Receiving a grade of "W" past the withdrawal date
- Extension of the time limit for converting a grade of "I"
- Exceptions to residency requirements

Students should complete a Petition to the Faculty form when they feel the academic policies or procedures have not been applied, or will not apply, fairly or appropriately to them.

Students desiring to petition the faculty for an exception should see the registrar's office for information on how to proceed.

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.

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.

Changing Your Student Record

Changing your major

If any student decides to pursue a different program of study than the one originally listed on the admissions application, the student must officially change majors by visiting the registrar's office and completing a change of major form. All changes of major require the approval of the losing and gaining department chairs.

Note that you must have permission to change majors. Changes of major are effective with the next term of attendance following the term of application for the change.

Changing your demographic information

Most demographic information such as address or phone number can be changed by the student using the student information system. To change your name or social security number, you must visit the registrar's office with appropriate documentation.

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

Continuous Enrollment

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

Classification of Students

Credit Hour

Definition of a Credit Hour - One credit hour 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. Some exceptions exist.

How a Student is Classified - A student is classified at the end of each term on the basis of the number of credit hours earned. The credit hours include all course work for which the student has earned college level credit at Southern Polytechnic State University, plus any transfer credit accepted by Southern Polytechnic State University.

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

Full-time Students

Undergraduate students enrolled for 12 or more credit hours are considered full-time students.

Note that the federal government and some other agencies have different definitions of student status. For example, without regard to the above table, all undergraduate students must be enrolled in at least 6 hours to qualify for most types of financial aid (HOPE and Pell excepted).

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:

- Check with the appropriate Department Chair about the applicability of credit by examination to the course(s) under consideration
- If credit by exam is appropriate, obtain a Request for Credit by Examination form from the Office of the Registrar, complete it and pay the requisite fee at the Business Office
- The Business Office will validate the form, and it should then be submitted to the Department Chair who is 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.

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, 1111L (Trigonometry based Physics I) and then takes PHYS 2211, 2211L (Calculus based Physics I), only one may be counted as hours earned, and only one may be used for graduation purposes.

Credit for Courses Completed More than Ten Years Prior to Graduation

Work completed more than ten years prior to the date of graduation may be credited toward degree program requirements with the approval of the student's major Department Chair, or if the student's enrollment at Southern Polytechnic State University has been continuous since the course was taken.

Cross Registration

Students may not attend Southern Polytechnic State University and another institution concurrently for transfer purposes, except under the cross registration program.

Southern Polytechnic State University 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.

Applications and additional information about cross registration can be obtained from the Registrar's Office.

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 the student cannot be reached, he or she will be given the grade of "Incomplete" until such time as he or she can be reached. The student shall have the right of appeal of the faculty member's decision

- first to the faculty member's Department Chair
- then to the appropriate school dean,
- and, if necessary, to the Vice President for Academic Affairs

Removal from a course under this provision will result in a grade of "F". 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.

Enrollment Verification and Student Status

Students desiring that their enrollment status be reported to an outside agency such as another university, or an insurance company, should request an enrollment verification from the national student loan clearing house. Student status is reported to the NSLCH as follows:

Note that the federal government and some other agencies have different definitions of student status. For example, without regard to the above table, all undergraduate students must be enrolled in at least 6 hours to qualify for most types of financial aid (HOPE excepted).

- Part-Time Less than 6 hours
- Half-Time 6, 7, or 8 hours
- 3/4 Time 9, 10, or 11 hours
- Full-Time 12 hours or more

Exceptions to Academic Regulations

Exceptions to the Academic Regulations of Southern Polytechnic State University may be made by the faculty or by the Registrar whenever a consideration of the student's complete record indicates that the application of a specific regulation will result in an injustice.

See sections on appeals for additional information.

Exclusion of Previous Major Courses from the Institutional GPA

Students may request deletion of previous major courses for graduation scholastic average and hours purposes by completing a Petition to the Faculty. 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.

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. Check with the Registrar's Office for the procedure to follow.

Grade Point Average

Computing the GPA

The cumulative grade point average determines the student's scholastic standing. The cumulative grade point average is computed by dividing the total quality points earned by the total number of credit hours for which the student has received a final grade of "A", "B", "C", "D", "F", or "WF".

Courses Taken at Other Institutions

Only courses taken at Southern Polytechnic State University, or courses completed under the cross-registration program, are computed in the cumulative grade point average. Credits 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.

Quality Points are assigned as follows:

Grade	Quality Points
A	Four quality points are assigned
B	Three quality points are assigned
C	Two quality points are assigned
D	One quality point is assigned
F	Zero quality points are assigned
WF	Zero quality points are assigned

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 Reports

Grades are reported to students by way of the student information system. Grade reports are not mailed. Students who desire a

written grade report may obtain one by written request to the registrar's office.

Grading System

Regular Grades

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

Grade	Definition	Comments
A	Excellent	
B	Good	
C	Satisfactory	
D	Poor	Some courses must be repeated if required for graduation
F	Failure	course must be repeated if required for graduation
WF	Withdrawal After Deadline	A grade of "WF" in a course is assigned upon official withdrawal after the midpoint of the term, and is counted in the student's scholastic average as a failing grade.

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 symbols are used in the cases indicated but are not included in the calculation of semester or cumulative grade point averages:

Grade	Definition	Comments
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 must be removed during the next term in which the student attends classes Otherwise the Registrar's Office shall convert the "I" into an "F". Once an incomplete grade is issued, a student should not re-register for the course until the grade becomes permanent, or converts to a permanent grade.
IP	In Progress	This grade indicates that credit has not been given in courses that require a continuation of work beyond the term for which the student signed up for the course. The use of this symbol is approved for thesis and project courses. This symbol cannot be substituted for an I (incomplete).
V	Audit	The "V" 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 grade of "W" is assigned when a student officially withdraws from a course before the midpoint of the term. Courses carrying the "W" grade will not be counted in the student's scholastic average.
S	Satisfactory	This symbol indicates that credit has been given for completion of degree requirements other than academic course work.
U	Unsatisfactory	This symbol indicates unsatisfactory performance in an attempt to complete degree requirements other than academic course work.

Graduation

Catalog for Graduation Evaluation

- 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.
- 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.
- Students changing majors will be evaluated for graduation from the catalog in effect at the time of the change, or any catalog in effect during subsequent periods of continuous enrollment.

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

General Requirements

A student is eligible for graduation when he or she:

- Has satisfactorily completed the required number of hours for the degree

- Has passed all required courses for the degree
- Has achieved the necessary scholastic average (2.00 for undergraduates; 3.00 for graduates)
- Has paid all required fees, fines, and other financial obligations
- Has filed an official "Petition of Admission to Candidacy for a Degree" through the Department Chair to the Registrar's Office
- Has 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, American Government, or Political Science 1101 satisfies this requirement; undergraduate degree only)
- Has satisfied any program related requirements
- Has merited the recommendation for the degree by the faculty and the President of the university
- Has earned 25% of the major hours required for the degree in residence at SPSU
- Has earned in residence at SPSU the last
  (Transient course work does NOT count as resident work)

  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

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 must be paid with check or money order only.

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.

Students are allowed and encouraged to petition early.

Honors

To graduate with honors, a student must have earned a minimum of 40 hours (in residence) for the associate degree and a minimum of 60 hours (in residence) for the bachelor's degree. The following GPA's apply to honors:

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 participating in the honors program (participation in classes designated as honors classes).

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.

Maximum Credit Hours

Students may register for a maximum of 18 hours during fall and spring and 12 hours during 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 that which is administratively authorized must be requested on a petition to the faculty form. Such petitions must be reviewed by the undergraduate student status committee.

Minor (Also see minors in the curriculum section)

To receive a minor, a student must complete at least six hours of the upper division requirements for the minor at Southern Polytechnic State University. Transfer credit may be used to satisfy the other requirements for the minor. Specific courses for minors are listed in the curricula section of this catalog.

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.

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

Repeat Courses

Students are free to repeat courses as many times as they like. For the purposes of calculating the institutional GPA, only the last attempt is used. Other attempts remain on the transcript, but are not used in calculating the institutional GPA.

Financial aid GPA's and other non-institutional GPA's may count all attempts.

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

A Course must have the same subject code, course number, and title to be considered the same course.

Courses that have the same subject code and course number, but have varied topics may be excluded from this policy.

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.

Course work considered to be in residence:

- Courses for which the student registers at SPSU including cross-registration

Course work considered to not be in residence:

- Transient work
- Transfer work
- Credit by examination
- K-credit

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. Each academic department must then process the petition.

If a student would rather have a second diploma, the student must apply for graduation using two separate forms. Each form must be accompanied by the graduation petition fee and each must be processed by the appropriate academic department.

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 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.

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.

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, 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
place of birth
current enrollment status
dates of attendance
major field of study
participation in officially recognized activities and sports
degrees and awards received
hometown
weight and height of members of athletic teams
prior college(s) attended

Policies and procedures

Specific policies and procedures for the maintenance of student records according to the Board of Regents of the University System of Georgia and the test of the Family Educational Rights and Privacy Act of 1974 are available for review in the Registrar's Office.

Destruction of Records

The complete academic record of all matriculating students will become permanent records of the institution. Following the third continuous term of non-enrollment by a student, the nonacademic records will be placed in an inactive, but accessible status. Following the end of the ninth year of inactive status, the nonacademic records will be purged and destroyed by the official responsible for their maintenance.

Students also have the right to file complaints with the FERPA Office of the Department of Education, Washington, D.C., 20201, regarding alleged violations of the Act.

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
- 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 university system of Georgia 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

The state of Georgia requires students to pass an examination of the United States and Georgia constitutions in order to graduate. SPSU satisfies this requirement by embedding an examination in certain core courses. Students who transfer to Southern Polytechnic State University from an institution located outside the University System of Georgia and who have completed U.S. History or American Government must complete HIST 2911 with a grade of "C" or better to receive transfer credit for HIST 2111 or 2112, or POLS 1101. Exceptions are considered by the core chief transfer officer.

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 following conditions must also be met by the institution where the credits were earned:

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

Transcript Request

All transcripts will include the entire academic record; no partial or incomplete record will be issued as a transcript. Though transcripts are normally issued promptly, requests should be made several business days before the document is required, particularly at the beginning or end of a semester. A transcript will not be issued when a student's record shows financial indebtedness to the institution. Transcripts may be ordered on line at getmytranscript.com.

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 in the Registrar's Office.

Withdrawal From Classes

Students desiring to withdraw from one or more classes before the midpoint of the term may do so by:

- Completing a Request to Withdraw at the Registrar's Office
- Or withdrawing through the Web-based registration system
- Or by sending a signed fax or letter to the registrar's office

After doing so, the student will be assigned a grade of "W" for those course(s). While a grade of "W" does not count in the student's cumulative grade point average, it does count in attempted hours for financial aid purposes and could affect a student's eligibility for aid if there are repeated withdrawals.

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

Refunds are based on the date of the withdrawal and are pro-rated. By University System of Georgia rule, refunds are not initiated for withdrawing from a portion of registered classes.

Withdrawing After the Mid-Point

Students who withdraw after the midpoint of the term are not eligible for a grade of "W" except in cases of hardship or extenuating circumstances as approved by the faculty. (See Administrative Procedures for instructions.) Students withdrawing after the withdrawal deadline date receive a grade of "WF" for the course(s), which counts the same as an "F" for grade point purposes.

Withdrawals After the Deadline

A request for a grade of "W" (past the deadline date) is properly made on a Petition to Withdraw After the Deadline form, available in the Registrar's Office.

- The petition must be completed and signed by the student's instructor(s).
- The petition must be accompanied by documentation sufficient to support the extenuating circumstances claimed.

No student will be allowed to withdraw from a course after the final class day of the term except via the petition process.

Students withdrawing from **all** classes during the refund period are entitled to a refund of a portion of the fees paid for the course(s). Students should check the Registration Bulletin to determine the date and amount of refund (if any) available. **No refunds are made for partial withdrawal.**

Withdrawal from Courses During Summer Term

Special rules apply to withdrawing during summer because of the various start dates for summer parts-of-term. See the registrar's web site (WWW.SPSU.EDU/Registration) for additional details.

The USG Core Curriculum

Core Curriculum

The University System of Georgia Common Core is designed to make transfer from one system institution to another as smooth as possible with a minimum of credit loss.

Principles Across the Core that are Common to All Institutions

Each Institution's core curriculum will:

- Encourage the development of written and oral communication skills and critical thinking within the broader academic context.
- Permit opportunities for interdisciplinary learning.
- Include offerings that reflect the special characteristics of the institution.
- Feature international components that increase global awareness and introduce the student to different cultural perspectives.

- Include an informed use of information technology.
- Employ pedagogy designed to increase intellectual curiosity and to initiate a continuing interest in the subject matter.
- Feature courses that are challenging and rigorous and provide learning experiences that distinguish a field.
- Introduce the methods used by technical and scientific professionals such as the evaluation of empirical data, problem recognition, problem definition, the application of scientific principles, and logical problem solving.
- Be cohesive and provide entry to both specialized studies in the student's chosen field and remaining courses (whether upper or lower division) in the institution's general education curriculum.
- Be designed with the assumption that students have met all admissions standards to the institution (with appropriate academic support provided for those who have not).

Curriculum Framework for the Common Core

A. Essential Skills (9-10 hours)

- English Composition I
- English Composition II
- College Algebra, Pre-Calculus or Calculus I, depending on major

Transfer Students: Transfer evaluation of courses in Area A is determined on a course-by-course basis.

B. Institutional Options (4 hours)

These courses address institution-wide general education outcomes chosen by the University. Examples include, but are not limited to, global issues, oral communication, information technology, critical thinking, wellness, geography, and foreign languages. At Southern Polytechnic State University, the Institutional Option courses are:

- Public Speaking (COMM 2400)
- Science, Technology and Society (STS 2400)

Transfer Students: If you have completed Area B at your original institution, Southern Polytechnic State University will accept this area in its entirety. If you did not complete this area at your original institution, you will be required to take the courses above to complete the necessary hours. We will accept courses in this area whether or not we offer the course at SPSU.

C. Humanities/Fine Arts (6 hours)

These are courses that address humanities/fine arts learning outcomes and which the undergraduate curriculum committee has approved. Interdisciplinary courses are acceptable.

Transfer Students: If you have completed Area C at your original institution, Southern Polytechnic State University will accept this area in its entirety. If the area has not been completed, you will be required to take additional course work to complete the necessary hours. We will accept courses in this area whether or not we offer the course at SPSU.

D. Science, Mathematics, and Technology (10-11 hours)

These are courses approved by the undergraduate curriculum committee that address learning outcomes in the sciences, mathematics, and technology. These need not be sequential courses. Interdisciplinary courses are acceptable. Required are:

- Two four-hour laboratory science courses
- Three additional credit hours in mathematics, science, or technology

Transfer Students: Transfer evaluation of courses in Area D is on a course-by-course basis. SPSU will accept any approved course in this area. If you have completed Area D at your original institution, Southern Polytechnic State University will accept this area in its entirety. If the area has not been completed, you will be required to take additional course work to complete the necessary hours.

E. Social Sciences (12 hours)

These are courses approved by the undergraduate curriculum committee that address learning outcomes in the social sciences, including, but not limited to, history and American government. Interdisciplinary courses are acceptable. If credit course work is used to satisfy the U.S./Georgia history and constitution requirement, course(s) shall be part of this area.

Transfer Students: If you have completed Area E at your original institution, Southern Polytechnic State University will accept this area in its entirety. If the area has not been completed, you will be required to take additional course work to complete the necessary hours, but never exceeding a total of fourteen semester hours between you former institution and SPSU. We will accept courses in this area whether or not we offer the course at SPSU.

F. Courses Related to the Program of Study (18 hours)

These are courses numbered below 3000 that are related to your program of study, and courses which are prerequisites to major courses at higher levels.

Transfer Students: Transfer evaluation of courses in Area D is on a course-by-course basis. If you have completed Area F at your original institution, Southern Polytechnic State University will accept this area in its entirety, provided your major does not change. If the area has not been completed, you will be required to take additional course work to complete the necessary hours.

Core Courses

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

Area A

Essential Skills

Three Courses are Required

All students must complete Composition I and II and either Math 1111 or Math 1113 depending on their major.

Take both English classes and one mathematics class, depending on your major.

Course	Title	Hours
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
	or	
MATH 1113	Pre-calculus	4
	or	
MATH 2253	Calculus I	4
	Area Total is 9 or 10 Hours depending on major	

NOTE: See your academic advisor for information about which specific math course you should take.

Area B

Institutional Option

Two Courses Are Required

All students must complete Speech 2400 and Science, Technology, and Society 2400.

Take both of these

Course	Title	Hours
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
	Area Total is 4 Hours	

Area C

Humanities/Fine Arts

Two Courses Are Required

All students must complete *One Course From Each of the Following Two Groups* for a total of two courses.

Literature of the World

Take one of these eleven courses.

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

Art and Culture of the World

Take one of these seven courses.

Course	Title	Hours
ARTS 2001	Art Appreciation	3
ARTS 2002	Drama Appreciation	3
ARTS 2003	Music Appreciation	3

ARTS 2004	History of Contemporary American Music	3
FREN 1002	Elementary French II	3
GRMN 1002	Elementary German II	3
SPAN 1002	Elementary Spanish II	3
FREN 2001	Intermediate French I	3
SPAN 2001	Intermediate Spanish I	3
FREN 2002	Intermediate French II	3
SPAN 2002	Intermediate Spanish II	3
	Area Total is 6 Hours	

Area D

Science, Mathematics, and Technology
Three Courses are Required

All students must complete two courses from the sciences group and one course from the mathematics group.

Sciences Group

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

Course	Title	Hours
ASTR 1000K	Introduction to the Universe	4
BIOL 2107K	Biology Principles I	4
BIOL 2108K	Biology Principles II	4
CHEM 1211	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry I Lab	1
CHEM 1212	Principles of Chemistry II	3
CHEM 1212L	Principles of Chemistry II Lab	1
PHYS 1111	Introductory Physics I	3
PHYS 1111L	Introductory Physics I Lab	1
PHYS 1112	Introductory Physics II	3
PHYS 1112L	Introductory Physics II Lab	1
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I Lab	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II Lab	1

Mathematics Group

Take one from this list of three courses for a total of 3 or 4 hours

Course	Title	Hours
MATH 1113	Pre-calculus	4
MATH 2240	Survey of Calculus	3
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
	Area Total is 11 or 12 Hours	

Area E

Social Sciences
Four Courses Are Required

All Students must complete one course from each of the following four groups

American Context Group

Take one of these three.

Course	Title	Hours
HIST 2111	U.S. History to 1877	3
HIST 2112	U.S. History since 1877	3
POLS 1101	American Government	3

NOTE: Any of the above three courses will satisfy the legislative requirements for U.S. Constitution and Georgia History

World History Group

Take one of these two.

Course	Title	Hours

HIST 1111	World Civ: Pre 1500	3
HIST 1112	World Civ: Post 1500	3

Behavioral Sciences Group

Take one of these two.

Course	Title	Hours
ECON 1101	Introduction to Economics	3
PSYC 1101	Introduction to General Psychology	3
SOCI 1101	Introduction to Sociology	3

Cultures and Societies Group

Take one of these five.

Course	Title	Hours
ANTH 1102	Introduction to Anthropology	3
ES 1100	Ethnic Studies	3
GEOG 1101	Introduction to Human Geography	3
POLS 2401	Global Issues	3
RELG 1200	World Religion	3
	Area Total is 12 Hours	

Area F

Courses Related to the Major Program of Study

See your advisor or your academic department for the required courses in this area.

NOTE: The additional hours in Areas A and D carry over to Area F or general degree requirements.

Area Total is 18 Hours.

Total Hours for USG CORE **60**

eCore

eCore — short for electronic core-curriculum — allows University System of Georgia (USG) students the opportunity to complete their 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 English, mathematics, science, history, and the social sciences that are designed, developed, taught and supported by faculty and staff from the USG. Please note that eCore has its own schedule, which varies slightly from the SPSU academic calendar. You can find out more information about eCore, such as courses offered, course descriptions, cost, textbook information, etc. at http://spsu.edu/ecore and http://ecore.usg.edu. Click here to see the eCore Equivalency Chart: http://spsu.edu/ecore/equivalency_chart.htm.

Courses taught in eCore are listed below:

CHEM 1211 - Principles of Chemistry I

CHEM 1212 - Principles of Chemistry II

COMM 1100 - Human Communications

ENGL 1101 - English Composition I

ENGL 1102 - English Composition II

ENGL 2111 - World Literature I

ENGL 2132 - American Literature II

ENVS 2202 - Environmental Science

ETEC 1101 - Electronic Technology in the Educational Environment

GEOL 1011K - Introductory Geosciences I

HIST 1111 - World History I

HIST 2111 - U.S. History I

MATH 1101 - Intro to Mathematical Modeling

MATH 1111 - College Algebra

MATH 1113 - Pre-calculus

MATH 1401 - Intro to Statistics

MATH 1501 - Calculus I

PHIL 2010 - Intro to Philosophy

PHYS 1211 - Principles of Physics I

POLS 1101 - American Government

PSYC 1101 - Introduction to General Psychology

SOCI 1101 - Introduction to Sociology

SPAN 2001 - Intermediate Spanish

SPAN 2002 - Intermediate Spanish II

Programs of Study

SPSU Majors and Areas of Study

Area of Interest	See Section in Catalog	Major Offered
Accounting	Business Administration	B.S., Accounting M.S. Accounting (see graduate catalog)
Apparel	Apparel Textile Technology	Bachelor of Apparel and Textiles
Applied Science	Applied Science	Bachelor of Applied Science (six different concentrations)
Architecture	Architecture	B. Architecture
Art	Arts	B.S., Technical Communication—Digital Media and Graphics
Astronomy	Physics	courses only
Biochemistry	Biology	B.S., Biology—Biochemistry and Molecular Biology
Biotechnology	Biotechnology	B.S., Biotechnology
Bioinformatics	Biology	B.S., Biology—Bioinformatics
Biology	Biology	B.S., Biology
Business	Business Administration	B.S., Business Administration B.A.S., Business Management M.B.A., Business Administration (see graduate catalog)
Chemistry	Chemistry	B.S., Chemistry. B.S., Biology - Biochemistry B.S., Chemistry - Education Track
Civil Engineering	Civil Engineering	B.S., Civil Engineering
Civil Engineering	Civil Engineering Technology	B.S., Civil Engineering Technology B.S., Surveying and Mapping
Computer Engineering	Electrical Engineering Technology	B.S., Computer Engineering Technology
Computer Game Design and Development	Computer Science	B.S., Computer Game Design and Development
Computer Science	Computer Science	B.A., Computer Science

		B.S., Computer Science B.S., Computer Game Design and Development M.S., Computer Science (See Graduate Catalog)
Communication	Electrical Engineering Technology, English and TCOM	B.S., Telecommunications Engineering Technology B.S., Technical and Professional Communication
Construction Management	Construction Management	B.S., Construction Management M.S., Construction Management (See Graduate Catalog)
Construction Engineering	Construction Engineering	B.S., Construction Engineering
Content Design	English and TCOM	B.A.S., Content Design
Electrical Engineering	Electrical Engineering	B.S., Electrical Engineering
Electrical Engineering	Electrical Engineering Technology	B.S., Electrical Engineering Technology B.S., Computer Engineering Technology B.S., Telecommunications Engineering Technology M.S., Engineering Technology: Electrical (See Graduate Catalog)
Engineering	Engineering	multiple degrees – see catalog section
Engineering Technology	Engineering Technology	multiple degrees - see catalog section
English	English	B.A., English and Professional Communication
Environmental Science	Environmental Science	B.S., Environmental Science
Fashion Design	Fashion Design and Product Development	Bachelor of Apparel and Textiles
Finance	Business Administration	B.S., Accounting M.S., Accounting (See Graduate Catalog) M.B.A., (See Graduate Catalog)
French	Modern Languages	courses only
Game Design	Computer Science	B.S., Computer Game Design and Development
General Studies	General Studies	A.S. in General Studies
History	History	B.S. in International Studies—History
Industrial Engineering	Industrial Engineering Technology	B.S. in Industrial Engineering Tech. M.S. in Quality Assurance (See Graduate Catalog)
Information Design	See Graduate Catalog	M.S. in Information Design and Communication (See Graduate

		Catalog)
Information Management	Information Technology	B.A.S., Information Management
Information Technology	Information Technology	B.S in Information Technology M.S., Information Technology (See Graduate Catalog)
International Studies	International Studies	B.S. in International Studies
Instructional Design	See Graduate Catalog	M.S. in Information and Instructional Design (See Graduate Catalog)
Languages	Modern Languages	B.S. in International Studies--Spanish
Logistics	Supply Chain Logistics	B.A.S
Management	Business Administration	B.A., Business Administration B.S., Business Administration M.B.A. in Business Administration (see graduate catalog)
Manufacturing Operations	Manufacturing Operations	B.A.S., Manufacturing Operations
Marketing	Business Administration	B.A., Business Administration B.S., Business Administration M.B.A., in Business Administration (see graduate catalog)
Mathematics	Mathematics	B.A. in Mathematics B.A. in Mathematics - Education Track B.S. in Mathematics
Mechanical Engineering	Mechanical Engineering	B.S., Mechanical Engineering
Mechanical Engineering	Mechanical Engineering Technology	B.S. in Mechanical Engineering Technology
Mechatronics Engineering	Mechatronics Engineering	B.S. in Mechatronics Engineering
Operations Management	See Graduate Catalog	M.B.A. in Business Administration (see graduate catalog)
Physics	Physics	B.S. in Physics B.S. in Physics with a concentration in Teacher Education
Political Science	Political Science	B.S. in Political Science
Pre-Law	Political Science	B.S., Political Science B.S. in International Studies—Technology and the Law
Pre-Medical	Biology	B.S. in Biology—Pre Professional B.S., Chemistry
Psychology	Social Sciences	B.S. in Psychology
Quality Assurance	See Graduate Catalog	M.S. in Quality Assurance
Residential Construction Management	Construction Management	B.A.S., Residential Construction Management

Robotics	Engineering	B.S., Mechatronics
Science, Technology and Society	Social Science	B.S. in International Studies
Social Sciences	Social Sciences	B.S. in International Studies
Software Engineering	Software Engineering	B.S. in Software Engineering M.S., Software Engineering
Spanish	Modern Languages	B.S. in International Studies—Spanish
Surveying & Mapping	Civil Engineering Technology	B.S. in Surveying and Mapping
Systems Engineering	Systems Engineering	B.S. in Systems Engineering M.S. in Systems Engineering (See Graduate Catalog)
Supply Chain	Supply Chain Logistics	B.A.S., Supply Chain Logisitics
TCSG Transfer Program	TCSG Transfer Program	B.A.S.
Teacher Education	Teacher Education	B.S. in Teacher Education - Chemistry B.S. in Teacher Education - Math B.S. in Teacher Education - Physics
Telecommunications	Electrical Engineering Technology	B.S. in Telecomm. Engineering Technology
Technical Communication	Technical and Professional Communications	B.S. in Technical Communication M.S. in Information Design and Communication
Writing	English and TCOM	M.S., Instructional Design and Communication

Minors Offered

Accounting
Aerospace Engineering (SME)
Apparel and Textile Technology
Architecture
Biology
Business Administration
Chemistry
Computer Game Design and Development
Computer Science
Construction Management
Industrial Engineering Technology
Information Technology
Mathematics
Mechatronics (Pending Approval)
Nuclear Engineering (SME)
Political Science
Physics
Professional Writing
Psychology
Software Engineering
Spanish
Technical Communication

Accounting

The Bachelor of Science in Accounting BSA is designed to give students a broad understanding of the major components of the accounting industry and the foundation requirements for taking the certified public accountant (CPA) exam as specified by the Georgia State Board of Accountancy. Included in the 122 hours required to earn this degree is a comprehensive coverage of business principles.

Accounting Bachelor's Degree Requirements

Area A Essential Skills		
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1113	Pre-Calculus	4
Area B Institutional Options		
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Humanities/Fine Arts		
Group 1	Literature Group	3
Group 2	Art and Culture Group	3
Area D Science, Mathematics, and Technology		
MATH 2240	Calculus	3
Science	2 science courses plus 2 labs	8
Area E Social Sciences		
Group 1	American Context	3
Group 2	World History	3
Group 3	Behavioral Science	3
Group 4	Cultures and Societies	3
Area F		
ECON 2105	Macro Economics	3
ECON 2106	Micro Economics	3
ACCT 2101	Accounting I	3
ACCT 2102	Accounting II	3
MGNT 2201	Intro to Computer Applications	3
COMM 2000	Business Communications	3
Common Professional Core		
MGNT 1000	Orientation	1
SPSU 1001	Hitchhiker's Guide to SPSU	1
IET 2227	Introduction to Statistics	3
MGNT 3105	Management and Organizational Behavior	3
MGNT 3135	Marketing Principles	3
MGNT 3145	Legal Environment of Business	3
MGNT 3125	Business Finance	3
MGNT 3205	Management Information Systems	3
MGNT 4135	Project Management	3
MGNT 4151	Operations Management	3
Core Accounting Courses		
ACCT 3230	Intermediate Accounting I	3
ACCT 3231	Intermediate Accounting II	3
ACCT 4530	Advanced Accounting	3
ACCT 3530	Cost Management Accounting	3
ACCT 4535	Accounting Information Systems & ERP	3
MGNT 4545	Legal Environment of Business II	3
ACCT 4555	Auditing and Assurance	3
ACCT 4560	Taxation I	3
Electives (Select 3 courses)		
ACCT 4562	Taxation II	3
ACCT 4565	Fraud Examination	3
IET 2305	Principles of Industrial Sys/Processes	3
IET 3356	Quality Concepts and Systems Design	3
ACCT 4568	Accounting Software Applications	3
MGNT 4595	Business Strategy	3
	Free Elective	2
	Degree Total	122

Accounting Minor

Students who wish to receive a concentration or minor in Accounting must take Intermediate Accounting I (ACCT 3230), Intermediate Accounting II (ACCT 3231), Cost Accounting (ACCT 3530), Auditing and Assurance (ACCT 4535), and one of the following: Advanced Accounting (ACCT 4530) or Taxation I (ACCT 4560).

Accounting Minor Courses (15 Credits)

IACCT 3230	Intermediate Accounting I
ACCT 3231	Intermediate Accounting II
ACCT 3530	Cost of Accounting
ACCT 4535	Auditing and Assurance
ACCT 4530 or ACCT 4560	Advanced Accounting or Taxation I

Architecture

Offering the Bachelor of Architecture

The mission of the Architecture Program at Southern Polytechnic State University is to expand and extend the university mission into the realm of architecture. The program prepares students for professional practice in the design, planning, development, and stewardship of the built environment.

An architect tackles many issues: people's needs, building needs, a building site, and environmental concerns. Because creativity is the greatest source of solutions that fit all these issues, students find that a background in art proves helpful. The best ideas are bigger than a computer mouse or a drafting instrument, so we've structured a program that puts your imagination and your hands to work from Day One.

Known as a 2+3 program, our School begins with two years of Design Foundation. Students analyze the organization of space, building designs by noted Architects, and contextual issues. They evaluate each building's successes and failures, and discuss how they might make changes to improve the designs. This preparation introduces you to the issues, processes, and the spirit of experimentation that characterizes the professional design of built environments. This experience forms a foundation of skills that you develop more fully during the last three years of the program. Because our courses must be taken in sequence, Architecture students typically attend year-round.

Many students elect to take our Furniture Design Studio following in the footsteps of great architects who design and create furniture — and learning much from the process of choosing materials, creating joints, and fitting together materials. A spacious workshop provides tools for use in modeling and construction projects.

Laptops and drafting instruments come in handy, but the most important piece of equipment for an architect is imagination. Initially, SPSU's award-winning faculty stimulate ideas through freehand drawing, which helps you reach into your creative "well" and channel those images onto paper.

Next, you'll learn a lot about scale and materials by putting models together. After you master these two skills, you're ready for computer use.

Throughout this program of study, you work with outstanding educator practitioners. Our faculty includes several Fellows of the American Institute of Architects, as well as faculty who have earned their Ph.D. — an unusual distinction in our profession.

About the program

SPSU is the only public state institution in Georgia to offer the Bachelor of Architecture degree. Our membership in the School of Architecture, Civil Engineering Technology, and Construction affords our students the opportunity to take classes in Construction and Civil Engineering for a multi-disciplinary degree. We also offer classes in furniture design, applied architectural research and design/build.

The faculty

Many of our faculty members are licensed architects, some with active architectural offices. Their fields of expertise encompass the areas of architectural design, environmental design, environmental psychology, cultural anthropology, urban design, urban planning, cultural diversity, structural design, methods of construction sustainability, architectural history and criticism, professional practice, and computer application... to name a few. The depth and breadth of our faculty's backgrounds is reflected in the choices available to Architecture students at Southern Polytechnic

Ameen Farooq	Professor and Department Chair
Edwin Akins	Assistant Professor
Kathryn Bedette	Associate Professor
William J. Carpenter	Professor
Michael J. Carroll	Assistant Professor
Joseph Choma	Assistant Professor
C. Richard Cole	Professor
Durham Crout	Associate Professor
Bronne Dytoc	Assistant Professor
Mine Hashas	Assistant Professor
Pyo-Yoon Hong	Assistant Professor
Howard F. Itzkowitz	Professor [Emeritus]
Harry F. Kaufman,	Professor [Emeritus]
Elizabeth Martin	Assistant Professor
Kemp Mooney	Senior Lecturer
Peter Pittman	Associate Professor, Program Senior Advisor
Anthony Rizzuto	Associate Professor
Ermal Shpuza	Associate Professor
Robert Tango	Associate Professor
M. Saleh Uddin	Professor
Manole Voroneanu	Assistant Professor
Christopher Welty,	Assistant Professor
Pegah Zamani	Assistant Professor

Departmental Staff :

Cathy Smith	Administrative Assistant
Mary Neely	Program Advisor
David Easterwood	Media and Digital Resources Supervisor
Philip Zhookoff	Architecture Wood Shop, Digital Fabrication Lab, and Building Operations Supervisor

Admissions

University admission's deadline for our program is June 1st. Admission to the University does not guarantee admission to the Design Foundation nor to the Professional Program.

Summer Design Workshop

All students must complete the three-week Summer Architecture Design Workshop [DFN 1000]. Students must successfully

complete the workshop to start in Design Foundation [DFN 1001] that fall. Math 1111 is also a pre-requisite to the DFN 1001

The Summer Design Workshop is a primer to design, that consist of a variation of 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.

All studios are taught in sequence. The first Design Foundation studio [DFN 1001], for example, is offered only in the fall term. Missing the admissions deadline and failure to successfully complete the mandatory Summer Design Workshop will require the student to repeat and successfully complete the design workshop in order to be admitted in the Design Foundation studios [DFN 1001] in the following year.

Computer Requirements

All students in the Architecture Program must have a laptop computer for their individual use by the beginning of the second semester of first year. We recommend a computer with a minimum of 2G+ Processor and a good graphics card to run 3D Design programs. Given the pace of change in digital technology, computer requirements are subject to change.

Transfer Students

Transfer students may apply for admission to the program. All transfer students coming from an NAAB accredited program must submit a portfolio for approval by the Architecture Faculty no later than 5:00 PM on the second Friday of April for possible advanced standing in the Architecture Program in the following fall and second Friday of October for possible advanced standing for Spring.

Any transfer student who is accepted and chooses not to submit a portfolio will be required to complete the Summer Design Workshop for placement in the first DFN studio. Transfer students must have satisfactory [C or above] transferring GPA. They must also have current, formal acceptance to Southern Polytechnic State University and meet the University requirements regarding transfer status.

Prospective transferring students may receive further specific information and advice regarding the application process and applicable dates directly from the Architecture Department. All decisions regarding acceptance into the Architecture Program are final.

The Architecture Department will only review Architecture related courses for transfer credit. All other courses will be reviewed by the corresponding department for transfer approval. See current departmental guidelines for foreign transfer credits.

Bachelor of Architecture

The Bachelor of Architecture program is a fully accredited program by the National Architectural Accrediting Board. It is a 2 plus 3 program consisting of the Design Foundation, the first two years, and the Professional Program for the last three years. The professional program places emphasis on enhancing the understanding of the relationship of people and their physical environment, and the synthesis of this complex information into relevant design solutions. The program is a combination of building and environmental technology, professional practice, architectural electives and a rigorous sequence of design studios geared to exceptional students.

Accreditation

The following statement is required by the National Architectural Accrediting Board to be included in all catalogs and promotional materials for an accredited program.

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 two types of degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year I think this is out-of date, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards.

Masters degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprises an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

Pre-requisite Requirements and Grading Standards

Failure to place into Math 1113 will result in summer course work [Physics 1111, 1111L with a minimum grade of "C"] following the First Year of the Arch Program

All students must complete Pre-Calculus [Math 1113 and PHYS 1111, 1111L with a minimum grade of "C"] prior to DFN 2211 (Architecture Structures I).

All DFN and Professional studios and lecture courses must be taken in sequence with their prerequisites and must be passed with a minimum grade of "C".

All courses in the DFN Matrix must be completed by spring of 2nd Year: Cumulative GPA for both Georgia Core and DFN courses is 2.5. See Portfolio Review Criteria.

ADMISSION TO THE PROFESSIONAL PROGRAM: Average of: [Faculty Portfolio Evaluation] + [Cumulative DFN Course] ≥ 2.0

Directed Electives can be taken towards a Minor Concentration outside of the Architecture Program or Directed Electives with the approval of Senior Program Advisor.

Directed Electives can be taken in any semester of the Professional Program. Specific Directed Electives may be taken while in the DFN program with approval of the Senior Academic Advisor.

Georgia Core Course shown in the Professional Program Section can be taken in any semester.

Thesis students must earn an "S" in Arch 5999-R to move forward to Arch 5999-T.

Updates in the Portfolio Review for the current academic year supersedes all changes of previous academic years including Catalogs.

Students will not be allowed to register for the same studio professor in two consecutive semesters.

Thesis Studio Grading

Arch 5999-R: Thesis Research

Student enrolled in this course must achieve a grade of "S" [satisfactory progress] by his or her Thesis Committee to move forward to Thesis Studio. A "U" [unsatisfactory progress] will delay the graduation for one year.

Arch 5999-T: Thesis Studio

"I"- Incomplete must follow University Guidelines.

"D"- is not considered a studio pass in the department: Student needs to enroll in the summer semester to complete his or her thesis project under the guidance of their thesis committee for summer graduation.

"F"- Student failing thesis studio for the first time must retake the studio section of the thesis. This is only the case for students who have taken thesis for the first time. This will delay their graduation for one year. Student can use the same thesis proposal in the thesis bazaar for it to be selected by a new thesis committee.

The Design Foundation

Design Foundation constitutes the first two years of the Bachelor of Architecture degree program. The Design Foundation sequence is an introduction to design issues and processes. Students learn to apply critical thinking using applied design skills to solve abstract and moderately complex design problems of the built environment. Students demonstrate their understanding of course material through exercises and simulated design projects.

Admittance to the Professional Program,

Portfolio Review: Mandatory condition to enter the Professional Program

Students MUST meet the following 3 requirements for admittance to the Professional Program:

- Minimum cumulative grade point average (GPA) of 2.5 in all course work including DFN,
- Successful completion of all regents core courses, as identified in the Curriculum.
- A satisfactory portfolio review according to the set guidelines and evaluation processes by the Architecture Program.

Portfolio Review: Mandatory condition to enter the Professional Program

A design portfolio review and approval by the Faculty is an essential requirement to enter the Professional Program. Students must follow the established guidelines to prepare their portfolios.

All four DFN studio works and other design/art work must be well articulated with a table of contents and strong graphics with well referenced and focused elaboration of critical design processes that led to final design solutions/projects. Faculty teams each consisting of five-members evaluate student's four semesters of design work following the design criteria approved by the Architecture Faculty. Students achieving the successful approval of their portfolio work will be awarded admission to the Professional Program.

Students whose portfolios are not approved by a 5-member faculty consensus are encouraged to improve their designs by repeating DFN 2004. Students can then compete again for admission to the professional program by resubmitting their portfolios with that class.

Professional Program

The Professional Program is comprehensive and rigorous. The Professional Program includes students who have successfully completed the two-year sequence of Design Foundation and who demonstrate exceptional professional promise. Students admitted to the Professional Program must maintain satisfactory progress by achieving a minimum grade of "C" in all lecture courses.

IMPORTANT: All professional studios are in sequence. Each studio must be passed with a minimum of "C" grade in order to advance into the next studio.

Student Work

All student work executed and produced is intellectual property of the Architecture Program. Student work may be returned at the discretion of the faculty. The faculty also reserves the right to refuse credit for any work that was executed outside the precincts of the Architecture facilities or otherwise executed without coordination with the faculty.

Bachelors in Architecture [5 Year Professional Degree] Requirements

Georgia Core

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
MATH 1113	Pre-calculus	4
MATH 2253	Calculus I	4
Area D	Lab Sciences (Two courses) – PHYS 1111K – Required	8
Area E Group 1	American Context, one course	3
Area E Group 2	World History, one course	3
Area E Group 3	Behavioral Science, one course	3
Area E Group 4	Cultures and Societies, one course	3

Design Foundation

DFN 1000	Orientation to Architecture (Summer Design Workshop)	2
SPSU 1001	Hitchhikers Guide to SPSU	1
DFN 1001	Design Foundation I	4
DFN 1002	Design Foundation II	4
DFN 1241	Design Communication I	2
DFN 2003	Design Foundation III	4
DFN 2004	Design Foundation IV	4
DFN 1111	Architecture Culture I	3
DFN 2112	Architecture Culture II	3
DFN 2211	Architecture Structures I: Introduction to Structures	3
DFN 2311	Environmental Tech I: System Selection & Materials	3
DFN 2242	Design Communication II	2

Architecture

ARCH 3011	Architecture Studio I	4
ARCH 3012	Architecture Studio II	4
ARCH 3113	Architecture Culture III	3
ARCH 3116	Urban Planning and Design Theory	3
ARCH 3211	Architecture Structures I	4
ARCH 3212	Architecture Structures II	3
ARCH 3313	Environmental Technology II: Human Comfort and: HVAC Systems	3
ARCH 3314	Environmental Technology IV: Lighting and Vertical Circulation	3
ARCH 4013	Architecture Studio III	4
ARCH 4014	Architecture Studio IV	4
ARCH 4114	Architectural Cultures IV	3
ARCH 4224	Environmental Technology III: Codes and Technical Documentation	3
ARCH 4411	Design Cost Control	2
ARCH 5313	Professional Practice and Ethics	3
ARCH 5593	Thesis Prep	2
ARCH 5998F	Focus Studio	5
ARCH 5999R	Thesis[Research	0
ARCH 5999T	Thesis Project	4
Electives		17
Degree Program Total		**153**

IMPORTANT: B. Arch Curriculum at SPSU continually corroborates with changes in the Design Profession. We strive to maintain high academic and professional standards in an effort to effectively prepare our students for competitive local and global markets. Any and all changes in the Curriculum become immediately in effect upon Architecture Faculty approval and supersede all previous versions of B. Arch Program Curriculum Matrix and University Catalogs. Students must keep up with the curriculum changes and meet any and all changes and requirements set in the most current version of the B. Arch Curriculum in an effort to successfully earn their professional degree in Architecture.

Minor In Architecture

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 course must be passed with a minimum grade of "C".

All studios should be taken in sequence.

Architecture Minor

DFN 1001	Design Foundation I	4

DFN 1002	Design Foundation II	4
DFN 2003	Design Foundation III	4
DFN 2004	Design Foundation IV	4
DFN 2241	Design Communication I	2
DFN 2242	Design Communication II	2
DFN 2311	Env. Tech I: System Selection & Materials and Finishes	3
DFN 1112/2112	Cultures 1 or Cultures II	3
DFN 2211	Architectural Structures	3
	Total	29

Certificate in Architecture Studies

This program is a study in architecture for non-architects. It provides a condensed exposure to the varied dimensions of architectural education while exercising restraint on time to complete.

While the program courses represent the major dimensions of an architectural education, they are surveys of regular coursework in the architecture major and, excepting Arch 2030, will not be recognized as credit bearing or substitution in the architecture major prescribed curriculum. The lecture courses address architecture as a whole, the design labs are oriented toward design of residential and light commercial buildings. This certificate is not open to architecture majors.

COURSES

Arch 2020 Design Communication
2-3-3 = 3 credit hours

No Pre-requisites
This course addresses the fundamentals of design communication to include drawing conventions and techniques used to represent design ideas and building forms. Students will progress through exercises with traditional media to basic exposure in digital representations in two and dimensions. Both small scale objects and moderate scale structures/buildings may be used as base information to represent concepts of design and techniques of representation. No pre-requisites. This course is not open to architecture majors and will not satisfy B.Arch curricular requirements.

Arch 2030 Global Sustainability Strategies
3-0-3 = 3 credit hours

No Pre-requisites.
This is a study of International aspects of buildings related to social orientation by looking at design and construction around the world in the context of sustainability and the carbon footprint of how we live. Form factors are discussed and the issues of planning, design and construction explored. The Architect/Engineer/Construction Manager's perspectives will be completed by specific building examples. International differences in the role of buildings/structures within our physical fabric will be explored, yet common threads will be found which can be useful in a shrinking world and a more universal construction industry. This course is open to all majors and undeclared students.

Arch 2040 History & Culture of Architecture
3-0-3 = 3 credit hours

No Pre-requisites
The history of architecture is examined from the dawn of recorded history through the development of society under the impact of other discourses such as philosophy, aesthetics, science, religion, politics and technology. Over time, architecture reflects the socio-cultural conditions of a given moment through aesthetic form in its relentless march to the modern and post-modern movements leading to the current paradigm shifts in process and form. This course is not open to architecture majors and will not satisfy B.Arch curricular requirements.

Arch 2050 Architectural Technology
2-2-3 = 3 credit hours

No Pre-requisites
This survey introduces the principle technologies involved in architecture and illustrates in a brief manner the integration of structure as the essential ingredient of form. The value and utility of structure are shown through a study of structural performance utilizing various materials and configurations. Enclosure systems and their intimate relationship to energy, human comfort and sustainability principles are discussed with special attention to natural and artificial lighting. Code and cost constraints on design are discussed, especially in the light of energy conservation and life cycle costs. This course is not open to architecture majors and will not satisfy B.Arch curricular requirements.

Arch 3060 Design Laboratory I
0-6-3 = 3 credit hours

Residential Basics
Pre-Reqs: Arch 2020, Arch 2030, Arch 2040 (may be concurrent)
This design laboratory will focus on the single family home of various sizes and projected market appeal. Interior and exterior design will be discussed as well as responsiveness to environmental constraints, energy efficiency and appropriate material choices. Students will participate in a sequence of design exercises illuminating and underscoring design principles and traits of excellence. This lab involves lecture, research, graphic design and model building. Pre-requisites include: Arch 2020, Arch 2030, Arch 2040 (may be concurrent). This course is not open to architecture majors and will not satisfy B.Arch curricular requirements.

Arch 3070 Design Laboratory II
0-6-3 = 3 credit hours

Residential Advanced/Light Commercial
Pre-Reqs: Arch 3060, Arch 3050 (may be concurrent w. instructor approval)
This design laboratory continues the exploration of residential architecture with consideration of multiformity structures, light commercial buildings, site design and programming.

Pre-requisites include: Arch 3060. This course is not open to architecture majors and will not satisfy B.Arch curricular requirements.

Total Program
= 18 credit hours

Arts

Offering the Bachelor of Science in Technical Communication – Digital Media and Graphics
(Degrees Offered: Bachelor of Science in Technical Communication—Digital Media and Graphics concentration; Bachelor of Arts in English and Professional Communication—Media, Communication, and Culture concentration)

Southern Polytechnic State University offers a variety of arts courses that may be used to satisfy core requirements, or as free electives. In addition, we offer a concentration track in our BS in Technical Communication program that allows students to develop the applied arts and information design skills needed in a world increasingly dominated by digital media arts. We also offer a concentration track in our BA in English and Professional Communication for students who are interested in applying these skills to careers in marketing communication, media arts, and entertainment.

The Faculty:

Kami Anderson, *Assistant Professor*
Carol Barnum, *Professor*
Terry Carter, *Associate Professor*
Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Keith B. Hopper, *Associate Professor*
John Lindsay, *Instructor*
Monique Logan, *Instructor*
Matthew McCool, *Assistant Professor*
Mark Nunes, *Associate Professor and Department Chair*
Betty Oliver, *Professor*
Iraj Omidvar, *Assistant Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Assistant Professor*
Ann Parker, *Lecturer*
Nancy L. Reichert, *Associate Professor*
Cheryl Shinall, *Instructor*
Herbert J. Smith, *Professor*
Charlotte Stephenson, *Instructor*
Mark K. Stevens, *Associate Professor*
Melissa Weaver, *Lecturer*
Jim Werner, *Assistant Professor*

Program Offerings in Digital Media/Media Arts:

The B.S. in Technical Communication—Digital Media and Graphics concentration is designed to prepare students for a variety of careers in which visual communication takes center stage.

Possible positions include:

- Documentation specialist
- Visual communication specialist
- Information designer
- Multimedia specialist
- Graphics specialist
- Website designer and content developer

Students pursuing the BS degree with a concentration in Digital Media and Graphics must complete:

- The Core Curriculum
- Required upper-division courses in technical communication (TCOM)
- Courses in the Digital Media and Graphics concentration
- Additional elective courses in the major
- Free electives

The B.A. in English and Professional Communication—Media, Communication, and Culture concentration combines hands-on production courses with a study of media and culture to prepare students for careers where media savvy can really pay off.

Possible positions include:

- Media specialist
- Marketing communications associate
- Interactive marketing specialist
- Media production associate
- Website content developer

Students pursuing the BA degree with a concentration in Media, Communication and Culture must complete:

- The Core Curriculum
- Required upper-division courses in technical communication (TCOM)
- Courses in the Media, Communication, and Culture concentration
- Additional elective courses in the major
- Free electives

Students must make a grade of at least a C in all major courses.

Included below are the complete requirements for both programs.

English

Offering:

The Bachelor of Arts in English and Professional Communication

Our Bachelor of Arts in English and Professional Communication degree is not your typical B.A. in English. Our program emphasizes the role and place of text and image within a world increasingly dependent upon clear communication. 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 technical, international, scientific, and computer-related information to both technical and non-technical users.

The required communication courses equip students with the most advanced communication skills in writing, editing, graphics, information design and collaboration. In addition, students study classical rhetoric, develop high-level computer skills, and produce a portfolio that demonstrates their communication proficiency to potential employers. Our literature courses help students understand the diversity of genres, cultures, and authors that contribute to literary production. With offerings in journalism, creative writing, science writing, and environmental writing, our Professional Writing and Communication concentration prepares students for careers in media writing, freelance writing, marketing, public relations, and publishing Our new concentration in Media, Communication, and Culture combines hands-on production courses with a study of media and culture to prepare students for careers in marketing, mass communication, and entertainment, where media savvy can really pay off.

The Faculty:

Kami Anderson, *Assistant Professor*
Carol Barnum, *Professor*
Terry Carter, *Professor*
Donna Colebeck, Lecturer
Laura Beth Daws, Instructor
Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Kelsey Harr-Lagin, *Instructor*
Keith B. Hopper, *Professor*
Monique Logan, *Instructor*
Matthew McCool, *Assistant Professor*
Michelle Nichols, *Lecturer*
Mark Nunes, *Professor and Department Chair*
Betty Oliver, *Professor*
Iraj Omidvar, *Associate Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Assistant Professor*
Ann Parker, *Lecturer*
Cassie Race, Instructor
Nancy L. Reichert, *Associate Professor*
Cheryl Shinall, *Instructor*
Erin Sledd, *Instructor*
Herbert J. Smith, *Professor*
Debora Stefani, *Instructor*
Charlotte Stephenson, *Instructor*
Mark K. Stevens, *Associate Professor*
Laurie Strauss ,*Instructor*
Beth Stutzmann, *Senior Lecturer*
Katherine Taylor, *Instructor*
Ava Werner, *Instructor*
Jim Werner, *Assistant Professor*
Misty York, *Lecturer*

The Program:

The Bachelor of Arts in English and Professional Communication is designed to prepare students for a variety of communication careers.

Possible positions include:

- Technical writer
- Documentation specialist
- Technical editor
- Professional writer
- Information designer
- Multimedia specialist
- Proposal writer
- Corporate communications specialist
- Public relations
- 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 professional and technical communication
- A concentration in one area of professional communication
- Additional elective courses in the major
- Free electives

Students must make a grade of at least a C in all major courses.

Included below are the complete requirements for the programs.

The English and Professional Communication Bachelor of Arts Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus I	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
SPSU 1001	Hitchhikers Guide to SPSU	1
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3

Required Foundations Courses (9 credits)

COMM 2000	Business Communication	3
TCOM 2010	Technical Writing[2]	3
TCOM 2020	Foundations of Technical Communication	3

Required Research Methods Course (3 credits; choose one)

TCOM 2030	Research in Technical Communication	
	OR	3
ENGL 2030	Research in Professional and Critical Writing	

Area F Electives (6 credits; choose two)

ENGL 2xxx	Any 2000-level literature survey	3-6
COMM 2060	International Communication[1]	3
COMM 2150	Ethics and Communication	3
Any additional course in Math, Science, or Computer Science (with programming) elective[1]		3
Any foreign language, 2001 or higher		3

Basic Required Courses in the Major (15 hours)

ENGL 3030	English Grammar for Professional Writing	3
TCOM 4030	Foundations of Graphics	3
COMM 4100	Small Group Communication	3
ENGL 4160	Rhetoric: History, Theory, and Practice	3
TCOM 4800	Project Portfolio[2]	3

English and Professional Communication Electives	15

Take any 3000-level departmental course, or approved SIS, STS[2], or other electives

Free Electives	15
Concentration Courses (Professional Writing and Communication or Media, Communication and Culture) *or* Minor Courses (International Studies or Spanish)	15
Degree Program Total	**121 credits**

Concentrations:

Professional Writing and Communication **15 hours**

COMM 3035	Organizational Communication	3
COMM 3040	Health Communication	3
ENGL 3010	Science Writing[1]	3
ENGL 3015	Environmental Writing[1]	3
ENGL 3025	Creative Writing Workshop	3
ENGL 3035	Problems in Language	3
ENGL 3040	Writer's Workshop[1]	3
ENGL 3050	Journalism	3
ENGL 3081	Studies in Genre	3
ENGL 3082	Science and Literature	3
ENGL 4010	Publishing for New Media	3
TCOM 3020	Proposal Writing	3
TCOM 4000	Professional Editing	3

Media, Communication and Culture **15 hours**

ARTS 3000	Visual Thinking	3
COMM 3060	Media, Culture, and Society	3
COMM 3160	Media Theory and Practice	3
COMM 4060	Cross-Cultural Communication	3
ENGL 3045	Writing for New Media	3
ENGL 3180	Film as Literature	3
ENGL 4170	Media and Narrative	3
TCOM 4045	Foundations of Multimedia	3
TCOM 4170	Film & Video Production	3

Minors:

International Studies **15 hours**

In place of a concentration, students can choose to complete the BA in English and Professional Communication with a minor in International Studies. To be eligible for a minor in International Studies, the student must complete the following with a grade of C or better:

SIS 2903	Special Topics in Studies Abroad	
	OR	3
SIS 400x	Regional Studies	
Additional approved SIS courses[3]		12

Spanish **15 hours**

In place of a concentration, students can choose to complete the BA in English and Professional Communication with a minor in Spanish. To be eligible for a minor in Spanish, the student must complete the following:

SPAN 2001	Intermediate Spanish I	3
SPAN 2002	Intermediate Spanish II	3
Additional courses in Spanish at the 3000 level		9

NOTES:

1. Students may also take cross-listed TCOM sections of these courses.
2. Students may take STS 4000 or STS 4400 but not both for TCOM Electives.
3. Courses cannot have been used to satisfy core requirements. No more than two courses can be numbered below 2900.

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

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*
Carol Barnum, *Professor*
Terry Carter, *Associate Professor*
Donna Colebeck, Instructor
Laura Beth Daws, Instructor
Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Keith B. Hopper, *Professor*
Monique Logan, *Instructor*
Matthew McCool, *Assistant Professor*
Michelle Nichols, *Lecturer*
Mark Nunes, *Associate Professor and Department Chair*
Betty Oliver, *Professor*
Iraj Omidvar, *Assistant Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Assistant Professor*
Ann Parker, *Lecturer*
Cassie Race, Instructor
Nancy L. Reichert, *Associate Professor*
Cheryl Shinall, *Instructor*
Erin Sledd, Instructor
Herbert J. Smith, *Professor*
Charlotte Stephenson, *Instructor*
Mark K. Stevens, *Associate Professor*
Laurie Strauss, Instructor
Beth Stutzmann, *Lecturer*
Katherine Taylor, Instructor
Jim Werner, *Assistant Professor*
Misty York, 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*** major courses.

Included below are the complete requirements for the programs.

New Media Arts Bachelor of Arts Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus I	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3

Area F Core Course in the Major (3 credits)

ARTS 2020	History and Principles of Design	3

Area F Core Studio Course in the Major (9 credits; choose 3)

ARTS 2010	Introduction to Drawing	3
ARTS 2110	Introduction to Painting	3
ARTS 2220	2D & 3D Design	3
ARTS 2903	Music Theory	3

Area F Elective Courses in the Major (6 credits; choose 2)

ARTS 2001	Art Appreciation	3
ARTS 2002	Drama Appreciation	3
ARTS 2003	Music Appreciation	3

COMM 2170	Introduction to Media Studies	3

Basic Required Courses in the Major (24 credits)

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

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

ARTS 3170	Digital Photography	3
ARTS 4600	Directed Study	3
CGDD 3103	Application Extensions and Scripting	3
CGDD 4003	Digital Media and Interaction	3
CGDD 4203	Mobile & Casual Game Development	3
COMM 3060	Media, Culture, and Society	3
ENGL 3180	Film as Literature	3
ENGL 4170	Media and Narrative	3
TCOM 4040	Applied Graphics	3
TCOM 4045	Foundations of Multimedia	3
TCOM 4170	Film and Video	3
TCOM 4175	2D Animation	3
TCOM 4400	Advanced Design for the Web	3

Free Electives	18
Degree Program Total	121

For additional information about the B.A. program, contact the English, Technical Communication, and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu.

Biology

Offering the Bachelor of Science in Biology

Visit biology.spsu.edu 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-professional studies, general biology, and bioinformatics.

The fast-moving disciplines of biology and physics are 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

Jennifer Louten, Ph.D., Assistant Professor

Peter Sakaris, Ph.D., Assistant Professor

Rajnish Singh, Ph.D., Assistant Professor

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

Matthew Weand, Ph.D., Assistant Professor

Krista Surovec, 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

Biology BS Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
MATH 1113	Pre-calculus	4
MATH 2253	Calculus I	4
MATH 2260	Probability and Statistics	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
CHEM 1211	Principles of Chemistry I	4
CHEM 1211L	Principles of Chemistry I	4
CHEM 1212	Principles of Chemistry II	3
CHEM 1212L	Principles of Chemistry II Lab	1
CHEM 2511K	Organic Chemistry I	4
CHEM 2512K	Organic Chemistry II	4
PHYS 1111	Introductory Physics I	3
PHYS 1111L	Introductory Physics I Lab	1
PHYS 1112	Introductory Physics II	3
PHYS 1112L	Introductory Physics II Lab	1
BIOL 2107K	Biological Principles I	4
BIOL 2108K	Biological Principles II	4
BIOL 3000K	Genetics	4
BIOC 3111K	Biochemistry I	4
Track Requirement: Take one of the tracks described below.		**38 hours**
Degree Program Total		**121**

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

Biochemistry & Molecular Biology Track Requirements

BIOL 3200K	Biotechnology	4
BIOL 3310K	Molecular Biology	4
BIOC 3112K	Biochemistry II	4
Free Electives		10 – 14
BIOL ELEC	At least 4 additional Biology Courses Above 2108K (Excluding Track Requirements)	12-16

Bioinformatics Track Requirements

BIOL 3310K	Molecular Biology	4
BIOL 2100K	Bioinformatics Tools & Databases	4
BIOL 4510K	Bioinformatics II	4
CS 1301	Computer Science I	4
CS 1302	Computer Science II	4
CS 3153	Database Systems	3
Free Electives		3 – 6
BIOL ELEC	At least 3 additional upper-level courses in BIOL above 2108K	9 – 12

General Biology Track Requirements

BIOL 3300K	Ecology	4
BIOL ELEC	At Least 6 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	20-24
Free Electives		10-1 4

Cellular Form and Function group

BIOL 3100K	Microbiology	4
BIOL 3400K	Cell Physiology	4
BIOL 4410K	Immunology	4
BIOL 4470	Plant Physiology	3

Organismal Form and Function group

BIOL 4100K	Entomology	4
BIOL 4200K	Zoology	4
BIOL 4400K	Human Physiology	4
BIOL 4440K	Botany	4

Pre-Professional Track Requirements

BIOL 3400K	Cell Physiology	4
BIOL 4400K	Human Physiology	4
BIOL 4460K	Human Anatomy	4
BIOL ELEC	At Least 4 BIOL or BIOC Courses Above 2199 (Excluding Track requirements)	12-1 6
Free Electives		10-14

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

Biology Minor Requirements

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 2107K and/or 2108K to satisfy Core D requirements cannot use these courses to satisfy requirements of the minor

Bachelor of Science in Biology - Education Track

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
MATH 1113	Pre-calculus	4
MATH 2253	Calculus I	4
MATH 2260	Probability and Statistics	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature	3

	Group	
Area C Group 2	Take One Course from the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
CHEM 1211	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry I Lab	1
CHEM 1212	Principles of Chemistry II	3
CHEM 1212L	Principles of Chemistry II Lab	1
CHEM 2510	Survey of Organic Chemistry	3
BIOC 2111	Survey of Biochemistry	3
PHYS 1111	Introductory Physics I	3
PHYS 1111L	Introductory Physics I	1
BIOL 3000K	Genetics	4
BIOL 3300K	Ecology	4
BIOL 3400K	Cell Physiology	4
BIOL 4200K	Zoology	4
BIOL 4400K	Human Physiology I	4
BIOL 4460K	Human Anatomy	4
BIOL 4440K	Botany	4
BIOL 4480	Evolution	3
Education Track Area F		6
Education Track		**33 hours**
Degree Program Total		**121**

NOTE: PHYS 2211, 2211L and 2212, 2212L may be taken instead of PHYS 1111, 1111L and 1112, 1112L

Biotechnology

Offering

Bachelor of Science in Biotechnology (Pending BOR approval)

Southern Polytechnic State University's proposed Bachelor of Science degree in biotechnology will provide students with a program of study in modern biotechnology principles and techiques. It was developed in response to needs articulated by state, county, and local agencies and industries for a high-tech biology work force.

BS in Biotechnology Degree Requirements (Pending BOR Approval)

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
MATH 1113	Pre-calculus	4
MATH 2253	Calculus I	4
MATH 2260	Probability and Statistics	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
PHYS 1211	Introductory Physics I	3
PHYS 1211L	Introductory Physics I Lab	1
PHYS 1112	Introductory Physics II	3
PHYS 1112L	Introductory Physics II Lab	1
CHEM 1211	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry I Lab	1
CHEM 1212	Principles of Chemistry II	3
CHEM 1212L	Principles of Chemistry II Lab	1
CHEM 2511K	Organic Chemistry I	4
CHEM 2512K	Organic Chemistry II	4
BIOL 2107K	Biological Principles I	4
BIOL 2108K	Biological Principles II	4
BIOL 3000K	Genetics	4
BIOL 3100K	Microbiology	4
BIOL 4600K	Biotechnology	4
BIOL 3310K	Molecular Biology	4
BIOL 3400K	Cell Physiology	4
BIOL 4350K	Cell and Tissue Culture	4
BIOC 3111K	Biochemistry I	4
	SELECT 3 ELECTIVES FROM THE FOLLOWING LIST	9-11
BIOL 2500K	Bioinformatics Tools and Databases	4
BIOL 2800	Drug Development and Regulation	3
BIOL 4410K	Immunology	3
BIOL 4420K	Advanced Immunology	4
BIOL 4300	Virology	3
BIOL 4550	Cancer Biology	3
BIOC 4200	Medicinal Chemistry	3
BIOC 3112K	Biochemistry II	4
	Free Electives	7-9
	Total Degree Hours	121

NOTE: PHYS 2211/2211L and PHYS 2212/2212L may be substituted for PHYS 1211/1211L and PHYS 1212/1212L

***THIS DEGREE IS PENDING BOR APPROVAL**

Business Administration

Offering:

- The Bachelor of Applied Science
- The Bachelor of Science in Accounting
- The Bachelor of Science in Business Administration
- The Masters of Business Administration *(See the graduate catalog)*
- The Masters of Science in Accounting *(See the graduate catalog)*

The baccalaureate programs in Business Administration prepare students for successful careers in management and marketing. Graduates of the program advance into supervisory and management positions in service and industrial enterprises.

The **Bachelor of Applied Science** degree is designed to cap designated associate degree programs. Admission to this program requires completion of an associate of applied science or associate of applied technology degree, in Management/Supervising or Marketing from a SACS accredited school in the Technical College System of Georgia. The program covers the common professional component in Business Administration with additional courses to fulfill the requirements of Areas A through E of the core. This coursework will prepare a candidate for a supervisory role in business or industry.

The **Bachelor of Science in Accounting**

The **Bachelor of Science in Business Administration** program provides students with a strong foundation in the management of business and service enterprises. The program has a technology focus that prepares students for the changing business arena. The program has concentrations: Accounting, Finance, Management, Management Information Systems, and Marketing.

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*
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*
Bor-Yi Tsay, *Professor, Accounting*
Sandra Vasa-Sideris, *Professor, Management*

Business Management — Bachelor of Applied Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
MATH 2240	Survey of Calculus	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two courses in Laboratory Science	8
Area E1	American Perspective	3
Area E2	World History	3
Area E3	Course in Behavioral Science	3
Area E4	Course in Cultures and Societies	3
IET 2227	Introduction to Statistics	3
MGNT 1000	Orientation to Business	1
SPSU 1001	Hitchhikers Guide to SPSU	1
MGNT 3105	Management and Organizational Behavior	3
MGNT 3125	Basic Business Finance	3
MGNT 3135	Marketing Principles	3
MGNT 3145	Legal Environment of Business	3
MGNT 3205	Management Information Systems	3
MGNT 4115	Human Resources Management	3
MGNT 4135	Project Management	3
MGNT 4145	International Management	3
MGNT 4151	Operations Management	3
MGNT 4595	Business Strategy	3
MGNT Elective:	Select 1 additional MGNT courses (3000 or above)	3

Technical Block

Students who have completed an A.A.S. in Management/supervising or marketing from a SACS accredited school in the Technical College System of Georgia may obtain transfer credit in the Technical Block for up to 38 credit hours in business.

Degree Program Total **122**

Business Administration — Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
COMM 2000	Business Communication	3
MATH 1113	Pre-Calculus	4
MATH 2240	Survey of Calculus	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two courses in Laboratory Science	8
Area E1	American Perspective	3
Area E2	World History	3
Area E3	Course in Behavioral Science	3

Area E4	Course in Cultures and Societies	3
ACCT 2101	Accounting I	3
ACCT 2102	Accounting II	3
ECON 2105	Macroeconomics	3
ECON 2106	Microeconomics	3
IET 2227	Introduction to Statistics	3
IET 3356	Quality Concepts and System Design	3
IET 4405	Operations Research	3
MGNT 1000	Orientation	1
SPSU 1001	Hitchhikers Guide to SPSU	1
MGNT 2201	Business Computer Applications	3
MGNT 3105	Management and Organizational Behavior	3
MGNT 3125	Business Finance	3
MGNT 3135	Principles of Marketing	3
MGNT 3145	Legal Environment of Business	3
MGNT 3205	Management Information Systems	3
MGNT 4115	Human Resources Management	3
MGNT 4125	Technology and Public Issues	3
MGNT 4135	Project Management	3
MGNT 4145	International Management	3
MGNT 4151	Operations Management	3
MGNT 4595	Business Strategy	3
OPTIONS	Select one of the options below 1. Business concentration (four related courses) + 5 hours free electives 2. Any four Business electives + 5 hours free electives 3. Four directed electives (four related courses) + 5 hours free electives 4. Minor in another field (15-18 Hours) + enough free electives to total 17 hours	17

Degree Program Total **123 hours**

Business Administration Options

Concentration, Business Electives, Directed Electives, or a Minor in Another Discipline

Students in the Bachelor of Science in Business Administration program may complete the remaining 17 hours of credit by taking electives in a concentration (management, marketing, management of information systems), directed electives, or by completing a minor in another field. At least three courses must be at the 3000-level or above.

Option 1: Concentration

Students may complete 12 hours (four courses) in Accounting, Management, Marketing, or MIS by completing four electives in the selected area (see the elective lists that follows). At least three courses must be at the 3000-level or above.

Option 2: Business Electives

Students may complete 12 hours of elective credit from all of the business electives. At least three courses must be at the 3000-level or above.

Option 3: Directed Electives

Students may create a customized group of four electives from business and other disciplines, subject to advisor approval At least three of the courses must be at the 3000-level or above.

*Option 4: Minor in another field of study

Students may complete a Minor in another field (15-18 hours). See the catalog for requirements in a specific minor. Must complete free electives if the minor is less than 17 hours. Note that some minors require 18 hours.

Accounting Concentration Electives (15 Credits)

IACCT 3230	Intermediate Accounting I
ACCT 3231	Intermediate Accounting II
ACCT 3530	Cost of Accounting
ACCT 4535	Auditing and Assurance
ACCT 4530 or	Advanced Accounting or
ACCT 4560	Taxation I

Finance Concentration Electives (12 Credits)

IMGNT 3231	Management of Financial Institutions
MGNT 4232	Financial Planning & Capital Budgeting
MGNT 4233	Investment Analysis & Portfolio Managment
MGNT 5234	International Finance

Management Concentration Electives: Select 4 courses from the list below

MGNT 4100	Business Systems Analysis and Design
MGNT 4140	Management of Networks and Telecommunications
MGNT 4185	Technology Management
MGNT 4195	Current Readings in Management of Technology
MGNT 4903	Special Topics in Management
MGNT 4103	Marketing Management
MGNT 3170	Leadership
MGNT 4190	Entrepreneurship

Management Information Systems Concentration Electives (12 credits)

IT 1113	Programming Principles
MGNT 3500	Database Applications
MGNT 4100	Business Systems Analysis and Design
MGNT 4140	Management of Networks and Telecommunications

Marketing Concentration Electives (12 credits)

MGNT 3210	Professional Selling
MGNT 3224	Business Marketing
MGNT 3228	Market Research & Demand
MGNT 4103	Marketing Management
MGNT 4903	Special Topics in Marketing

Business Administration Options

Concentration, Business Electives, Directed Electives, or a Minor in Another Discipline

Students in the Bachelor of Science in Business Administration program may complete the remaining 17 hours of credit by taking

electives in a concentration (management, marketing, management of information systems), directed electives, or by completing a minor in another field. At least three courses must be at the 3000-level or above.

Option 1: Concentration

Students may complete 12 hours (four courses) in Accounting, Management, Marketing, or MIS by completing four electives in the selected area (see the elective lists that follows). At least three courses must be at the 3000-level or above.

Option 2: Business Electives

Students may complete 12 hours of elective credit from all of the business electives. At least three courses must be at the 3000-level or above.

Option 3: Directed Electives

Students may create a customized group of four electives from business and other disciplines, subject to advisor approval At least three of the courses must be at the 3000-level or above.

***Option 4: Minor in another field of study**

Students may complete a Minor in another field (15-18 hours). See the catalog for requirements in a specific minor. Must complete free electives if the minor is less than 17 hours. Note that some minors require 18 hours.

Accounting Concentration Electives (15 Credits)

IACCT 3230	Intermediate Accounting I
ACCT 3231	Intermediate Accounting II
ACCT 3530	Cost of Accounting
ACCT 4535	Auditing and Assurance
ACCT 4530 or ACCT 4560	Advanced Accounting or Taxation I

Finance Concentration Electives (12 Credits)

IMGNT 3231	Management of Financial Institutions
MGNT 4232	Financial Planning & Capital Budgeting
MGNT 4233	Investment Analysis & Portfolio Managment
MGNT 5234	International Finance

Management Concentration Electives: Select 4 courses from the list below

MGNT 4100	Business Systems Analysis and Design
MGNT 4140	Management of Networks and Telecommunications
MGNT 4185	Technology Management
MGNT 4195	Current Readings in Management of Technology
MGNT 4903	Special Topics in Management
MGNT 4103	Marketing Management
MGNT 3170	Leadership
MGNT 4190	Entrepreneurship

Management Information Systems Concentration Electives (12 credits)

IT 1113	Programming Principles
MGNT 3500	Database Applications
MGNT 4100	Business Systems Analysis and Design
MGNT 4140	Management of Networks and Telecommunications

Marketing Concentration Electives (12 credits)

MGNT 3210	Professional Selling
MGNT 3224	Business Marketing
MGNT 3228	Market Research & Demand
MGNT 4103	Marketing Management
MGNT 4903	Special Topics in Marketing

Business Administration - Minors

Accounting Minor
Students who wish to receive a concentration or minor in Accounting must take Intermediate Accounting I (ACCT 3230), Intermediate Accounting II (ACCT 3231), Cost Accounting (ACCT 3530), Auditing and Assurance (ACCT 4535), and one of the following: Advanced Accounting (ACCT 4530) or Taxation I (ACCT 4560).

Business Minor
Students wishing to receive a minor in Business Administration must take ACCT 2101, MGNT 3105, and three additional 3 hour business courses, two of which must be upper division. You may not use MGNT 1000 to satisfy a requirement in the minor. Additionally accounting courses beyond ACCT 2101 may not be used for the business minor. Students majoring in Accounting are not eligible for the minor in Business Administration.

Chemistry

Offering the

Bachelor of Science in Chemistry

Bachelor of Science in Chemistry with Teacher Education

Track leading to grades 6-12 certification

The Chemistry Program at Southern Polytechnic State University is part of the Department of Biology, Chemistry and Physics 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., *Assistant Professor*
Zvi Szafran, Ph.D., *Professor and Vice President for Academic Affairs*
Wei Zhou, Ph.D., *Assistant Professor*
Stephanie McCartney, Ph.D., *Laboratory Manager*

Chemistry - Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Communication	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences (Physics recommended)	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
BIOC 3111K	Biochemistry	4
CHEM 1211	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry I Lab	1
CHEM 1212	Principles of Chemistry II	3
CHEM 1212L	Principles of Chemistry II Lab	1
CHEM 2511K	Organic Chemistry I	4
CHEM 2512K	Organic Chemistry II	4
CHEM 2601	Chemical Literature	2
CHEM 3100K	Analytical Chemistry	5
CHEM 3300K	Instrumental Analysis	4
CHEM 4111K	Physical Chemistry I	4
CHEM 4112	Physical Chemistry II	3
CHEM 4112L	Physical Chemistry II Laboratory	1
CHEM 4411	Inorganic Chemistry	3
MATH 1113	Pre-Calculus	4
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
PHYS 2211	Physics I	3
PHYS 2211L	Principles of Physics I	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II Lab	1
General Chemistry Track:		**12-16**

Four additional upper level Chemistry, Mathematics or Science electives
(as approved by the faculty)

Materials Science Track:		**13-14**
MSCI 3101	Materials Science	4
CHEM 4112	Advanced Inorganic Chemistry	3
CHEM 4415	Solid State Chemistry	3
Chemistry Elective		3-4
Free Electives		3-7

(11-15 hours of free electives if Physics is taken as Lab Science)

Degree Program Total	**120 hours**

Bachelor of Science in Chemistry - Education Track

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Communication	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences (Physics 2211/2212 recommended)	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
BIOC 3111	Biochemistry	4
CHEM 1211	General Chemistry I	4

CHEM 1212	General Chemistry II	4
CHEM 2511	Organic Chemistry I	4
CHEM 2512	Organic Chemistry II	4
CHEM 3100	Analytical Chemistry	5
CHEM 3300	Instrumental Analysis	4
CHEM 4111K	Physical Chemistry I	4
CHEM 4112	Physical Chemistry II	3
CHEM 4112L	Physical Chemistry II Laboratory	1
CHEM 4411	Inorganic Chemistry	3
MATH 1113	Pre-Calculus	4
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
Chemistry Education		
EDUC 1101	Step 1	1
EDUC 1102	Step 2	1
EDUC 2010	Knowing and Learning	3
EDUC 2020	Classroom Interactions	3
EDUC 4030	Project-based Instruction	3
RSCH 3610	Research Methods	3
STS 3347	Perspectives on Science & Math	3
EDUC 4401	Apprentice Teaching Seminar	1
EDUC 4406	Apprentice Teaching	6
Chemistry Electives		**6**
Free Electives		**2**

Degree Program Total **120 hours**

Chemistry Minor

CHEM 1211	General Chemistry I
CHEM 1211L	General Chemistry I Lab
CHEM 1212	General Chemistry II
CHEM 1212L	General Chemistry II Lab
CHEM 2511K	Organic Chemistry I
CHEM 2512K	Organic Chemistry II

10 additional hours of upper division (3000 level or higher) Chemistry or Biochemistry courses.

Chemistry Curriculum: Material Science Track

Year 1

Fall Semester

CHEM 1211	General Chemistry I	4
HIST 10xx	World History	3
MATH 1113	Pre-calculus	4
ENGL 1101	English Comp I	3
SPCH 2400	Speech	2
		TOTAL 14

Spring Semester

CHEM 1212	General Chemistry II	4
HIST 21xx	American History	3
MATH 2253	Calculus I	4
ENGL 1102	English Comp II	3
		TOTAL 16

Year 2

Fall Semester

CHEM 2511	Organic Chemistry I	4
CHEM 2601	Chemical Literature	2
PHYS 2211	Physics I	4
MATH 2254	Calculus II	4
STS 2400	Science, Technology & Society	2
		TOTAL 16

Spring Semester

CHEM 2512	Organic Chemistry II	4
CHEM 3100	Analytical Chemistry	5
PHYS 2212	Physics II	4
area C2	Art & Culture	3
		TOTAL 16

Year 3

Fall Semester

BIOC 3111	Biochemistry I	4
MSCI 3101	Material Science	4
area E3	Behavioral Science	3
ENGL	21xx Literature	3
Free Elective		3
		TOTAL 14

Spring Semester

CHEM 3300	Instrumental Analysis	4
CHEM 4411	Inorganic Chemistry	3
TCOM 2010	Technical Writing	3
area E4	Cultures & Societies	3
		TOTAL 16

Year 4

Fall Semester

CHEM 4111K	Physical Chemistry I	4
CHEM 4412	Adv. Inorganic Chemistry 3	
CHEM	Upper-level Elective	3
Free Electives		4
		TOTAL 14

Spring Semester

CHEM 4112	Physical Chemistry II	3
CHEM 4112L	Physical Chemistry II Lab	1
CHEM 4415	Solid State Chemistry	3
Free Electives		7
		TOTAL 14
		TOTAL for degree: 120

Chemistry Curriculum: General Track

Year 1

Fall Semester

CHEM 1211	General Chemistry I	4
HIST 10xx	World History	3
MATH 1113	Pre-calculus	4
ENGL 1101	English Comp I	3

SPCH 2400	Speech	2
		TOTAL 14

Spring Semester

CHEM 1212	General Chemistry II	4
HIST 21xx	American History	3
MATH 2253	Calculus I	4
ENGL 1102	English Comp II	3
		TOTAL 16

Year 2

Fall Semester

CHEM 2511	Organic Chemistry I	4
CHEM 2601	Chemical Literature	2
PHYS 2211	Physics I	4
MATH 2254	Calculus II	4
STS 2400	Science, Technology & Society	2
		TOTAL 16

Spring Semester

CHEM 2512	Organic Chemistry II	4
CHEM 3100	Analytical Chemistry	5
PHYS 2212	Physics II	4
Free Elective		3
		TOTAL 16

Year 3

Fall Semester

BIOC 3111	Biochemistry I	4
CHEM	CHEM elective	4
area C2	Art & Culture	3
TCOM 2010	Technical Writing	3
		TOTAL 14

Spring Semester

CHEM 3300	Instrumental Analysis	4
CHEM	CHEM or BIOC elective	4
ENGL	Literature	3
Free Electives		4
		TOTAL 15

Year 4

Fall Semester

CHEM 4111K	Physical Chemistry I	4
CHEM 4411	Inorganic Chemistry	3
area E3	Behavioral Science	3
Math or Science elective		4
Math or Science elective		4
		TOTAL 14

Spring Semester

CHEM 4112	Physical Chemistry II	3
CHEM 4112L	Physical Chemistry II Lab	1
area E4	Cultures & Societies	3
Free Electives		4
		TOTAL 15
		TOTAL for degree: 120

Civil Engineering

Offering the 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 may include 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, *Professor and Department Chair*
Sung-Hee Kim, *Ph.D., P.E., Associate Professor*
Wasim Barham, *Ph.D., Assistant Professor*
M.A. Karim, *Ph.D., Assistant Professor*
Metin Oguzmert, *Ph.D., Assistant Professor*

Civil Engineering - Bachelor of Science Requirements

CHEM 1211K	Principles of Chemistry I	4
CHEM 1212K	Principles of Chemistry II	4
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2260	Statistics and Probability	3
MATH 2306	Differential Equations	3
BIOL 2107K	Biological Principles I	4
PHYS 2211K	Principles of Physics I	4
PHYS 2212K	Principles of Physics II	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology and Society	2
Area C1	Course in English Literature	3
Area C2	Course in Art and Culture	3
Area E1	Course in History: Political Science	3
Area E2	World Civilization	3
Area E3	Course in Behavioral Science	3
Area E4	International Issues	3
EDG 2160	Engineering Graphics	3
ENGR 2214	Engineering Mechanics—Statics	3
ENGR 3131	Strength of Materials	3
ENGR 3132	Strength of Materials Lab	1
ENGR 3324	Project Cost Analysis	3
ENGR 3343	Fluid Mechanics	3
ENGR 3345	Fluid Mechanics Lab	1
CE 1000	Orientation to Engineering Professions	1
SPSU 1001	Hitchhiker's Guide to SPSU	1
CE 3201	Structural Analysis	3
CE 3202	Design of Concrete Structures	3
CE 3501	Materials for Civil and Construction Engineering	3
CE 3502	Materials for Civil and Construction Engineering Lab	1
CE 3701	Geotechnical Engineering	3
CE 3708	Geotechnical Lab	1
CE 3702	Environmental Engineering	3
CE 3704	Environmental Engineering Lab	1
CE 3703	Environmental Engineering II	3
CE 4103	Design of Steel Structures	3
CE 4105	Foundation Design	3
CE 4177	Transportation Engineering	4
CE 4178	Highway Design and Construction	3
CE 4703	Engineering Hydrology	3
CE XXXX	Technical Electives	9
CE 4800	Senior Project	3

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:

CE 4704 Engineering Hydraulic Analysis and Design (3)

CE 4705 Advanced Soil Mechanics (3)

CE 4706 Pavement Engineering (3)

CE 4707 Design of Wood Structures (3)

CE 4708 Hazardous Waste Engineering (3)

CE 4709 Matrix Structural Analysis (3)

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 (pending BOR approval)

The Bachelor of Science in Structural Engineering Technology (pending BOR approval)

Certificate in Geographical Information Systems (GIS)

Certificate in Land Surveying

Accreditation

The B.S. Civil Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

The B.S. Surveying and Mapping program is accredited by the Applied Science Accreditation Commission of ABET, http://www.abet.org.

The Faculty:
Lourdes Abellera, Assistant Professor
Daniel L. Branham, *Lecturer*
John M. Lee, Instructor
Mehrdad Mesbahi, *Associate Professor*
Fatih Oncul, *Assistant Professor*
Carlos A. Ortiz, *Professor*
Nancy J.Turner, *Lecturer*
Matthew M. Wilson, *Professor*
Timothy W. Zeigler, *Professor and Department Chair*

The Civil Engineering Technology Program

Students completing the CET program will be able to:

- Conduct analysis and design and prepare engineering drawings (and other appropriate construction documents).
- Collect and analyze relevant data from experiments or research for the purpose of developing an engineering decision, design, or layout.
- Effectively communicate information in these formats: written, oral, graphical, and mathematical.
- Apply appropriate software to solutions of problems in civil engineering technology applications.
- Identify, analyze, and solve civil problems and apply science, mathematics, engineering and technology in those solutions.
- Perform economic analysis and cost estimates related to design, construction, operations, and maintenance of civil systems.
- Select appropriate surveying methods for land measurement as applied in civil engineering technology field.
- Participate as productive team leaders (or team members) in defining and solving problems in civil engineering technology.
- Demonstrate a commitment to quality, timeliness, continuous improvement, and life-long learning.
- Interpret the published ASCE Code of Ethics for engineers and its application in professional practice with emphasis in ensuring safe designs.
- Respect diversity, and recognize contemporary professional, societal, and global issues in professional practice.

In practice graduates of the Civil Engineering Technology program will:

- Demonstrate a balance of knowledge that encompasses key specialties within the practice of civil engineering technology.
- Be competent in applying the principles of civil engineering technology to the planning, development, design, construction, operation and management of both public and private facilities.
- Meet industry expectations in evaluating ethical, societal, and environmental issues in the practice of civil engineering technology.
- Practice effective professional communications in formats common to industry practice.
- Be capable of career advancement, professional development, and can pursue Registration as a professional engineer in the State of Georgia.

Southern Polytechnic State University graduates have the qualifications to enter careers in:

Construction
Surveying
Geotechnical
Site development
Structural Design
Transportation
Urban Planning
Environmental Technologies

A student may select electives from these concentrations:

Environmental
Structural
Surveying and Mapping
Transportation
Geotechnical
General

In class, our wide-range of courses enables you to choose a career in such areas as Environmental Control, Structures, Transportation, Geotechnical, or Surveying and Mapping. Working in teams, CET students put their technical and managerial skills to work on various projects, including the design, construction, operation, and maintenance of municipal facilities. Your collaboration is most intense on the senior capstone project, which gives you a taste of professional partnership from preliminary studies through site location to final design.

Environmental electives prepare graduates for analysis and design of systems and facilities to correct or control the pollution of air, land, or water. For example, design of water and waste water plants, and solid waste disposal facilities. Many career opportunities exist with municipalities, industry, consulting firms and governmental agencies.

Structural electives prepare graduates for design, plan preparation, construction, and inspection of modern buildings and bridges and other structures. In their course work, students analyze and design structural members of steel, reinforced concrete and other engineering materials.

Surveying electives utilize state-of-the-art surveying equipment and are available in:

- Boundary
- Topographic
- Geodetic
- Route, and
- Construction surveying

Transportation electives prepare graduates to perform design and plan maintenance of all types of transportation facilities including streets, highways, mass transit systems, railroads, airfields, ports, harbors and pipelines.

Geotechnical electives prepare graduates to perform subsurface investigations, and field and laboratory tests; and design and analysis for civil engineering works such as foundations, dams, and tunnels.

Starting annual salaries have always been competitive. Co-op positions such as project management, field engineering, and computer-aided design can prepare you for work with consulting firms, state and local transportation departments, and companies that specialize in geotechnical engineering, structural engineering, environmental engineering, construction, and surveying.

Professional Registration

Professional Engineer: In Georgia and approximately 35 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 SURV 4465, Legal Aspects of Land Surveying, meet the educational requirements to become licensed as a Registered Land Surveyor (RLS) in Georgia. Those seeking this option should consult their advisor for more information. In addition, they must obtain four years of acceptable experience and pass the FLS and PLS examinations.

B. S. Civil Engineering Technology — Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	CHEM 1211, 1211L and PHYS 2211, 2211L	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
MATH 1113	Pre-calculus (extra hour is applied to core related to major)	4
MATH 2253	Calculus I (extra hour is applied to core related to major)	4
MATH 2254	Calculus II	4
MATH 2306	Differential Equations	3
CE 1000	Orientation to Professions	1
SPSU 1001	Hitchhikers Guide to SPSU	1
CET 2110	Problem Solving Methods in CET	1
CET 3410	Soil Properties and Site Exploration	4
CET 3110	Construction Materials & Sustainability	4
CET 3210	Structural Mechanics	3
CET 3510	Traffic Analysis and Road Design	3
CET 3130	Applied Fluid Mechanics & Hydraulics	3
CET 3310	Water Treatment and Distribution	3
CET 3320	Wastewater Collection and Treatment	3
CET 3220	Applied Structural Steel Design	3
CET 3210	Cost Estimating and Scheduling in CET	4
CET 3230	Concrete Infrastructure Design	3
CET 4120	Senior Project	3
CET 4310	Stormwater Management & Erosion Control	3
CET 4410	Foundation and Retaining Wall Design	3
CET 4110	Ethics of Engineering	1
SURV 2221	Surveying I	4
SURV 3421	Geographic Information Systems I	4
EDG 2160	Civil Graphics and Computer Aided Drafting	3
ENGR 2214	Engineering Mechanics – Statics	3
ENGR 3131	Strength of Materials	3
ENGR 3132	Strength of Materials Lab	1
CET Electives	12 hours	
Degree Program Total		**129 hours**

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.

B.S. Structural Engineering Technology (pending BOR approval)

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	CHEM 1211, 1211L and PHYS 2211, 2211L	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
MATH 1113	Pre-calculus (extra hour is applied to core related to major)	4
MATH 2253	Calculus I (extra hour is applied to core related to major)	4
MATH 2254	Calculus II	4
MATH 3312	Linear Algebra	3
EDG 2160	Civil Graphics/CAD	3
ENGR 2214	Engineering Mechanics-Statics	3
CE 1000	Orientation to Professions	1
SPSU 1001	Hitchhikers Guide to SPSU	1
CET 2110	Problem Solving Methods in CET	1
ENGR3131/3132	Strength of Materials & Lab	4
CET 3110	Construction Materials & Sustainability	4
CET 3210	Structural Mechanics	3
CET 3120	Cost Est. and Scheduling in CET	4
CET 3130	Applied Fluid Mechanics & Hydraulics	3
CET 3220	Applied Structural Steel Design	3
CET 3230	Concrete Infrastructure Design	3
CET 3410	Soil Properties and Site Exploration	4
CET 4410	Foundation and Retaining Wall Design	3
SET 3260	Masonry and Timber Design	4
SET 3250	Structural Loads and Connections	3
SET 4240	Structural Rehabilitation	3
CET 4210	Computer Methods in Structures	4
CET 4230	Advanced Concrete Design	4
SET 4250	Bridge Design	3
CET 4110	Ethics of Engineering	1
CET 4120	Senior Project	3
MGNT 3105	Management and Org. Behavior	3
CET ELECTIVES	Take a minimum 8 hours from the courses listed below:	
CET 4220	LRFD Steel Design	4
CET 4310	Stormwater Mgt. and Erosion Control	3
SET 3240	Hydraulic Structures	3
CET 4420	Earth Dam and Levee Design	3

Degree Program Total **130 hours**

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.

B.S. Environmental Engineering Technology (pending BOR approval)

Area A:		
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1113	Pre-calculus (extra hour is added to core Area F)	4
Area B:		
COMM 2400	Public Speaking	2
STS 2400	Science, Technology and Society	2
Area C: Group 1	Take one course from ENGL Literature	3
Area C: Group 2	Take one course from Arts and Culture Group	3
Area D:		
CHEM 1211	Principles of Chemistry I	43
CHEM 1211L	Principles of Chemistry I Lab	1
CHEM 1212	Principles of Chemistry II	3
CHEM 1212L	Principles of Chemistry II	1
MATH 2253	Calculus I (extra hour added to core Area D)	4
Area E:	Take one course from each Social Science group(G1, G2, G3, G4)	12
Area F:	Core related to major.	
EDG 2160	Civil Graphics/CAD	3
MATH 2306	Differential Equations	3
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I Lab	1
MATH 2254	Calculus II	4
POLS 3401	Regulatory and Environmental Law	3
MATH	Excess from AREA A	1
MAJOR COURSES:		
SPSU 1001	Hitchhikers Guide to SPSU	1
CE 1000	Orientation to Engineering & Surveying Professions	1
CET 2110	Problem Solving Methods in CET	3
CET 2200	Introduction to Structures	4
ENV 2100K	Introduction to Environmental Science	4

CET 3110	Construction Materials & Sustainability	4
CET 3120	Cost Estimation & Scheduling for CET	4
CET 3130	Applied Fluid Mechanics & Hydraulics	3
CET 3310	Water Treatment & Distribution	3
CET 3320	Wastewater Collection & Treatment	3
ENV 3100K	Soil and Water Science	4
CET 3410	Soil Properties & Site Exploration	4
CET 4310	Stormwater Management & Erosion Control	3
CET 4320	Unit Operations in Environmental Engineering	4
CET 4330	Solid Waste Management	3
CET 4340	Air Pollution Control	3
CET 4110	Ethics of Engineering	1
CET 4120	Senior Project	3
SURV 2110	Introduction to Mapping	4
CM 4710	Construction Safety	4
Major Electives:	Take minimum of 6 hours from major electives listed below:	
MGNT 3105	Management & Organizational Behavior	3
MET 3400	Survey of Thermodynamics	3
SET 3240	Hydraulic Structures	3
ENV 4000K	Wetlands and Mitigation	4
BIOL 3300K	Ecology	4
CHEM 3150K	Environmental Chemistry	4
	DEGREE PROGRAM TOTAL HOURS	130

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.

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 (22 - hours)		
SURV 2221	Surveying I	4
SURV 3222	Surveying II	4
SURV 4465	Legal Aspects of Land Surveying	4
SURV 4475	Land Surveying Practice	2
SURV 4470	Land Development Design	4
CET 4310	Stormwater management and Erosion Control	3
TOTAL		21 Hours

Geographical Information Systems (GIS) Certificate Program

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 - hours)		
SURV 2110	Introduction to Mapping	4
SURV 3421	Geographic Information Systems	4
SURV 4420	Remote Sensing	4
SURV 4422	Geographic Information Systems II	4
SURV 4110	Geographic Information Systems Practice	3
TOTAL		19 Hours

Surveying and Mapping Program

(Bachelor of Science Degree Offered)

Program Coordinator: Professor Matt Wilson

Students completing the Surveying and Mapping program will be able to:

- Implement procedures for the use and care of field equipment.
- Apply Math, science, and technology in surveying activities.
- Perform a boundary survey and preparation of a plat using appropriate Georgia standards and laws.
- Perform typical land surveying activities including ALTA, topographic, volume, as-built, control, geodetic, and subdivision surveys.
- Design residential subdivisions including lot layout, roads, and drainage.
- Perform coordinate calculations on the State Plane Coordinate System and transformations to other coordinate systems.
- Identify the surveyor's role in a land information system (GIS).
- Identify careers in surveying and mapping and be committed to the profession and life-long learning, ethical and safe practices, and respect diversity and societal issues in practice.
- Effectively communicate information in these formats: written, oral, mathematical, and graphical.
- Identify and perform typical surveying business activities including project management, bidding, contracts and overhead.
- Function effectively as team members (or team leaders) on multi-disciplinary teams.

In practice Graduates of the Surveying and Mapping Program will:

- Possess a balance of technical knowledge that encompasses surveying, mapping and land development.
- Meet industry expectations for expertise in planning, execution, and development of a survey, site/subdivision design and small-scale map.
- Meet industry expectations in evaluating ethical, societal, and environmental issues in the practice of surveying and mapping.

- Practice effective professional communications in formats common to industry practice.
- Be capable of career advancement, professional development, and can pursue registration as a Professional Land Surveyor in the State of Georgia.

The Surveying and Mapping program is offered through the Civil Engineering Technology Department. Students in Surveying and Mapping are taught the principles and techniques of field measurements and adjustments, boundary, topographic, geodetic, route and construction surveys.

Students apply classroom knowledge in laboratory exercises with modern surveying equipment including theodolites, electronic total stations, robotic instrumentation, Global Positioning System (GPS) satellite receivers, and optical alignment devices. Mapping topics include Geographic Information Systems (GIS), 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 student 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.

Starting annual salaries have always been competitive. Approximately 75% of our graduates begin their careers in subdivision and boundary surveying, and eventually two-thirds of them own their own businesses.

Professional Registration

Registered Land Surveyor: Surveying and Mapping majors 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.

Surveying and Mapping — Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to major courses)	4
MATH 2254	Calculus II	4
MATH 2260	Probability and Statistics I	3
Math Elective		3
Area D	Any Two Lab Sciences	8
PHYS 1111	Principles of Physics I	3
PHYS 1111L	Principles of Physics I Lab	1
PHYS 1112	Introductory Physics II	3
PHYS 1112L	Introductory Physics Lab	1
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
IT 1113	BASIC Programming	3
	OR	
CS 2123	C Programming	3
CET 3130	Applied Fluid Mechanics & Hydraulics	3
CE 1000	Orientation to Professions	1
SPSU 1001	Hitchhiker's Guide to SPSU	1
MGNT 3105	Management and Organizational Behavior	3
EDG 2160	Civil Graphics and Computer Aided Drafting	3
CET 2200	Introduction to Structures	4
CET 3510	Traffic Analysis and Road Design	3
CET 4310	Storm Water Management and Erosion Control	3
CET 3120	Cost Estimating and Scheduling in CET	4
SURV 2221	Surveying I	4
SURV 3222	Surveying II	4
SURV 4410	Surveying Computations and Adjustments	4
SURV 3421	Geographic Information Systems I	4
SURV 4465	Legal Aspects of Land Surveying	4
SURV 4470	Land Development Design	4
SURV 4415	Geodetic Surveying Methods	4
SURV 4475	Land Surveying Practice	2
SURV	Electives	4
Free Elective		3
Degree Program Total		**129**

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.

NOTE 1: PHYS 1111 and 1112 are required.

NOTE 2: If you use PHYS 1111/1112 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.

NOTE 3: If you use PHYS 1111/1112 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.

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*
Venu G. Dasigi, *Professor and Chair of Department of Computer Science and Software Engineering*
Richard A. Gesick, *Lecturer*
Jon Preston, *Associate 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

- Partner with local industrial and non-profit partners through student team projects and consulting
- Educate students to provide intellectual capital and leadership to advance the fields of game design and development and related industries

Computer Game Design and Development - Bachelor of Science Requirements

Students must earn a C or better in all the major courses (CSE, CS, SWE, and CGDD).

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2345	Discrete Math	3
MATH 2260	Probability and Statistics I	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area D	See your advisor before you select science courses	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
CSE 1301	Programming & Problem Solving I	4
CSE 1302	Programming & Problem Solving II	4
CSE 2642	Professional Practices and Ethics	2
CS3224	Computer Organization and Architecture	4
CS 3424	Data Structures	4
CS4253	Artificial Intelligence	3
CS4363	Computer Graphics and Multimedia	3
SWE2313	Introduction to Software Engineering	3
SWE3643	Software Testing and Quality Assurance	3
SWE4324	User-Centered Design	4
CGDD2002	Fundamentals of Game Design	2
CGDD3103	Application Extensions and Scripting	3
CGDD4003	Digital Media and Interaction	3
CGDD4203	Mobile and Casual Game Development	3
CGDD4303	Educational and Serious Game Design	3
CGDD4803	Studio	3
CGDD4814	Capstone	4
Upper-level Concentration (see below for options or as approved)		9
Free Electives		6
Degree Program Total		121

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 CGDD4113 and CGDD4603) may rely upon Physics. Students who are interested in the Simulation-Informatics concentration (see below) may find Biology or Chemistry beneficial instead of Physics.

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	MATH3312 – Linear Algebra CGDD4113 – 3D Modeling and Animation CGDD4603 – Production Pipeline and Rendering
Distributed-Mobile	SWE3683 – Embedded Systems Analysis & Design CS4253 – Distributed Computing CS4263 – Computer Networks
Educational-Serious	6 hours of approved TCOM courses CGDD4313 – Designing Online Learning Content and Environments
Planning-Management (pick 3 of 4)	MGNT3105 – Management and Organizational Behavior MGNT4185 – Technology Management SWE3623 – Software Systems Requirements SWE4663 – Software Project Management
Simulation-Informatics	CS3153 – Database Systems CS4253 – Distributed Computing CGDD4703 – Data Modeling and Simulation

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

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 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)

TOTAL: 18+ credits

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*
Venu G. Dasigi, *Professor and Chair of Computer Science and Software Engineering*
Thomas M. Eidson, *Instructor*
Bob Harbort, *Professor*
Chih-Cheng Hung, *Professor*
Edward Jung, *Assistant Professor*
Orlando A. Karam, *Associate 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 (http://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 Science — Bachelor of Arts Requirements

BACS Program Objectives

- To meet the educational needs of the students and prepare them for careers using their computing knowledge. Students should be well versed in not only the fundamentals but also develop skills in problem solving, logic, organization, and ethics.
- To provide graduates with a thorough grounding in key principles and practices of computing.
- To provide graduates with an understanding of the ethical aspects of computing within society.
- To provide graduates with applicable communication and team skills to be used in computing careers.
- To provide graduates with another area of study where they can apply their computing knowledge or expand the context for their computing knowledge.
- To prepare graduates for employment using their computing knowledge.

BACS Learning Outcomes

Each graduate of the program should be able to:

- Convey the understanding of, and ability to solve, problems through artifacts of computing such as specifications, code and other written documents.
- Demonstrate and apply their knowledge of fundamental data structures and algorithms to solve problems.
- Describe and explain the major concepts in the areas of operating systems, programming languages, architecture, and distributed computing.
- Demonstrate an ability to work effectively in teams on computing related projects.
- Demonstrate an ability to effectively communicate technical information.
- Demonstrate an understanding of social, professional and ethical issues related to computing.
- Obtain the skills and knowledge to be employable in positions that utilize their computing education.
- Demonstrate an understanding of a minor field of study, where computing can be applied.

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
MATH 1113	Pre-calculus	4
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2345	Discrete Math	3
MATH 2260	Probability and Statistics I	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take a foreign language	3
Area D	Two lab science courses required	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
CSE 1002	Introduction to the Computing Disciplines	2
CSE 1301	Programming & Problem Solving I	4
CSE 1302	Programming & Problem Solving II	4
CSE 2642	Professional Practices and Ethics	2
CS 3123	Programming Language Concepts	3
CS 3153	Database Systems	3
CS 3224	Computer Organization & Architecture	4
CS 3243	Operating Systems	3
CS 3424	Data Structures	4
SWE 2313	Intro to Software Engineering	3
SWE 3613	Software System Engineering	3
Upper-Level CS Elective (or Approved UL CGGD/SWE/IT Elective)		4
Approved Minor		15
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
Free Electives		5
Degree Program Total		**123**

Computer Science — Bachelor of Science Requirements

BSCS Program Educational Objectives (PEOs)

The Bachelor of Science in Computer Science prepares our graduates to reach the following goals 3 to 5 years beyond graduation:

- Computer Science graduates will be successful professionals in the field with solid fundamental knowledge of computer science, making valuable technical contributions to the

design, development, and production of computing systems and related areas.

- 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 being accepted into or completing advanced degree programs.

BSCS Student Outcomes (SOs)

Each graduate of the program should be able to:

- Convey the understanding of, and ability to solve, problems through artifacts of computing such as specifications, code and other written documents.
- Demonstrate and apply their knowledge of fundamental data structures and algorithms to solve problems.
- Describe and explain the major concepts in the areas of operating systems, programming languages, architecture, and distributed computing.
- Demonstrate an ability to work effectively in teams on computing related projects.
- Demonstrate an ability to effectively communicate technical information.
- Demonstrate an understanding of social, professional and ethical issues related to computing.
- Obtain the skills and knowledge to be employable in positions that utilize their computing education.

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
MATH 1113	Pre-calculus	4
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2345	Discrete Math	3
MATH 2260	Probability and Statistics I	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area D	Two lab science courses required	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
CSE 1002	Introduction to the Computing Disciplines	2
SPSU 1001	Hitchhikers Guide to SPSU	1
CSE 1301	Programming & Problem Solving I	4
CSE 1302	Programming & Problem Solving II	4
CSE 2642	Professional Practices and Ethics	2
CS 3123	Programming Language Concepts	3
CS 3153	Database Systems	3
CS 3224	Computer Organization & Architecture	4
CS 3243	Operating Systems	3
CS 3424	Data Structures	4
CS 4253	Distributed Computing	3
CS 4413	Algorithm Analysis	3
CS 4893	CS Capstone	3
SWE 2313	Intro to Software Engineering	3
SWE 3613	Software System Engineering	3
Approved Science Elective		4
Approved Math Elective (MATH 2255, MATH 2306, MATH 2335, or 3000 level or above)		3
Upper-level CS Electives (or Approved UL CGDD/SWE/IT Electives)		9
Free Electives (* MATH 1111 may not be used as free elective hours)		4
Degree Program Total		**122**

The Five-Year BSCS-MSSWE program

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 by completing the requirements for a Master's degree in Software Engineering. 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. Students can start taking MSSWE 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 MSSWE program as electives in their BSCS degree, and the courses also count towards the MSSWE program. Students will be able to complete the MSSWE program by taking only 10 more graduate courses in an additional year.

Specific features of the combined 5-year BSCS+MS program include:

1. A waiver of all MSSWE or MSCS prerequisites with careful advisement and planning.
2. The ability to take and count two approved graduate courses – toward target MS program, taken as upper level electives in BSCS.
3. Taking the remaining ten graduate courses toward the MSSWE program during a 12-month period, including a summer. A third graduate course can be taken as an undergraduate that counts solely for the MSSWE (it does not count towards the BSCS), leaving only nine remaining courses for the MSSWE.

Note: The student must graduate with the BSCS before being fully admitted into the MSSWE program and still meet its entrance requirements.

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.

NOTE: CS 3424 requires MATH 2345 Discrete Math as a pre-requisite.

Minor in CS Program Objectives

- Provide students with computing knowledge that can be applied in their major area of study.
- To provide students with fundamental programming skills.

Minor in CS Learning Outcomes

- Demonstrate programming skills in 2 different programming languages.
- Demonstrate knowledge of at least one additional area of computing.

Minor in Computer Science

CSE 1301	Programming & Problem Solving I	4
CSE 1302	Programming & Problem Solving II	4
CS 3424	Data Structures	4
Two additional upper-level CS courses		6+

Computer Science Certificate Programs

Certificate in Programming

The Professional Certificate in Programming prepares students with post-secondary education or several years of work experience to enter the Computer Programming field as a career change. The focus is on obtaining programming skills and database and web-based applications development skills. All classes must be passed with a "C" or better.

Programming Certificate Program Objectives

- Provide students with ability to transition into the computing profession.
- To provide students with fundamental programming skills.
- To provide students exposure to implementing computer applications.

Programming Certificate Learning Outcomes

- Demonstrate proficient programming skills.
- Demonstrate knowledge of databases and applications using databases.
- Demonstrate knowledge of application web programming.

Certificate in Programming Requirements

CSE 1301	Programming & Problem Solving I	4
CSE 1302	Programming & Problem Solving II	4
CS 3153	Database Systems	3
IT 3203	Introduction to Web Development	3

And one of the following:

SWE 2313	Introduction to Software Engineering	3
CS 3424*	Data Structures	4
IT 4203	Advanced Web Development	3

Total: 17 - 18 hours

**NOTE: CS 3424 has a pre-requisite of MATH 2345 Discrete Mathematics.*

Computer Science Graduate

CS 5123	Advanced Programming and Data Structures
CS 5153	Database Systems
CS 5183	Object-Oriented Programming
CS 5223	Computer Architecture
CS 5243	Operating Systems
CS 5423	Mathematical Structures for Computer Science
CS 6023	Research Methods and Presentations
CS 6103	Discrete -Time Signals and Systems
CS 6123	Theory and Implementation of Programming Languages
CS 6143	Enterprise Application Development
CS 6153	Advanced Database Systems
CS 6163	Information Retrieval and Search Engines
CS 6223	Advanced Computer System Architecture
CS 6243	Advanced Concepts in Operating Systems
CS 6263	Computer Networks
CS 6283	Real-Time Systems
CS 6293	Information Security: Implementation and Application
CS 6323	Human Factors
CS 6353	Computer Graphics and Multimedia
CS 6413	Theory of Computation
CS 6423	Algorithmic Processes
CS 6453	Simulation and Modeling
CS 6523	Survey of Artificial Intelligence
CS 6563	Digital Image Processing and Analysis
CS 6593	Selected Topics in Artificial Intelligence
CS 6703	Independent Study
CS 6901-6903	Special Topics
CS 7803	Master's Thesis

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.

Minor in SWE 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.

Minor in SWE 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 in Software Engineering

CSE 1302	Programming & Problem Solving II	4
SWE 2313	Intro to Software Engineering	3
Three additional upper-level SWE courses		9

Note: CSE 1302 has a pre-requisite of CSE 1301.

Construction Engineering (ABET Accredited)

Offering the Bachelor of Science degree in Construction Engineering

The Construction Engineering program is part of the Division 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

Engineering Accreditation Commission (EAC) of ABET.

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 may 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, *Professor and Department Chair*
Sung-Hee Kim, *Ph.D., P.E., Associate Professor*
Wasim Barham, *Ph.D., Assistant Professor*
M.A. Karim, *Ph.D., Assistant Professor*
Metin Oguzmert, *Ph.D., Assistant Professor*

Construction Engineering — Bachelor of Science Requirements

CHEM 1211K	Principles of Chemistry I	4
CHEM 1212K	Principles of Chemistry II	4
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2260	Statistics and Probability	3
MATH 2306	Differential Equations	3
MATH 2335	Numerical Methods	3
PHYS 2211K	Principles of Physics I	4
PHYS 2212K	Principles of Physics II	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology and Society	2
Area C1	Course in English Literature	3
Area C2	Course in Art and Culture	3
Area E1	Course in History: American Perspective	3
Area E2	World History	3
Area E3	Course in Behavioral Science	3
Area E4	Course in Cultures and Societies	3
EDG 2160	Civil Graphics/CAD	3
ENGR 2214	Engineering Mechanics—Statics	3
ENGR 3131	Strength of Materials	3
ENGR 3132	Strength of Materials Lab	1
ENGR 3324	Project Cost Analysis	3
ENGR 3343	Fluid Mechanics	3
CE 1000	Orientation to Engineering Professions	1
SPSU 1001	Hitchhiker's Guide to SPSU	1
CE 3201	Structural Analysis	3
CE 3501	Materials for Civil and Construction Engineering	3
CE 3502	Materials for Civil and Construction Engineering Lab	1
CE 3701	Geotechnical Engineering	3
CE 3702	Environmental Engineering	3
CE 4177	Transportation Engineering	4
CE 4178	Highway Design and Construction	3
CE 4202	Steel and Concrete Design	4
CE 4703	Engineering Hydrology	3
CE 4800	Senior Project	3
CM 3160	Commercial & Heavy Construction Methods	3
CM 3420	Construction Estimating II	4
CM 4510	Construction Scheduling	3
CM 4560	Construction Project Management	3

CM 4639	Construction Safety and Law	4
SURV 2221	Survey I	4
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

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
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 morning, 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.

The Construction Management B.S. Degree program offers the following concentrations:

General Contracting
Land Development
Specialty (MEP) Construction.
Facilities Management

We also offer a minor in Construction Management for 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
- **Specialty -** focuses on the mechanical and electrical managerial aspects of construction
- **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 Professor John Mench, recipient of 2007 Georgia Society of Professional Engineer of the Year Award in Education & 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) & SPSU Teacher of the Year 2003 Awards, and Dr. Gouranga Banik, ASC's National Teaching Award recipient in 2002 & SPSU Teacher of the Year 2006.

Hussein Abaza, *Assistant Professor*
Gouranga C. Banik, *Professor*
Wilson C. Barnes, ACC Dean/ Professor
Zuhair El-Itr, *Associate Professor*
Maureen Weidner, *Lecturer*
Shariar Makarechi, *Assistant Professor*
Pavan Meadati, *Assistant Professor*
John Mench, *Senior Lecturer*
Sonia Toson, *Lecturer*
Fwu-shiun Liou, Professor
Khalid M. Siddiqi, *Professor and Department Chair*

Construction Management - Bachelor of Science Requirements

Area A: Composition:		
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1113	Pre-calculus	4
Area B:		
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C:		
Group 1	Take One Course from the Literature Group	3
Group 2	Take One Course from the Art and Culture Group	3
Area D: Laboratory Sciences		
Group 1	Any Two Lab Sciences (PHYS 1111, 1111L required and CHEM 1211, 1211L recommended) *See Note 2 for PHYS 1111, 1111L	8
PHYS 1111	Introductory Physics I recommended for Area D– **See Note 2**	3
PHYS 1111L	Introductory Physics Lab	1
Group 2	MATH 2240 Survey of Calculus I	3
Area E: Social Sciences		
Group 1	American Context	3
Group 2	World History	3
Group 3	Behavioral Science	3
ECON 1101	Introduction to Economics recommended for Area E– **See Note 1**	3
Group 4	Cultures and Societies	3
Area F:		
MGNT 3145	Legal Environment and Change	3
CET 2200	Introduction to Structures	4
SURV 2200	Construction Measurements	4
TCOM 2010	Technical Writing	3
MGNT 3205	Management Information Systems	3
Major-CM Courses		
ACCT 2101	Accounting I	3
CM 1000	Orientation to Construction and Development	(2)
CM 2000	Construction Graphics	3
CM 3000	Computer Applications in Construction	3
CM 3110	Residential and Light Construction Methods	3
CM 3160	Commercial and Heavy Construction Methods	3
CM 3180	Mechanical and Electrical Building Systems	4
CM 3410	Construction Quantity Surveying	3
CM 3500	Building Codes	2

CM 4510	Construction Scheduling	3
CM 4710	Construction Safety	4
CM 4760	Construction and Real Property Law	3
CM 4900	Capstone Project	3

Other Major Requirements:

MGNT 3105	Management and Organizational Behavior	3
ECON 1101	Introduction to Economic (if needed)	3
PHYS 1111	Introductory Physics I (if needed)	3
PHYS 1111L	Introductory Physics I Lab (if needed)	1

Concentration – Choose One Concentration From Below **21**

General Concentration

CM 3210	Applied Structures I	4
CM 3260	Applied Structures II	3
CM 3420	Construction Estimating and Bid Preparation	4
CM 3620	Construction Finance and Feasibility	4
CM 4560	Construction Project Management	3
CM 4800	Construction Management Technique	3

Development Concentration

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

Specialty Concentration

CM 3280	MEP Codes and Loads	4
CM 3190	Sustainable Construction LEED	3
CM 3480	Construction Estimating IV	4
CM 4480	Mechanical Systems and Electrical Systems Design-Build	3
CM 4560	Construction Project Management	3
CM 4800	Construction Management Technique	3

Facilities Management Concentration

CM 3190	Sustainable Construction. LEED	3
CM 4560	Construction Project Management	3
CM 3620	Construction Finance & Feasibility	4
CM 3290	Facilities Management	4
CM 4620	Development Process II	3
CM 4190	Sustainable Operation & Maintenance	4

Note: Specialty Prerequisite for CM 4800 is CM 4480 in addition to the other prerequisites

Degree Program Total **128**

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, 1111L were taken to satisfy Area D, Lab Science, a 4-hour Construction Elective can be substituted.

Construction Minor

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

CM 2000*	Construction Graphics	3
CM 3000*	Computer Applications in Construction	3
CM 3160*	Commercial and Heavy Construction Methods	3
CM 3410	Quantity Surveying	3
CM 4510	Construction Scheduling	3

***Students having 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
CM 3420	Construction Estimating and Bid Preparation	4
CM 4511	Construction Scheduling Software	2
CM 4560	Construction Project Management	3
CM 4760	Construction and Real Property Law	3

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.

Certificate in Facilities Management

The Primary objective of the Certificate in Facilities Management is to provide training and education for working professionals who wish to pursue a career in the operation and management of facilities.

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

Required Courses: (19 semester hours)

CM 3180	Building Techniques & Methods	4
CM 3190	Sustainable Construction LEED	3
CM 3620	Construction Finance and Feasibility	4
CM 3290	Facilities Management	4
CM 4480	Design/ Build	4

Subtotal:		**19+**
Elective Courses:	(3 semester hours required)	
CM 3310	Introduction to Development	4
CM 3410	Construction Quantity Surveying	3
CM 4620	Development Process II	3
Subtotal:		**3+**
Total Hours Required		**22+**

Certificate in Highway Project Management

The primary objective of the Certificate in Highway Construction Project Management is to provide training and education for working professionals who wish to pursue a career in highway and infrastructure construction. Prerequisites must be met prior to enrollment in certain certificate courses.

Required Courses:	(21 semester hours required)	
CE 3701	Geotechnical Engineering	3
CE 3501	Materials for Civil & Construction Engineering	3
CM 2000	Construction Graphics	3
CM 3410	Construction Quantity Surveying	3
CM 4510	Construction Scheduling	3
CM 4560	Construction Project Management	3
CM 4760	Construction and Real Property Law	3
Subtotal:		**21**

Elective Courses:	(3 semester required hours)	
CM 3420	Construction Estimating and Bid Preparation	4
CM 4710	Construction Safety	4
CM 3260	Applied Structures II	3
Subtotal:		**3+**
Total:		**24+**

Certificate in Land Development

The primary objective of the Certificate in Land Development is to provide 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:	(14 semester hours)	
CM 3160	Commercial & Heavy Construction Methods	3
CM 3310	Introduction to Development	3
CM 3710	Site Planning	4
CM 4570	Land Development Process I	4
Subtotal:		

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

Elective Courses:	(7 semester hours)	
CM 2000	Construction Graphics	
CM 3110	Residential & Light Construction Methods	
CM 3410	Construction Quality Surveying	
CM 3430	Construction Estimating III	
CM 4510	Construction Scheduling	
CM 4620	Land Development Process II	
Subtotal		
Total Hours		

Certificate in Project Management Construction

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:	(11-12 semester hours)	
CM 2000	Construction Graphics	3
CM 3000	Computer Application in Construction	3
CM 3110	Residential and Light Construction Methods	3
	OR	
CM 3160	Commercial and Heavy Construction Methods	3
CM 4560	Construction Project Management	3
Subtotal:		**11**

Elective Courses:	(9 semester hours required)	
CM 3410	Construction Quantity Surveying	3
CM 3420	Construction Estimating and Bid Preparation	4
CM 4510	Construction Scheduling	3
CM 4710	Construction Safety	4
CM 4760	Construction and Real Property Law	3
Subtotal:		**9+**
Total:		**20+**

Certificate in Specialty Construction

The primary objective of the Certificate in Specialty Construction is to provide training and education for management of mechanical and electrical construction.

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

Required Courses: (19 semester hours)		
CM 3180	Mechanical and Electrical Building Systems	4
CM 3280	Mechanical, Electrical and Plumbing Codes & Loads	4
CM 3480	Estimating IV	4
CM 4480	Design/Build MEP Systems	4
CM 3190	Sustainable Construction	3
Subtotal:		**19**
Elective Courses: (2 semester hours required)		
CM 3620	Construction Finance and Feasibility	4
CM 3500	Building Codes	2
CM 4510	Construction Scheduling	3
CM 4710	Construction Safety	4
Subtotal:		**2+**
Total		**21+**

An online version of Specialty Construction certificate is also available.

Construction Management Graduate Courses

CM 5030	Descriptive Structural Systems
CM 6000	Information Methods
CM 6020	Ergonomics Analysis and Productivity
CM 6100	Construction Law: Contracts and Claims
CM 6110	Commercial Construction Transactions
CM 6120	Dispute Resolution
CM 6130	Case Studies in Construction
CM 6200	Strategic Bidding and Estimating
CM 6310	Advanced Scheduling and Integrated Controls
CM 6320	Construction Information Systems
CM 6330	Advanced Operations: Constructability, Value Eng., Productivity
CM 6340	Analytical Tools for Construction Managers
CM 6410	Building Failures and Defective Work
CM 6420	Tall Buildings
CM 6430	Automation and Robotics
CM 6510	Marketing of Construction Services
CM 6520	International Construction
CM 6530	Construction Markets
CM 6540	The Construction Company
CM 6600	Construction Risk Analysis and Control
CM 6800	Construction Seminar
CM 6901-6904	Special Topics
CM 7701-7704	Master's Project
CM 7801-7804	Master's Thesis

Electrical and Computer Engineering Technology

Offering:

The Bachelor of Science in Electrical Engineering Technology

The Bachelor of Science in Computer 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 Committee (ETAC) of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202 (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. Engineering technologists could fill four out of every five engineering positions in the U.S., and industry and educational leaders consider our graduates among the 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 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 degree program in electrical engineering technology are meeting this need.

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 degree in computer engineering technology was created to meet this need. 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.

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 BSTCET degree program is designed to provide individuals with the theory and hands-on knowledge necessary to meet the demand.

The Faculty:
Austin B. Asgill, *Professor and Department Chair*
Charles L. Bachman, *Professor Emeritus*
Craig A. Chin, *Assistant Professor*
Kim Davis, *Associate Professor*
Charles Duvall, *Assistant Professor*
Thomas Fallon, *Associate Professor*
Pamela S. Frinzi, *Professor*
William R. Hodges, *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*

The ECET department has adopted the following Program Educational Objectives:

- 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.

Electrical Engineering Technology

(Bachelor of Science Degree Offered)

The Electrical Engineering Technology 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:

Biomedical
ECET 3020
ECET 3030
ECET 4010
ECET 4020
ECET 4030
ECET 4040
ECET 4050

Communications
ECET 4320
ECET 4330
ECET 4420
ECET 4431
ECET 4432
ECET 4450
ECET 4630
ECET 4820

Digital
ECET 3640
ECET 3701
ECET 4630
ECET 4710
ECET 4720
ECET 4730
ECET 4820

Power
ECET 4510
ECET 4520
ECET 4530
ECET 4540
ECET 4560

Telecommunications
ECET 3810
ECET 4820
ECET 4840
ECET 4850
ECET 4860

Electrical Engineering Technology - Bachelor of Science Requirements

CHEM 1211*	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry Lab	1
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2306	Ordinary Differential Equations	3
PHYS 2211	Principles of Physics I*	4
PHYS 2212	Principles of Physics II*	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
TCOM 2010	Technical Writing	3

Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
ECET 1001	Orientation	1
SPSU 1001	Hitchhikers Guide to SPSU	1
ECET 1012	Design Fundamentals	2
ECET 1101	Circuits I	4
ECET 1200	Digital I	4
ECET 2111	Circuits II	4
ECET 2300	Electronics I	4
ECET 2210	Digital II	4
ECET 2310	Electronics II	4
ECET 3220	Digital III	4
ECET 3400	Data Communications	4
ECET 3600	Test Engineering	4
ECET 3410	High Frequency Systems	4
ECET 3500	Survey of Electric Machines	4
ECET 3620	Signals and Systems Analysis	4
ECET 4610	Control Systems	4
EDG 1210	Survey of Engineering Graphics	2
EET Electives		13
Degree Program Total		**129**

** PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L may be substituted for PHYS 2211/PHYS 2211L and PHYS 2212/PHYS 2212L.*

NOTES: 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.

Computer Engineering Technology

(Bachelor of Science Degree Offered)

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 development of the microcomputer has created a need for engineering technologists with a specialized knowledge of computers and control systems. The bachelor degree in computer engineering technology was created to meet this need.

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, 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.
Students may wish to focus their CpET electives to satisfy one of the following suggested areas of special interest:

1. **Embedded Systems:** (take 2 of the following courses)

ECET 3640	Introduction to Systems Engineering and Robotics
ECET 4630	Digital Signal Processing
ECET 4720	Distributed Micro-controllers and PCs
ECET 4730	VHDL and Field Programmable Gate Arrays

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.

2. **Networks:** (take 2 of the following courses)

ECET 4710	Network Programming and Interfacing
ECET 4720	Distributed Micro-controllers and PCs
ECET 48XX	BS Telecom 3000-4000 course
ECET 48XX	BS Telecom 3000-4000 course

Note: ECET 4830 cannot be used as an elective.

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.

Computer Engineering Technology – Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2306	Ordinary Differential Equations	3
MATH 2335	Numerical Methods I	3
PHYS 2211	Principles of Physics I	4
PHYS 2212	Principles of Physics II	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
TCOM 2010	Technical Writing	3
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
ECET 1001	Orientation	1
SPSU 1001	Hitchhiker's Guide to SPSU	1
ECET 1012	Design Fundamentals	2
ECET 1101	Circuits I	4
ECET 1200	Digital I	4
ECET 2111	Circuits II	4
ECET 2300	Electronics I	4
ECET 2210	Digital II	4
ECET 2310	Electronics II	4
ECET 3220	Digital III	4
ECET 3400	Data Communications	4
ECET 3600	Test Engineering	4
ECET 3410	High Frequency Systems	4
ECET 3701	Embedded PCs	4
ECET 3710	Hardware Programming & Interfacing	4
ECET 3810	Applications of C++, JAVA and HTML	3
ECET 4610	Control Systems	4
EDG 1210	Survey of Engineering Graphics	2
CpET Electives		11
Degree Program Total		**129**

NOTE: 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.

Telecommunications Engineering Technology

(Bachelor of Science Degree Offered)

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 BSTCET degree program is designed to provide individuals with the theory and hands-on knowledge necessary to meet that 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.

A capstone Telecommunications Project course is required for the program. Six TCET elective hours are provided in the TCET program, enabling students to customize their program. TCET electives can be one of the following:

ECET 4431	Wireless Communications Systems
ECET 4432	Fiber optic Communications Systems
ECET 4710	Network Programming and Interfacing
ECET 38XX/48XX	Any junior/senior-level telecommunications course
MGNT 3XXX/4XXX	Any junior/senior-level management course

Telecommunications Engineering Technology – Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2260	Probability and Statistics	3
MATH 2306	Ordinary Differential Equations	3
PHYS 2211	Principles of Physics I*	3
PHYS 2211L	Principles of Physics I Lab	1
PHYS 2212	Principles of Physics II*	3
PHYS 2212L	Principles of Physics II Lab	1
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
TCOM 2010	Technical Writing	3
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
ECET 1001	Orientation	1
SPSU 1001	Hitchhikers Guide to SPSU	1
ECET 1012	Design Fundamentals	2
ECET 1101	Circuits I	4
ECET 1200	Digital I	4
ECET 2111	Circuits II	4
ECET 2300	Electronics I	4
ECET 2210	Digital II	4
ECET 2310	Electronics II	4
ECET 3400	Data Communications	4
ECET 3410	High Frequency Systems	4
ECET 3810	Applications of C++, JAVA and HTML	3
ECET 4820	Communications Networks and the Internet	4
ECET 4830	Telecommunications Management	3
ECET 4840	Advanced Telecommunications	4
ECET 4850	Telecommunications Project	4
ECET 4860	Network Security	4
EDG 1210	Survey of Engineering Graphics	2
MGNT 3105	Management and Organizational Behavior	3
MGNT 4135	Project Management	3
TCET Electives		6
Degree Program Total		**129**

** PHYS 1111, 1111L and PHYS 1112, 1112L may be substituted for PHYS 2211, 2211L and 2212, 2212L.*

NOTE: 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.

Electrical and Computer Eng Tech Graduate Classes

ECET 6001	Circuit and System Modeling with SPICE
ECET 6002	Programmable Devices
ECET 6003	Advanced Test Engineering
ECET 6004	System Engineering
ECET 6100	Discrete -time Signals and Systems
ECET 6101	Digital Signal Processing
ECET 6102	Mechatronics
ECET 6201	Advanced Digital Design
ECET 6202	Embedded PC Systems
ECET 6203	Topics in Machine Intelligence
ECET 6204	Networked Embedded PCs
ECET 6300	Telecommunications Networking
ECET 6301	Telecommunications
ECET 6302	Digital Communication Networks
ECET 6303	Wireless Communication Systems
ECET 6304	Antenna Design
ECET 6305	Radar Systems
ECET 6401	Linear Control System Analysis and Design
ECET 6402	Power Flow Studies and Fault Analysis
ECET 6403	Applications of Power Electronics in Electric Drive Systems
ECET 6404	Switching Power Supplies
ECET 6704	Project Proposal
ECET 6901-6905	Special Topics
ECET 7504	Research
ECET 7704	Project

Electrical Engineering

Offering the Bachelor of Science degree in Electrical Engineering

The Electrical Engineering program is part of the Division 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*
Bill M. Diong, *Ph.D., Associate Professor*
Deidra Hodges, *Ph.D., Assistant Professor*
Yusun Chang, *Ph.D., Assistant Professor*
Kuo-Sheng Ma, *Ph.D. Assistant Professor*

Electrical Engineering

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C1	Course in English Literature	3
Area C2	Course in Art and Culture	3
Area E1	Course in History: American Context	3
Area E2	World History	3
Area E4	Culture and Societies	3
ECON 2107	Engineering Economics	3
CHEM 1211	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry I Lab	1
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2306	Ordinary Differentials Equations	3
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I Lab	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II Lab	1
EE 1000	Foundations of Electrical Engineering	2
CSE 1301E	Programming and Problem Solving I	4
ENGR 2214	Statics	3
EE 2301	Circuit Analysis I	4
EE 2302	Circuit Analysis II	3
EE 2401	Semiconductor Devices	3
EE 2501	Digital Logic Design	4
MATH 2260	Probability and Statistics	3
EE 3501	Micro Embedded Systems	4
EE 3605	Electromagnetics	3
EE 3701	Signals and Systems	3
ENGR 4402	Engineering Ethics	1
EE 3401	Engineering Electronics	4
EE 3702	Communications Systems	3
EE 3601	Electric Machines	3
EE 4201	Control Systems	4
EE 4701	Professional Practice	3
EE 3/4XXX	Technical Electives	9
EE 3/4XXX	Engineering Science Elective	3
EE 4800	Senior Project	4
Math Elective	Math above 2335	3
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.

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 which 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, industrial, mechanical, and telecommunications. These programs are accredited by the Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012; telephone: (410) 347-7700.

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.

English

Offering:

The Bachelor of Arts in English and Professional Communication

Our Bachelor of Arts in English and Professional Communication degree is not your typical B.A. in English. Our program emphasizes the role and place of text and image within a world increasingly dependent upon clear communication. 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 technical, international, scientific, and computer-related information to both technical and non-technical users.

The required communication courses equip students with the most advanced communication skills in writing, editing, graphics, information design and collaboration. In addition, students study classical rhetoric, develop high-level computer skills, and produce a portfolio that demonstrates their communication proficiency to potential employers. Our literature courses help students understand the diversity of genres, cultures, and authors that contribute to literary production. With offerings in journalism, creative writing, science writing, and environmental writing, our Professional Writing and Communication concentration prepares students for careers in media writing, freelance writing, marketing, public relations, and publishing Our new concentration in Media, Communication, and Culture combines hands-on production courses with a study of media and culture to prepare students for careers in marketing, mass communication, and entertainment, where media savvy can really pay off.

The Faculty:

Kami Anderson, *Assistant Professor*
Carol Barnum, *Professor*
Terry Carter, *Professor*
Donna Colebeck, Lecturer
Laura Beth Daws, Instructor
Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Kelsey Harr-Lagin, *Instructor*
Keith B. Hopper, *Professor*
Monique Logan, *Instructor*
Matthew McCool, *Assistant Professor*
Michelle Nichols, *Lecturer*
Mark Nunes, *Professor and Department Chair*
Betty Oliver, *Professor*
Iraj Omidvar, *Associate Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Assistant Professor*
Ann Parker, *Lecturer*
Cassie Race, Instructor
Nancy L. Reichert, *Associate Professor*
Cheryl Shinall, *Instructor*
Erin Sledd, *Instructor*
Herbert J. Smith, *Professor*
Debora Stefani, *Instructor*
Charlotte Stephenson, *Instructor*
Mark K. Stevens, *Associate Professor*
Laurie Strauss ,*Instructor*
Beth Stutzmann, *Senior Lecturer*
Katherine Taylor, *Instructor*
Ava Werner, *Instructor*
Jim Werner, *Assistant Professor*
Misty York, *Lecturer*

The Program:

The Bachelor of Arts in English and Professional Communication is designed to prepare students for a variety of communication careers.

Possible positions include:

Technical writer
Documentation specialist
Technical editor
Professional writer
Information designer
Multimedia specialist
Proposal writer
Corporate communications specialist
Public relations
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 professional and technical communication
A concentration in one area of professional communication
Additional elective courses in the major
Free electives

Students must make a grade of at least a C in all major courses.

Included below are the complete requirements for the programs.

English

Offering:

The Bachelor of Arts in English and Professional Communication

Our Bachelor of Arts in English and Professional Communication degree is not your typical B.A. in English. Our program emphasizes the role and place of text and image within a world increasingly dependent upon clear communication. 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 technical, international, scientific, and computer-related information to both technical and non-technical users.

The required communication courses equip students with the most advanced communication skills in writing, editing, graphics, information design and collaboration. In addition, students study classical rhetoric, develop high-level computer skills, and produce a portfolio that demonstrates their communication proficiency to potential employers. Our literature courses help students understand the diversity of genres, cultures, and authors that contribute to literary production. With offerings in journalism, creative writing, science writing, and environmental writing, our Professional Writing and Communication concentration prepares students for careers in media writing, freelance writing, marketing, public relations, and publishing Our new concentration in Media, Communication, and Culture combines hands-on production courses with a study of media and culture to prepare students for careers in marketing, mass communication, and entertainment, where media savvy can really pay off.

The Faculty:

Kami Anderson, *Assistant Professor*
Carol Barnum, *Professor*
Terry Carter, *Professor*
Donna Colebeck, Lecturer
Laura Beth Daws, Instructor
Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Kelsey Harr-Lagin, *Instructor*
Keith B. Hopper, *Professor*
Monique Logan, *Instructor*
Matthew McCool, *Assistant Professor*
Michelle Nichols, *Lecturer*
Mark Nunes, *Professor and Department Chair*
Betty Oliver, *Professor*
Iraj Omidvar, *Associate Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Assistant Professor*
Ann Parker, *Lecturer*
Cassie Race, Instructor
Nancy L. Reichert, *Associate Professor*
Cheryl Shinall, *Instructor*
Erin Sledd, *Instructor*
Herbert J. Smith, *Professor*
Debora Stefani, *Instructor*
Charlotte Stephenson, *Instructor*
Mark K. Stevens, *Associate Professor*
Laurie Strauss ,*Instructor*
Beth Stutzmann, *Senior Lecturer*
Katherine Taylor, *Instructor*
Ava Werner, *Instructor*
Jim Werner, *Assistant Professor*
Misty York, *Lecturer*

The Program:

The Bachelor of Arts in English and Professional Communication is designed to prepare students for a variety of communication careers.

Possible positions include:

- Technical writer
- Documentation specialist
- Technical editor
- Professional writer
- Information designer
- Multimedia specialist
- Proposal writer
- Corporate communications specialist
- Public relations
- 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 professional and technical communication
- A concentration in one area of professional communication
- Additional elective courses in the major
- Free electives

Students must make a grade of at least a C in all major courses.

Included below are the complete requirements for the programs.

English and Professional Communication Bachelor of Arts Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus I	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3

Required Area F Foundations Courses (9 credits)

COMM 2000	Business Communication	3
TCOM 2010	Technical Writing	3
TCOM 2020	Intro to Professional & Technical Communication	3

Area F Required Research Methods Course (3 credits; choose one)		
TCOM 2030	Research in Technical Communication	
	OR	3
ENGL 2030	Research in Professional and Critical Writing	

Area F Electives (6 credits; choose two)		
ARTS 2020	History and Principles of Design	3
ENGL 2xxx	Any 2000-level literature survey	3-6
COMM 2170	Intro to Media Studies	3
COMM 3065	International Communication	3
COMM 2065	Cross-Cultural Communication	3
COMM 2150	Ethics and Communication	3
Other coursework appropriate to major, as approved by the department (3 credits max)		3
Any foreign language, 2001 or higher		3

Basic Required Courses in the Major (18 hours)		
SPSU 1001	Hitchhikers Guide to SPSU	1
ENGL 3030	English Grammar for Professional Writing	3
ENGL 3100	Rhetoric: History, Theory, and Practice	3
TCOM 3400	Foundations of Design for the Web	3
TCOM 3430	Foundations of Graphics	3
COMM 4100	Small Group Communication	3
ENGL 4800	Project Portfolio[2]	3

English and Professional Communication Electives	12
Take any 3000-level or higher ARTS, COMM, ENGL, or TCOM Course, or	
other courses (not to exceed 6 credits) as approved by the department.	
Free Electives	15
Concentration Courses (Professional Writing and Communication or Media, Communication and Culture) *or* Minor Courses (International Studies or Spanish)	15

Professional Writing and Communication (15 hours)		
COMM 3035	Organizational Communication	3
COMM 3040	Health Communication	3
COMM 3050	Journalism	3
COMM 3150	Public Relations Practice	3
ENGL 3010	Science Writing	3
ENGL 3015	Environmental Writing	3
ENGL 3025	Creative Writing	3
ENGL 3035	Problems in Language	3
ENGL 3040	Article & Essay Workshop	3
ENGL 3081	Studies in Genre	3
ENGL 3082	Science & Literature	3
ENGL 4010	Publishing for New Media	3
TCOM 3020	Proposal Writing	3
TCOM 4000	Professional Editing	3

or

Media, Communication, and Culture (15 hours)		
ARTS 3000	Visual Thinking	3
COMM 3060	Media, Culture, and Society	3
COMM 3065	International Communication	3
COMM 3160	Media Theory and Practice	3
ENGL 3045	New Media Writing	3
ENGL 3180	Film as Literature	3
ENGL 4170	Media and Narrative	3
TCOM 3145	Social Media Integration	3
TCOM 4045	Foundations of Multimedia	3
TCOM 4170	Video Production	3
Degree Program Total		**121 credits**

Minors:

International Studies **15 hours**

In place of a concentration, students can choose to complete the BA in English and Professional Communication with a minor in International Studies. To be eligible for a minor in International Studies, the student must complete the following with a grade of C or better:

SIS 2903	Special Topics in Studies Abroad	
	OR	3
SIS 400x	Regional Studies	
Additional approved SIS courses		12
Spanish		**15 hours**

In place of a concentration, students can choose to complete the BA in English and Professional Communication with a minor in Spanish. To be eligible for a minor in Spanish, the student must complete the following:

SPAN 2001	Intermediate Spanish I	3
SPAN 2002	Intermediate Spanish II	3
Additional courses in Spanish at the 3000 level		9

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

Minor Professional Writing

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. Choose your courses from:

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

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.

Environmental Science (Pending BOR approval)

Southern Polytechnic State University's proposed Bachelor of Science degree in Environmental Science will provide students a program of study in Environmental Science with optional tracks in Environmental Chemistry and Environmental Biology. 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.

BS Requirements Environmental Science (Pending BOR Approval)

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
MATH 1113	Pre-calculus	4
MATH 2253	Calculus I	4
MATH 2260	Probability and Statistics	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
ENV 2100K	Introduction to Environmental Science	4
BIOL 3300K	Ecology	4
CHEM 2511K	Organic Chemistry I	4
CHEM 2512K	Organic Chemistry II	4
PHYS 1111	Introductory Physics I	3
PHYS 1111L	Introductory Physics I Lab	1
PHYS 1112	Introductory Physics II	3
PHYS 1112L	Introductory Physics II Lab	1
BIOL 2107K	Biological Principles I	4
BIOL 2108K	Biological Principles II	4
ENV 2200K	Geology	4
POLS 3401	Enviornmental Law and Policy	3
STS 4300	Enviornmental Ethics	3
ENV 3000	Environmental Science Seminar	1
Track Requirement: Take one of the tracks described below.		**35 hours**
Degree Program Total		**121**

General Environmental Science Track Requirements

CHEM 2511K	Organic Chemistry I	4
CHEM 2512K	Organic Chemistry II	4
CHEM 3150K	Environmental Chemistry	4
BIOL 4200K	Zoology	4
BIOL 4440K	Plant Biology (to be changed from Botany)	4
ENV 3100K	Soil and Water Science	4
ENV 4120	Senior Project	3
Free Electives		8

Environmental Chemistry Track Requirements

MATH 2254	Calculus II	4
CHEM 2511K	Organic Chemistry I	4
CHEM 2512K	Organic Chemistry II	4
CHEM 3150K	Environmental Chemistry	4
CHEM 3100K	Analytical Chemistry	4
CHEM 3300K	Instrumental Analysis	4
ENV 4120	Senior Project	3

Students must take 2 Electives from following courses (7 Credits):

ENV 3150K	Enviornmental Toxicology	4
CHEM 3200K	Atmospheric Chemistry	4
CHEM 4111K	Physical Chemistry I	4
BIOC 3111K	Biochemistry I	4
ENV 3100K	Soil and Water Science	4
BIOL 3250K	Ecosystem Ecology	4
BIOL 3100K	Microbiology	4
ENV 3350	Oceanography	3
SYS 4200	History of Environmentalism	3
ENV 4000K	Wetlands and Mitigation	4
BIOL 3500	Biostatistics	3
ENV 4500	Environmental Science Internship	3

Environmental Biology Track Requirements

CHEM 2511K	Organic Chemistry I	4
CHEM 2512K	Organic Chemistry II	4
BIOL 4200K	Zoology	4
BIOL 4440K	Plant Biology (to be changed from Botany)	4
ENV 3100K	Soil and Water Science	4
SURV 2110	Introduction to Mapping	4
ENV 4120	Senior Project	3

Students must take 2 Electives from following courses (7 Credits):

ENV 3450	Conservation Biology	3
ENV 3250	Natural Resource Management	3
ENV 3150K	Environmental Toxicology	4
BIOL 3250K	Ecosystem Ecology	4

ENV 3150K	Wetlands and Mitigation	4
BIOC 3111K	Biochemistry	4
BIOL 3100K	Microbiology	4
BIOL 3650	Marine Biology	3
BIOL 3600	Freshwater Biology	3
BIOL 3700K	Ichthyology	4
ENV 3350	Oceanography	4
STS 4200	History of Environmentalism	3
BIOL 4470	Plant Physiology	3
BIOL 4420K	Animal PHysiology	4
BIOL 3500	Biostatistics	3
ENV 4500	Environmental Science Internship	3
	Free Electives	0-1

This Degree is pending Board of Regents approval.

Apparel Textile Technology

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 Department Chair
Keely Clay Assistant Professor
Walter Thomas 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.
- 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.
- Recognize the need for life long learning.

Apparel Textile Technology - Fashion Design and Product Development Requirements

Area A		
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
Area B		
COMM 2400	Public Speaking	2
STS 2400	Science, Technology and Society	2
Area C		
C1	Literature of the World	3
C2	Art and Culture of the World	3
Area D		
Sciences	Two Area D Lab Science Courses	8
Math	One Area D Math Course	4
Area E		
E1	US History	3
E2	World History	3
E3	Behavioral Science	3
E4	Cultures and Societies	3
Area F		
ACCT 2101	Accounting I	3
ATT 1200	Apparel Design Graphics	2
ATT 1300	International Sourcing	3
ECON 1101	Introduction to Economics	3
MGNT 2201	Introduction to Computers	3
TCOM 2010	Technical Writing	3
Major Courses		
ATT 1000	Orientation	1
SPSU 1001	Hitchhikers Guide to SPSU	1
ATT 1400	Principles of Merchandising	3
ATT 2301	Apparel Computer-Aided Design I	4
ATT 3505	Fabric Formation and Design	3
ATT 3600	Apparel Analysis & Product Development	3
ATT 3100	Fashion Merchandising	3
ATT 3602	Apparel Computer-Aided Design II	4
ATT 3800	Fashion Forecasting & Trends	3
ATT 4444	QA for Textiles and Apparel	4
ATT 4670	Apparel Business Practices	3
ATT 4750	Advanced Design & Product Dev	3
ATT 4840	Apparel/Textile Business Project	3
IET 4810	Ethics and Safety	1
MGNT 3135	Principles of Marketing	3
SPSU1001	Hike Hikers Guide to SPSU	1
	ATT Related Electives: Select four courses: *	12
ARTS 2010	Introduction to Drawing	

ATT 4820	Senior Internship	
IET 2227	Industrial Statistics	
IET 2449	Logistics Planning and Control	
IET 3511	Sustainability Engineering	
MGNT 3105	Mgt & Organizational Behavior	
MGNT 3205	Management Information Systems	
MGNT 4145	International Management	
Free Electives		6
Total Degree Requirements		121

* At least six hours of Related Elective must be upper level courses

Apparel and Textiles Minor

To be eligible for a minor in Apparel and Textile Technology, the student must complete 18 credit hours from the following courses with at least 9 hours of upper division course work.

ATT 1300	International Sourcing	3
ATT 1400	Principles of Merchandising	3
ATT 2301	Apparel Computer-Aided Design I	4
ATT 2505	Fabric Formation and Design	3
ATT 2600	Apparel Analysis & Product Dev	3
ATT 3100	Fashion Merchandising	3
ATT 3602	Apparel Computer-Aided Design II	4
ATT 3800	Fashion Forecasting & Trends	3
ATT 4444	QA for Textiles & Apparel	4
ATT 4670	Apparel/Textile Business Practices	3
ATT 4750	Advanced Design and Product Dev	3

Certificate in Apparel Product Development

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 classes from the following list:

ATT 1300	ATT 1400
ATT 2301	ATT 2505
ATT 2600	ATT 3100
ATT 3602	ATT 3800
ATT 4444	ATT 4670
ATT 4750	

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.

Associate of Science General Studies Transfer Degree

COMM 2400	Public Speaking	2
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
Elective Courses as defined below		17
Program Total		**60**

Elective Courses:

At least one course in humanities (Area C)	3
At least one course in social sciences (Area E)	3
Any humanities, social science, math, lab science or any area F course from any program.	11

Relevant Course Descriptions:

Core Courses
Humanities: see English (ENGL), Arts (ART); Modern Languages (FREN, SPAN)
Social Sciences: (including ANTH, ECON, ES, GEOG, PSYC, RELG, SOCI, STS) see also History (HIST), Political Science (POLS)

History

Offering:

Bachelor of Science in International Studies

Concentration in History

The Bachelor of Science in International Studies

Concentration in History of Science and Technology

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 Program:

The History 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 an International Studies degree with concentrations in History and History of Science and Technology, SPSU seeks to produce graduates who not only understand the historical, political and economic processes of globalization, but who also possess the technological skills and knowledge that will allow them to deal with the new demands of a more global society.

The International Studies—History or **International Studies—History of Science and Technology** degree will prepare graduates for employment in:

International business
Intelligence
Graduate study
The non-profit sector
Pre-Law
Government
Public Policy

Students pursuing this degree must complete:

The Core Curriculum	60
Required Upper Division Core in international studies	24
The History or History of Science and Technology concentration	15
Directed International Electives	9
Free Electives	12

Any courses taken to satisfy degree program requirements in International Studies Required Upper Division Core, the student's Concentration, and the student's Directed International Electives must be passed with a grade of "C" or better.

International Studies Bachelor of Science —Concentration in History of Science and Technology Requirements

COMM 2400	Public Speaking	2
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two Courses in Laboratory Science	8
Area E3	Course in Behavioral Science	3
Area E4	Course in Cultures and Societies	3
ECON 1101	Introduction to Economics	3
HIST 1111	Survey of World Civilization pre- 1500	3
HIST 1112	Survey of World Civilization post-1500	3
HIST 2111	United States History to 1877	3
HIST 2112	United States History since 1877	3
HIST 3801	Contemporary World History since 1945	3
POLS 2401	Global Issues	3
POLS 2801	Comparative Politics	3
POLS 3101	International Political Economy	3
PSYC 3101	International Social Psychology	3
SIS 1000	International Studies Orientation	1
SPSU 1001	Hitchhikers Guide to SPSU	1
POLS 2100	Basic Quantitative Research Methods for International Studies and Political Science Majors	3
SIS 400x	Two Courses in Regional Studies	6
SIS 4100	Cross National Technology Policy Analysis	3
SPAN 2001	Intermediate Spanish I*	3
SPAN 2002	Intermediate Spanish II*	3
STS 4000	International Issues in Science and Technology	3
STS 4800	Capstone Seminar	3

** or other language at a similar level*

History of Science and Technology Electives: Take any three of the following courses:		9
HIST 3200	History of Science Survey	
HIST 3250	History of American Technology	
HIST 3260	History of American Science and Medicine	
HIST 490x	Special Topics in the History of Science and Technology	
International Electives: Take any three of the following courses:		9
ECON 2106	Microeconomics	
GEOG 3101	World Regional Geography	
HIST 3200	History of Science Survey	
HIST 3301	Diplomatic and Military History since 1815	
HIST 3401	Colonization and Rebellion in the Transatlantic World	

HIST 3501	Modern Social and Cultural History	
HIST 3601	History of the Pacific Rim	
HIST 390x, 490x	Special Topics with topic-specific departmental approval	
POLS 2903, 4903	Special Topics with topic-specific departmental approval	
POLS 3301	Modern Political Theory	
POLS 3601	Contemporary World Politics	
POLS 4101	Political Economy of Post-Communist Transformation	
POLS 4201	International Relations of the Americas	
PSYC 2903, 4903	Special Topics with topic-specific departmental approval	
PSYC 4000	International Psychology	
RELG 1200	World Religions	
SIS 390x	Special Topics in International Studies	
SIS 400x	Regional Studies (multiple courses on different regions may be taken)	
SIS 4600	Global Technology Internship	
SPAN 300x, 400x	Spanish (or other language at similar level)	
STS 4400	Topical Studies in Science and Technology	
Free Electives		12
Degree Program Total		**121**

International Studies Bachelor of Science—Concentration in History Requirements

COMM 2400	Public Speaking	2
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two Courses in Laboratory Science	8
Area E3	Course in Behavioral Science	3
Area E4	Course in Cultures and Societies	3
ECON 1101	Introduction to Economics	3
HIST 1111	Survey of World Civilization pre- 1500	3
HIST 1112	Survey of World Civilization post- 1500	3
HIST 2111	United States History to 1877	3
HIST 2112	United States History since 1877	3
HIST 3801	Contemporary World History since 1945	3
POLS 2401	Global Issues	3
POLS 2801	Comparative Politics	3
POLS 3101	International Political Economy	3
PSYC 3101	International Social Psychology	3
SIS 1000	International Studies Orientation	1
SPSU 1001	Hitchhikers Guide to SPSU	1
SIS 2100	Introduction to Quantitative Research Methods	3
SIS 400x	Two Courses in Regional Studies	6
SIS 4100	Cross National Technology Policy Analysis	3
SPAN 2001	Intermediate Spanish I*	3
SPAN 2002	Intermediate Spanish II*	3
STS 4000	International Issues in Science and Technology	3
STS 4800	Capstone Seminar	3

**Or other language at a similar level*

History Electives: Take any three of the following courses:		9
HIST 3301	Diplomatic and Military History since 1815	
HIST 3401	Modern Social and Cultural History	
HIST 3501	Colonization and Rebellion in the Trans-Atlantic World	
HIST 3601	History of the Pacific Rim	
HIST 390x	Special Topics in History	
SIS 400x	Regional Studies	
International Electives: Take any three of the following courses:		9
ECON 2106	Microeconomics	
GEOG 3101	World Regional Geography	
HIST 3200	History of Science Survey	
HIST 3301	Diplomatic and Military History since 1815	
HIST 3401	Colonization and Rebellion in the Transatlantic World	
HIST 3501	Modern Social and Cultural History	
HIST 3601	History of the Pacific Rim	
HIST 390x, 490x	Special Topics with topic-specific departmental approval	
POLS 2903, 4903	Special Topics with topic-specific departmental approval	
POLS 3301	Modern Political Theory	
POLS 3601	Contemporary World Politics	
POLS 4101	Political Economy of Post-Communist Transformation	
POLS 4201	International Relations of the Americas	
PSYC 2903, 4903	Special Topics with topic-specific departmental approval	
PSYC 4000	International Psychology	
RELG 1200	World Religions	
SIS 390x	Special Topics in International Studies	
SIS 400x	Regional Studies (multiple courses on different regions may be taken)	
SIS 4600	Global Technology Internship	
SPAN 300x, 400x	Spanish (or other language at similar level)	

STS 4400	Topical Studies in Science and Technology	
Free Electives		12
Degree Program Total		**121**

Industrial Engineering Technology

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.

Offering the only Industrial Engineering Technology program in the University System of Georgia, Southern Polytechnic prepares you to help make organizations more efficient, productive, and cost-effective. This kind of skill adds directly to your company's—and your own—bottom line.

Who makes a good industrial engineering technologist? Students 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.

Industrial engineering technologists manage quality, resources, and systems of a wide range of workplaces, including commercial facilities, service organizations, hospitals, and insurance companies.

To compete today, business and industry must aim for the greatest productivity and quality. SPSU does the same. Our small classes ensure more individual attention from our expert faculty. Moreover, IET's Industry Advisory Board provides suggestions to keep our curriculum current.

As you master quality control, facility design, time studies, simulation software, and project management, you can immediately apply such course knowledge in a part-time job or internship. Employers appreciate our students' professionalism, learned by making class presentations and working in teams. This experience also prepares you to manage future projects—a new service, a new process, a new product or whatever new innovation your employer is considering.

SPSU's IET graduates work for such powerhouses as Delta Airlines, Shaw Industries, Milliken, General Electric, UPS, Lockheed Martin and several other top companies.

Traditionally industrial engineering technologists have pursued careers in manufacturing environments, but increasingly they hold positions in logistics, banking, healthcare, and transportation. Our student organizations—branches of the Institute of Industrial Engineers (IIE) and American Society for Quality (ASQ)—put you in contact with professional networks before graduation.

The field of Industrial Engineering Technology offers the student a challenging career in business, industry, or government. Graduates deal primarily with the efficient management of money, materials, and labor in a business and industrial environment.

Career opportunities involve problem solving in the fields of:

- Production/Materials Management
- Facilities Planning
- Process Improvement
- Quality Control
- Logistics and Supply Chain Management
- Systems Simulation
- Salary and Compensation Plans
- Workplace Design
- Personnel Management
- Occupational Safety, Health and Ethics
- Project Management
- Economic Analysis/Cost Control

Offering the only Industrial Engineering Technology program in the University System of Georgia, Southern Polytechnic prepares you to help make organizations more efficient, productive, and cost-effective. To enable the graduate to solve such a wide variety of business and industrial problems, the curriculum of study is broad and interesting.

Program Educational Objectives:

Graduates of the Industrial Engineering Technology Program will:

- Meet industry expectations for expertise in the design, improvement, and installation of integrated systems of manpower, 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, manufacturing, 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,
- Possess the necessary interpersonal skills to communicate and work effectively in teams.

Program Outcomes:

Graduates of the Industrial Engineering Technology Program will demonstrate the following:

- An appropriate mastery of mathematical and scientific knowledge, techniques, and tools used in analysis of industrial systems.
- An ability to adapt to emerging applications of mathematics, science, engineering and technology.
- An ability to conduct, analyze and interpret experiments and apply experimental results to improve manufacturing and service processes.

- An ability to apply creativity in the design of industrial systems and processes.
- An ability to function effectively on multidisciplinary teams.
- An ability to identify, formulate and solve technical problems related to industrial engineering.
- An ability to communicate effectively.
- An ability to engage in and recognize the need for lifelong learning.
- An ability to understand, professional, ethical and social responsibilities.
- Respect for diversity and issues of social and global nature.
- A commitment to quality, timeliness and continuous improvement.
- An ability to integrate industrial systems using engineering methods.

The B.S. in Industrial Engineering Technology program is accredited by the Technology Accreditation Commission (TAC) of ABET. Further information regarding the accreditation board may be found at abet.org.

The Faculty:
Robert W. Atkins Professor
Thomas R. Ball Department Chair
David C. Caudill Professor and Associate VPAA
E. Lester Dollar, III Associate Professor
Ruston M. Hunt Professor and Dean of Extended University
Kenneth W. Jackson Associate Professor
Christina R. Scherrer Associate Professor
Gregory Wiles Assistant Professor

BS in Industrial Engineering Technology Requirements

Area A		
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1113	Pre-calculus	4
Area B		
COMM 2400	Public Speaking	2
STS 2400	Science, Technology & Society	2
Area C		
Group 1	Literature of the World	3
Group 2	Art and Culture of the World	3
Area D		
Sciences	Lab Science * Note 1	8
Math	Calculus I	4
Area E		
Group 1	American Context	3
Group 2	World History	3
Group 3	Behavioral Science	3
Group 4	Cultures and Societies	3
Area F		
CHEM 1211	Principles of Chemistry I * Note 2	3
CHEM 1211L	Principles of Chemistry I Lab * Note 2	1
TCOM 2010	Technical Writing	3
IT 1113	Programming Principles	3
EDG 1210	Survey of Engineering Graphics	2
IET 2305	Principles of Industrial Systems	4
Major Courses		
ACCT 2101	Accounting I	3
IET 1000	Orientation	1
SPSU 1001	Hitchhikers Guide to SPSU	1
IET 2227	Introduction to Statistics	3
IET 2449	Logistics Planning & Control	3
IET 3322	Work Measurement and Ergonomics	4
IET 3339	Statistical Quality Control	3
IET 3356	Quality Concepts & Systems	3
IET 3403	Industrial Experimentation	3
IET 3424	Engineering Economy	3
IET 3433	Eng Product and Process Costing II	3
IET 4405	Principles of Operations Research	3
IET 4422	Plant Layout and Materials Handling	4
IET 4451	Systems Simulation	3
IET 4475	Senior Project	3
IET 4810	Safety & Ethics	1
MGNT 4115	Human Resource Management	3
MGNT 4135	Project Management	3
MGNT 4151	Production & Operations Management	3
SPSU 1001	Hick Hiker's Guide to SPSU	1
IET Electives	From the Approved List	9
Free Electives		6
Degree Program Total		**129**

Notes:

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
IET 2449	Logistics Planning & Control	3
IET 3320	Advanced Logistics	3
IET 3511	Sustainability Engineering	3
IET 4405	Operations Research	3
MGNT 4115	Human Resource Management	3
MGNT 4151	Production and Operations Management	3
Total		21

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
IET 3356	Quality Concepts & Systems Design	3
IET 3403	Industrial Experimentation	3
IET 3407	Six Sigma Concepts & Lean Mfg	3
IET 3410	Principles of Team Dynamics	3
MGNT 4135	Project Management	3
MGNT 4151	Production and Operations Management	3
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.

Manufacturing Operations

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 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 http://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 http://tcsg.spsu.edu/.

Area A		
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
Area B		
COMM 2400	Public Speaking	2
STS 2400	Science, Technology & Society	2
Area C		
Group 1	Literature of the World	3
Group 2	Art and Culture of the World	3
Area D		
Sciences	Lab Sciences	8
MATH 1113	Pre Calculus	4
Area E		
Group 1	American Context	3
Group 2	World History	3
Group 3	Behavioral Science	3
Group 4	Cultures and Societies	3
Area F		
Technical Block	Up to 17 Semester Hours	17
Major Technical Block	Up to 21 Semester Hours	21
Major Courses		
ACCT 2101	Accounting I	3
IET 2227	Introduction to Statistics	3
IET 3322	Work Measurement and Ergonomics	4
IET 3339	Statistical Quality Control	3
IET 3356	Quality Concepts & Systems	3
IET 3424	Engineering Economy	3
IET 3511	Sustainability	3
IET 4422	Plant Layout and Materials Handling	4
MATH 2253	Calculus I	4
MGNT 4151	Production & Operations Management	3
Technical Electives	Choose any two courses	

IET2305	Industrial Systems & Processes	4
IET 2449	Logistics Planning & Control	3
IET3403	Industrial Experimentation	3
ECET 3000	Electrical Principles	4
MET 1311	Manufacturing Processes	3
MET 2322	Manufacturing Processes Lab	3
TCOM 2010	Technical Communications	3
Degree Program Total		120

Supply Chain Logistics

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 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 http://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 http://tcsg.spsu.edu/.

Area A		
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
Area B		
COMM 2400	Public Speaking	2
STS 2400	Science, Technology & Society	2
Area C		
Group 1	Literature of the World	3
Group 2	Art and Culture of the World	3
Area D		
Sciences	Lab Sciences	8
MATH 1113	Pre Calculus	4
Area E		
Group 1	American Context	3
Group 2	World History	3
Group 3	Behavioral Science	3
Group 4	Cultures and Societies	3
Area F		
Technical Block	Up to 17 Semester Hours	17
Major Technical Block	Up to 21 Semester Hours	21
Major Courses		
ACCT 2101	Accounting I	3
IET 2227	Introduction to Statistics	3
IET 2449	Logistics Planning & Control	3
IET 3320	Advanced Logistics	3
IET 3339	Statistical Quality Control	3
IET 3356	Quality Concepts & Systems	3
IET 3424	Engineering Economy	3
IET 3511	Sustainability	3
IET 3XXX	Distribution & Warehousing	3
MGNT 3105	Mgt & Organizational Behavior	3
MGNT 3135	Principles of Marketing	3
MGNT 4135	Project Management	3
TCOM 2010	Technical Communications	3
Degree Program Total		120

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
IET 2305	Principles of Industrial Systems and Processes	4
IET 3356	Quality Concepts	3

And choose two courses from the following list:

IET 2449	Logistics Planning & Control	3

IET 3320	Advanced Logistics	3
IET 3322	Work Measurement and Analysis	4
IET 3339	Statistical Quality Control	3
IET 3403	Industrial Experimentation	3
IET 3407	Six Sigma Concepts	3
IET 3410	Team Dynamics	3
IET 3424	Engineering Economics	3
IET 3511	Sustainability Engineering	3
IET 4405	Principles of Operations Research	3
IET 4422	Plant Layout/Materials Handling	4
Total		**16-18**

NOTE: An overall 2.0 GPA in required in the courses for the IET Minor (excluding the international studies minor courses).

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.

Required Courses:

IET 2227	Introduction to Statistics	3
IET 2449	Logistics Planning and Control	3
IET 3320	Advanced Logistics	3
IET 3511	Sustainability Engineering	3
IET 4405	Operations Research	3
MGNT 4115	Human Resources Management	3
MGNT 4151	Production and Operations Management I	3
Total		**21**

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.

Required Courses:

IET 2227	Introduction to Statistics	3
IET 3322	Work Measurement and Ergonomics	4
ACCT 2101	Accounting I	3
IET 4422	Plant Layout and Materials Handling	4
IET 4405	Operations Research	3
MGNT 4151	Production and Operations Management I	3
Total		**20**

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.

Required Courses:

IET 2227	Introduction to Statistics	3
IET 3339	Statistical Quality Control	3
IET 3356	Quality Concepts and Systems Design	3
IET 3403	Industrial Experimentation	3
IET 3410	Principles of Team Dynamics	3
MGNT 4135	Project Management	3
MGNT 4151	Production and Operations Management I	3
Total		**21**

Information Technology

Offering:

Bachelor of Science in Information Technology
Bachelor of Applied Science in Information Technology
Online Bachelor of Science in Information Technoloty (WebBSIT)

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 degree in information technology from a community college or a Technical College System of Georgia (TCSG) institution, but lack the general education and upper level IT coursework required for a Bachelor of Science degree to continue their education in Southern Polytechnic State University.

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, *Lecturer*
Richard Halstead-Nussloch, *Professor*
Svetlana Peltsverger, *Assistant Professor*
Han Reichgelt, *Professor and Dean*
Rebecca Rutherfoord, *Professor*
Susan Vande-Ven, *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, and required electives. The Major contains those courses considered fundamental to the information technology field and the electives 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.**

Information Technology Bachelor of Applied Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
MATH 1113	Pre-Calculus	4
Area D	See your advisor before you select science courses (2 science courses)	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
CSE 1301	Programming and Problem Solving I	4
MATH 2345	Discrete Math	3
IT 1324	Advanced Programming Principles	4
CSE 2642	Professional Practices & Ethics	2
CS 3153	Database Systems	3
IT 3123	Hardware/Software Concepts	3
IT 3203	Introduction to Web Development	3
IT 3223	Software Acquisition and Project Management	3
IT 3423	Operating Systems Concepts and Administration	3
IT 3883	Advanced Applications Development	3
IT 4323	Data Communications and Networks	3
IT 4823	Information Security Administration	3

Choose two from the following:

IT 4123	Electronic Commerce	3
IT 4203	Advanced Web Development	3
IT 4153	Advanced Database	3
IT 4333	Network Configuration & Administration	3
IT 4683	Management Information Technology	3
IT 4723	IT Policy and Law	3
IT 4833	Wireless Security	3
IT 4843	Ethical Hacking for Effective Defense	3
IT 4853	Computer Forensics	3
Technical Block (AAS major courses)		**28**

Students who have completed an AAS degree may obtain transfer credit for up to 60 credit hours from approved associate programs. If a course listed above is covered by a transferred course, students have to take another course in its place from the BSIT program at the same level or above.

Free Elective	**1**
Degree Program Total	**121**

Information Technology Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to area F)	4
	OR	
MATH 2240	Survey of Calculus	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any two lab-based science courses	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
TCOM 2010	Technical Writing	3
MATH 2345	Discrete Mathematics	3
MATH 2260	Probability and Statistics	
	OR	
IET 2227	Statistics	3
CSE 1301	Program and Problem Solving I	4
IT 1324	Advanced Programming Principles OR CSE 1302	4
CSE 1002	Introduction to the Computing Disciplines	2
SPSU 1001	Hitchhiker's Guide to SPSU	1
CSE 2642	Professional Practices and Ethics	2
CS 3153	Database Systems	3
IT 3123	Hardware/Software Concepts	3
IT 3203	Introduction to Web Development	3
IT 3223	Software Acquisition and Project Management	3
IT 3423	Operating Systems Concepts and Administration	3
IT 3883	Advanced Applications Development	3
IT 4123	Electronic Commerce	3
IT 4323	Data Communications and Networks	3
IT 4423	Unix/Linux	3
IT 4683	Management of Information Technology and Human Computer Interaction	3
IT 4723	IT and the Law	3
IT 4823	Information Security Administration	3
IT 4983	IT Capstone	3
Free Electives		8
Concentration or Technical Electives (see listing below)		12
Degree Program Total		**120**

Choose one of the tracks below and complete 3 of their courses. The 4th elective can be from the same or different track.

Management Track

MGNT 4185	Technical Management	3
MGNT 4151	Production and Operations Management	3
SWE 4664	Software Project Management	
	OR	3
MGNT 4135	Project Management	
MGNT 3105	Management & Org. Behavior	3

Systems & Administration Track

IT 4203	Adv Web Development	3
IT 4153	Advanced Database	3
IT 4333	Network Conf & Administration	3
IT 3653	Client Server System Administration	3

Information Assurance & Security Track

IT 4833	Wireless Security	3
IT 4843	Ethical Hacking for Effective Defense	3
IT 4853	Computer Forensics	3
IT 4903	Special Topics in Information Security	3

Health Information Technology Track

IT 3503	Foundations of Health IT	3
IT 4513	Elect Health Rec Sys and App	3
IT 4523	Clinical Proc and Workflows: Analysis and Design	3
IT 4533	Health Information Security & Privacy	3

Information Technology Minor

To be eligible for a minor in Information Technology, the student must complete 18 credit hours of the following courses with a grade of "C" or better:

Information Technology Minor Requirements

CSE 1301	Programming and Problem Solving I	4
IT 1324	Advanced Programming Principles OR CSE 1302 - Programming & Problem Solving 2	4
IT 3123	Hardware/Software Concepts OR CS 3224 - Computer Organization & Architecture	3 or 4
IT 3203	Introduction to Web Development OR CS 3153 - Database Systems	3

And one of the Following:

IT 4123	Electronic Commerce	3
IT 4323	Data Communications & Networks	3
IT 4823	Information Security Administration	3

WebBSIT Requirements

WebBSIT Curriculum

Area F - 18 hours

- WBIT 1100 Introduction to Information Technology
- WBIT 1310 Programming and Problem Solving I
- MATH 1401 Statistics (Available from WebBSIT participating institutions or through eCore®)

• WBIT 2000 The Enterprise and IT
• WBIT 2300 Discrete Math for IT
• WBIT 2311 Programming and Problem Solving II

Required Core Courses - 42 hours

• WBIT 3010 Technical Communication
• WBIT 3110 Systems Analysis and Design
• WBIT 3111 Information Technology Project Management
• WBIT 3200 Database Design, Development and Deployment
• WBIT 3400 Introduction to Digital Media
• WBIT 3410 Web Application Development
• WBIT 3500 Architecture and Operating Systems
• WBIT 3510 Data Communications and Networking
• WBIT 3600 Introduction to E-Commerce
• WBIT 4020 Professional Practice and Ethics
• WBIT 4030 Senior Project and Portfolio
• WBIT 4112 Systems Acquisition, Integration and Implementation
• WBIT 4120 Human Computer Interaction
• WBIT 4520 Information Assurance and Security

Concentration/Electives - 18 hours

• WBIT 4601 Customer Relationship Management
• WBIT 4602 IT Strategy, Design, and Development
• WBIT 4610 IT Policy and Law
Free Electives (not within the WebBSIT) - 9 hours

International Studies

Offering:

Bachelor of Science in International Studies

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*

By offering an International Studies degree with concentrations in areas of technology or applied liberal arts, 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 particular area of concentration	14-19
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 Concentration, and the student's Directed International Electives must be passed with a grade of "C" or better.

International Studies Bachelor of Science Requirements

COMM 2400	Public Speaking	2
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two Courses in Laboratory Science	8
Area E1	Course in American Context	3

Students taking Political Science Concentration should take POLS 1101 or HIST 2112

Students taking History or History of Science and Technology Concentration should take HIST 2111 or HIST 2112

Area E2	Course in World History	3
Area E3	Course in Behavioral Sciences	3
Area E4	Course in Cultures and Societies	3
ECON 1101	Introduction to Economics	3
HIST 3801	Contemporary World History post 1945	3
POLS 2100	Basic Quantitative Research Methods for Political Science and International Studies Majors	3
POLS 2401	Global Issues	3
POLS 2801	Comparative Politics	3
POLS 3101	International Political Economy	3
PSYC 3101	International Social Psychology	3
SIS 1000	International Studies Orientation	1
SIS 400x	Two Courses in Regional Studies	6
SIS 4100	Cross National Technology Policy Analysis	3
SPAN 2001	Intermediate Spanish I*	3
SPAN 2002	Intermediate Spanish II*	3
STS 4000	International Issues in Science and Technology	3
STS 4800	Capstone Seminar	3

**Or another language at a similar level*

Directed International Electives: Take any three of the following courses: 9

ECON 2106	Microeconomics
GEOG 3101	World Regional Geography
HIST 3200	History of Science Survey
HIST 3301	Diplomatic and Military History since 1815
HIST 3401	Colonization and Rebellion in the Transatlantic World
HIST 3501	Modern Social and Cultural History
HIST 3601	History of the Pacific Rim
HIST 390x, 490x	Special Topics with topic-specific departmental approval

POLS 2903, 4903	Special Topics with topic-specific departmental approval	
POLS 3301	Modern Political Theory	
POLS 3601	Contemporary World Politics	
POLS 4101	Political Economy of Post-Communist Transformation	
POLS 4201	International Relations of the Americas	
PSYC 2903, 4903	Special Topics with topic-specific departmental approval	
PSYC 4000	International Psychology	
RELG 1200	World Religions	
SIS 390x	Special Topics in International Studies	
SIS 400x	Regional Studies (multiple courses on different regions may be taken)	
SIS 4600	Global Technology Internship	
SPAN 300x, 400x	Spanish (or other language at similar level)	
STS 4400	Topical Studies in Science and Technology	
Concentration		**14-19**

International Studies majors are required to complete a concentration.

Free Electives	variable
Degree Program Total	**120**

International Studies Concentration Options

Students majoring in International Studies must complete one of the following areas of Concentration:

Biology	15-16
Civil Engineering Technology	17
Computing	19
Construction	14
Electrical Engineering Technology	16
History	15
History of Science and Technology	15
Industrial Engineering Technology	15
International Business	15
Latin American Studies	15
Management	15
Political Science	15
Pre-Law	15
Social Science	15
Psychology	15
Spanish	15
Surveying	16
Technical Communication	15

Biology Concentration (15-16 credits)

This area of concentration will provide students with a basic understanding of the principles and terminology in the Biology discipline. Students taking this option should take BIOL 2107K and BIOL 2108K to satisfy the core lab science core requirements.

BIOL 3000K	Genetics	(4)
BIOL 3310K	Molecular Biology	(4)
BIOL 3200K	Biotechnology	(4)
Any additional Biology course numbered 3000 or higher		(3-4)

Civil Engineering Technology Concentration (16 credits)

This concentration will give students a basic understanding of the principles and terminology involved in civil engineering technology. Students taking this option should take PHYS 1111 and PHYS 1112 to satisfy the core lab science core requirements and must take MATH 2253.

CE 1000	Orientation	(1)
EDG 2160	Civil Engineering Graphics	(3)
CET 2200	Introduction to Structures	(4)
CET 3130	Applied Fluid Mechanics and Hydraulics	(3)
CET 3310	Water Treatment and Distribution	(3)
CET 3320	Wastewater Collection and Treatment	(4)

Computing Concentration (19 credits)

This concentration will give students a basic understanding of the principles and terminology involved in computer science and programming.

CSE 1301	Programming and Problem Solving I	(4)
CSE 1302	Programming and Problem Solving II	(4)
CS 3153	Database Systems	(3)
IT 3123	Hardware/Software Concepts	(3)
SWE 2313	Introduction to Software Engineering	(3)
CSE 2642	Professional Practices and Ethics	(2)

Construction Concentration (14 credits)

This concentration will give students a basic understanding of what makes the construction process work.

CM 1000	Orientation	(2)
CM 2000	Construction Graphics	(3)
CM 3000	Computer Applications	(3)
CM 3110	Building Techniques I	(3)
CM 3410	Construction Estimating	(3)

Electrical Engineering Technology Concentration (16 credits)

This concentration will give students a basic understanding of the principles and terminology involved in electrical engineering technology. Students taking this option should take PHYS 1111 and PHYS 1112 to satisfy the core lab science core requirements and must take MATH 2253.

ECET 1000	Orientation	(2)
ECET 1011	Fundamentals	(3)
ECET 1200	Digital I	(4)
ECET 3000	Electrical Principles	(4)
ECET 3810	C++, JAVA, HTML	(3)

History Concentration (15 credits)

This concentration encompasses the development of the human experience as it changes over time and across cultures and offers

analytical and communications skills applicable in a wide range of professional settings.

World History:	Select whichever course not taken to satisfy core requirements	(3)
HIST 1111	Survey of World Civilization to 1500	
HIST 1112	Survey of World Civilization since 1500	
American History:	Select whichever course not taken to satisfy core requirements	(3)
HIST 2111	United States History to 1877	
HIST 2112	United States History since 1877	
History Electives:	Select any three of the following:	(9)
HIST 3301	Diplomatic and Military History Since 1815	
HIST 3401	Modern Social and Cultural History	
HIST 3501	Colonization and Rebellion in the Trans-Atlantic World	
HIST 3601	History of the Pacific Rim	
HIST 390x	Special Topics in History	
SIS 400x	Regional Studies*	

**No more than one Regional Studies course may be used to satisfy the concentration.*

History of Science and Technology Concentration (15 credits)

This concentration will use historical investigation to give students a deeper understanding of the nature and impact of science and technology.

World History:	Select whichever course not taken to satisfy core requirements	(3)
HIST 1111	Survey of World Civilization to 1500	
HIST 1112	Survey of World Civilization since 1500	
American History:	Select whichever course not taken to satisfy core requirements	(3)
HIST 2111	United States History to 1877	
HIST 2112	United States History since 1877	
History Electives:	Select any three of the following:	(9)
HIST 3200	History of Science Survey	
HIST 3250	History of American Technology	
HIST 3260	History of American Science and Medicine	
HIST 490x	Special Topics in the History of Science and Technology	

Industrial Engineering Technology Concentration (15 credits)

This concentration will give students a basic understanding of the principles and terminology involved in industrial engineering technology.

IET 1000	Orientation	(1)
IET 2227	Introduction to Statistics	(3)
IET 2305	Principles of Industrial Systems & Processes	(4)
ACCT 2101	Accounting I	(3)
IET 3322	Work Measurement and Ergonomics	(4)

International Business Concentration (15 credits)

This concentration provides students with the ability to master important functional areas of business, in both domestic and international settings .

ACCT 2101	Accounting I	(3)
MGNT 3105	Management and Organizational Behavior	(3)
MGNT 3125	Basic Business Finance	(3)
MGNT 3135	Marketing Principles	(3)
MGNT 4145	International Management	(3)

Latin American Studies Concentration (15 credits)

This concentration provides students with a basic understanding of Latin America and proficiency in Spanish for work in government, non-governmental organizations, and business.

ES 1100	Ethnic Studies (must be Latino/Hispanic)	(3)
HIST 3501	Colonization and Rebellion in the Trans-Atlantic World	(3)
POLS 4201	International Relations of the Americas	(3)
SIS 4001	Regional Studies: Latin America*	(3)
SPAN 3003	Hispanic Cultures and Civilizations	(3)

**student must take an additional regional studies (SIS 400X) to fulfill the International Studies upper division core requirement*

Management Concentration (15 credits)

This concentration will give students a basic understanding of management skills and technology. These basic skills are vital in managing international and high technology organizations.

MGNT 3105	Management and Organizational Behavior	(3)
An additional 12 hours of Management electives; at least 6 of the 12 hours must be 3000- or 4000-level courses		(12)

Political Science Concentration (15 credits)

This concentration provides students with a basic introduction into the terminology, theoretical frameworks and developments within the various sub-fields of political science.

Political Science Requirements:	Take all of the following:	(9)
POLS 1101	American Government (cannot also satisfy E1 requirement)	
POLS 3301	Modern Political Theory	
POLS 3601	Contemporary World Politics	
Group A:	Take one of the following:	(3)
POLS 3701	American Institutions	
POLS 3801	Political Behavior	
Group B:	Take one of the following:	(3)
SIS 4001	Regional Studies: Latin America	
SIS 4005	Regional Studies: Russia / Eastern Europe	

Pre-Law Concentration (15 credits)

One of the most common career paths chosen by students of International Studies is a legal career. Additionally, legal training in technology issues is in demand at present and is extensively needed domestically as well as internationally. This concentration will provide International Studies majors with additional coursework that will better prepare them for pursuing a career in law upon graduation with a B.S. in International Studies.

American Context Core: Take both courses not used to satisfy General Core (6)

HIST 2111	U.S. History to 1877
HIST 2112	U.S. History since 1877
POLS 1101	American Government

Pre-Law Electives: Select three courses (9)

MGNT 3145	Legal Environment of Business
MGNT 4545	Legal Environment of Business II
POLS 3209	U.S. Constitutional Law
POLS 3301	Modern Political Theory
POLS 3401	Environmental Law and Policy
POLS 3501	Intellectual Property Issues
CM 4760	Construction Law

Psychology Concentration (15 Credits)

With this concentration, students will be introduced to the basic terminology, theoretical frameworks and developments within psychology.

Group A: Select three of the following*: (9)

PSYC 2011	Cognitive Psychology
PSYC 2700	Engineering Psychology
PSYC 2401	Psychology of Diversity
PSYC 3020	Physiological Psychology
PSYC 3031	Experimental Psychology**
PSYC 3301	Psychological Testing**
PSYC 4050	History and Systems of Psychology
MGNT 3105	Management and Organizational Behavior

**prerequisite IET 2227 Industrial Statistics

Group B: Select two of the following*: (6)

PSYC 3010	Educational Psychology
PSYC 3015	Theories of Personality
PSYC 3230	Abnormal Psychology
PSYC 3305	Developmental Psychology
PSYC 4000	International Psychology
PSYC 4130	Psychology of Aging
PSYC 4220	Psychoactive Drugs, Behavior and Society
PSYC 4600	Conflict Resolution

*At least three of the courses selected for the Psychology Concentration must be numbered 3000 or higher.

Social Science Concentration (15 credits)

With this concentration, students will be introduced to the basic terminology, theoretical frameworks and developments within various social science disciplines.

Orientation: Select two of the following: (6)

ANTH 1102	Introduction to Anthropology
GEOG 1101	Introduction to Human Geography
POLS 3601	Contemporary World Politics
RELG 1200	World Religions

Social Science Electives: Select three of the following: (9)

HIST Any 3000- or 4000- level History course
PSYC Any 3000- or 4000- level Psychology course
POLS Any 3000- or 4000- level Political Science course
SIS Any 3000- or 4000- level SIS course
SPAN 3003 Hispanic Cultures and Civilizations (only for students with the requisite Spanish language skills)

Note: Only one course may be selected from each discipline.

Spanish Concentration (15 credits)

With this concentration students can achieve an intermediate low proficiency in Spanish and a basic understanding of Hispanic cultures.

Any three 3000 level Spanish courses	(9)
Any two 4000 level Spanish courses	(6)

Surveying Concentration (16 credits)

This concentration will give students a basic understanding of the principles and terminology involved in surveying. Students taking this option should take PHYS 1111 and PHYS 1112 to satisfy the lab science core requirements.

CE 1000	Orientation	(1)
EDG 2160	Civil Engineering Graphics	(3)
SURV 2221	Surveying I	(4)
SURV 3222	Surveying II	(4)
SURV 3421	Geographic Information Systems	(4)

Technical Communication Concentration (15 credits)

This concentration will give students a basic understanding of the principles and terminology involved in technical writing.

COMM 2000	Business Communication	(3)
TCOM 2010	Technical Writing	(3)
Any three TCOM courses numbered 3000 or above		(9)

International Studies Minor

To be eligible for a minor in International Studies, the student must complete the following with a grade of C or better:

1. **Select one course from the following:**

SIS 2903	Special Topics in Studies Abroad
SIS 400x	Regional Studies

2. **Select four courses not used to satisfy core requirements from the following list.**

No more than two can be numbered below 3000.

ANTH 1102	Introduction to Anthropology
ECON 1101	Introduction to Economics
ECON 2106	Micro Economics
GEOG 1101	Introduction to Human Geography
GEOG 3101	World Regional Geography
HIST 1111	World Civilization to 1500
HIST 1112	World Civilization since 1500
HIST 3200	History of Science Survey

HIST 3301	Diplomatic and Military History Since 1815
HIST 3401	Social and Cultural History During the 20th Century
HIST 3501	Colonization and Rebellion in the Trans-Atlantic World
HIST 3601	History of the Pacific Rim
HIST 3801	Contemporary World History Since 1945
HIST 3903, 4903	Special Topics, with topic-specific departmental approval
MGNT 4145	International Management
POLS 2401	Global Issues
POLS 2801	Comparative Politics
POLS 2903, 3903	Special Topics, with topic-specific departmental approval
POLS 3101	International Political Economy
POLS 3301	Modern Political Theory
POLS 3601	Contemporary World Politics
POLS 4101	Political Economy of Post-Communist Transformation
POLS 4201	International Relations of the Americas
PSYC 2903, 4903	Special Topics, with topic-specific departmental approval
PSYC 3101	International Social Psychology
PSYC 4000	International Psychology
RELG 1200	World Religion
SIS 3600	Comparative Culture
SIS 3903	Special Topics in International Studies
SIS 400x	Regional Studies (must be different from course used to satisfy 1.)
SIS 4100	Cross-National Technology Policy Analysis
SPAN 300x, 4000x	Any upper division Spanish course; two courses maximum
STS 4000	International Issues in Science and Technology
STS 4400	Topical Studies in Science and Technology
STS 4800	Global Technology Seminar

3. **Demonstrate proficiency in a foreign language equivalent to or complete FREN 1002, GRMN 1002 or SPAN 1002.**

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:

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*
Andrew G. McMorran, *Associate Professor and Department Chair*
Nicolae Pascu, *Assistant Professor*
Laura Ritter, *Assistant Professor*
Claudia Spiro, 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.

Mathematics — Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics II Lab	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II Lab	1
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
CSE 1301	Computer Science I	4
CSE 1302	Computer Science II	4
MATH 1113	Pre-calculus	4

MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2306	Ordinary Differential Equations	3
MATH 2345	Discrete Mathematics	3
MATH 3310	Introduction to Advanced Mathematics	3
MATH 3312	Linear Algebra	4
MATH 3320	Introductory Real Analysis I	4
MATH 3321	Introductory Real Analysis II	4
MATH 4407	Vector Analysis	3
MATH 4440	Abstract Algebra	4
MATH 4451	Capstone Mathematics Project	3
Mathematics Electives		**9 hours**

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

Guided Electives	**20 hours**

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

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 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.

Mechanical Engineering

Offering the 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. In this energy conscious world, a thorough understanding of energy and its uses is essential to the success of a mechanical engineer.

Mechanical engineers help to design energy efficient devices such as wind-turbines as well as artificial knee joints that help society.

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:

David R. Veazie, *P.E., Professor*
Richard Ruhala, *Ph.D., Associate Professor*
Laura A. Ruhala, *Ph.D., Associate Professor*
Mohammed S. Mayeed, *Ph.D., Assistant Professor*
Erhan Ilksoy, *P.E., Senior Lecturer*

Mechanical Engineering- Bachelor of Science Requirements

CHEM 1211	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry II	1
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
ENGL 21XX	Core C1-Literature	3
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2260	Probability & Statistics	3
MATH 2306	Differential Equations	3
MATH 2335	Numerical Methods *	3
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I Lab	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II Lab	1
COMM 2400	Public Speaking	2
STS 2400	Science, Technology and Society	2
TCOM 2010	Technical Writing	3
ECON 2107	Core E3- Engineering Economics	3
Core C2	Art & Culture	3
Core E1	American Context	3
Core E2	World History	3
Core E4	Culture & Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
EDG 1211	Engineering Graphics I	3
CSE 1301E	C++ Programming for Engineers	4
ENGR 2214	Statics	3
ENGR 2501	Material Science	3
ENGR 3125	Machine Dynamics & Vibrations	3
ENGR 3122	Dynamics	3
ENGR 3131	Strength of Materials	3
ENGR 3132	Strength of Materials Lab	1
ENGR 3343	Fluid Mechanics	3
ENGR 3345	Fluid Mechanics Lab-Mechanical	1
ENGR 3650	Computer-Aided Engineering	3
ENGR 4402	Ethics	1
EE 2301	Circuits	4
ME 1001	Intro to Mechanical Engineering	2
ME 3201	Product Realization	2
ME 3410	Thermodynamics	3
ME 3440	Heat Transfer	3
ME 3501	Dynamic Systems & Control Theory	3
ME 4141	Machine Design I	3
ME 4201	Senior Design I	1
ME 4202	Senior Design II	3
ME 4403	Heat Transfer & Thermodynamics Lab	1
ME 4501	Vibrations & Controls Lab	1
ME 3XXX	ME approved engineering elective	4
ME 4XXX	ME approved engineering elective	4
Degree Program Total		**129**

*May substitute MATH 2335 Numerical Methods I with MATH 3312 Linear Algebra (4 credits) and this would reduce major electives needed from 8 to 7 credits.

The Mechanical Engineering degree requires a grade of "C" or better in all ME, and ENGR courses applied to degree requirements.

*Extra hour credit added to degree total for SPSU 1001

Mechanical Engineering Technology

Offering: Bachelor of Science in Mechanical Engineering Technology

Technology is rapidly changing machinery, systems, and the industries that produce them. If you want your career to grow just as rapidly—and offer you interesting problems to solve ever day—this program gives you plenty of hands-on experience. The Mechanical Engineering Technology degree leads to diverse, well-paid specialties, from manufacturing operations and management to systems design, sales, and plant engineering. Working step by step with your professors and fellow students, you'll learn to apply engineering concepts in many industrial settings. In the process, you'll gain marketable skills and a proven degree.

Building on core courses in calculus and physics, our curriculum develops your hands-on ability to solve engineering problems. A strong background in algebra and trigonometry can enable you to opt out of pre-calculus and move more quickly toward courses where you design machines, tools, and manufacturing systems. These classes teach you to go beyond the analysis of existing solutions, by creating designs that maximize efficiency and save costs.

In the lab, in your first year, welding and metal cutting helps you understand how materials and machinery behave—and how to specify or design materials economically. Combined with your core courses, these fundamentals prepare you to use CAD software and advanced equipment, such as the three-dimensional prototype printer, in hands-on design. One example: Our students fabricate a complete yo-yo assembly system that operates with no hand touching. These challenges help you develop a very organized way of documenting your solutions—whether you're making a power plant more efficient or specifying architectural support equipment.

Bridging the gap between research engineers and skilled technicians, our graduates fill a vital role in many industries. Elective courses offer students the opportunity to concentrate in an area of specialization, and every student masters such marketable skills as graphics, manufacturing processes, and clear communication on team projects. MET careers challenge our alumni in exciting ways, and many of our students are employment-ready before graduation.

Our purpose is to develop students into Mechanical Engineering Technologists capable of applying current engineering concepts to industrial applications. Instruction is in the broad area of technological education, bridging the gap between the research engineer and the skilled craftsman and technician trained in the vocational-technical schools.

Our graduates apply engineering principles to today's industrial needs in the areas of manufacturing, machine design, heating, ventilating and air conditioning, and power production. We emphasize practical, applications-oriented laboratory experience in manufacturing processes and techniques, instrumentation and controls, and equipment and machinery performance testing and evaluation, with particular emphasis on the needs of industries prevalent in the Southeast.

In addition to the common core of courses taken by all MET students, a student may concentrate in an area of specialization by the appropriate choice of elective courses.

The Faculty:

Mir M. Atiqullah, Associate Professor

Gregory M. Conrey, Associate Professor

Kenton R. Fleming, Assistant Professor

Donald D. Horton, Associate Professor

Ali Khazaei, Assistant Professor

Simin Nasseri, Assistant Professor

Jeffrey Ray, Professor and Dean

Norman A. Russell, Associate Professor

John F. Sweigart, Associate Professor and Department Chair

David R. Veazie , Professor

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.

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 apply knowledge of engineering materials, applied mechanics, thermal sciences, fundamentals of electricity, manufacturing processes, mechanical design, computer-aided engineering graphics, and electro-mechanical devices and controls.
- an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology
- an ability to conduct, analyze and interpret experiments and apply experimental results to improve processes
- an ability to apply creativity in the design of systems, components, and processes
- an ability to function effectively on teams,
- an ability to identify, analyze and solve technical problems,
- an ability to communicate effectively,
- a recognition of the need for, and an ability to engage in lifelong learning,
- an ability to understand professional, ethical and social responsibilities,
- a respect for diversity and a knowledge of contemporary professional, societal and global issues.
- a commitment to quality, timeliness, and continuous improvement.
- technical expertise in engineering materials, statics, dynamics, strength of materials, solid and fluid mechanics, thermodynamics, industrial electronics.
- technical expertise with added depth in mechanical design and computer-aided design.
- added technical depth in at least one of the following (selected by the student): analysis and design of HVAC&R systems, including economic analysis and computerized energy evaluation methods; engineering materials; or manufacturing.
- ability to use calculus to solve applied physics problems in mechanics and thermodynamics.

The Program:

General Concentration

The MET bachelor degree with a general concentration permits the selection of five elective courses in the major. It is strongly encouraged (but not required) that students concentrate these five elective courses in one of the following areas to enhance their knowledge and preparation in an area in which they are most interested in working.

Energy Systems/Thermal Systems Design: The Heating, Ventilating, Air Conditioning (HVAC) and Refrigeration area specializes in the design and operation of heat and mass transfer systems which produce the needed environments for manufacturing operations, industrial processes and human comfort.

Systems that utilize mechanical equipment such as pumps, blowers, fans, compressors and heat exchanges are found in fields as diverse as air conditioning, low temperature metallurgy, food preservation, chemical processing and industrial manufacturing.

Graduates of this program are employed as systems designers for consulting firms and mechanical contractors; as manufacturer sales representatives; and as maintenance supervisors.

The Heat/Power area of specialization deals with energy conversion, i.e., the study of internal combustion engines, steam turbines, boilers, air compressors, pumps and fans. The program includes study in thermodynamics, heat transfer and fluid mechanics.

Graduates with this specialty are employed as systems designers in architectural companies; as process plan engineers in the petrochemical and pulp and paper industries; as power generation plant engineers; and as sales representatives for manufacturers. Specialty courses in this area include:

MET 3402 Thermodynamics II

MET 4341 Automation Systems and Controls

MET 4411 Refrigeration

MET 4412 Air Conditioning and/or

MET 4431 Plant and Power Applications

Machine/Mechanical Design

This area of specialization is concerned with the application of fundamental principles of design to new and existing machines, machine parts, mechanical structures, and systems.

Graduates may be employed as designers of machinery and/or machine parts for the improvement of production operations and cost; as product designers; and as sales and service representatives of industrial and manufacturing firms.

Specialty courses in this area include:

MET 3123 Dynamics of Machines

MET 4124 Vibrations and Advanced Dynamics

MET 4133 Advanced Engineering Materials

MET 4142 Machine Design II

MET 4112 Computer Aided Engineering and Analysis

MET 4341 Automation Systems and Controls

EDG 3212 Advanced Engineering Graphics

NOTE: MET 4801 - 4805 Special Projects and MET 4901 - 4905 Special Topics may also be applicable to this area.

Manufacturing Systems

The area of specialization called Manufacturing is concerned with manufacturing production processes and operations: tool and jig design, and the design and layout of manufacturing facilities. Graduates may be employed in areas such as steel production and fabrication, aircraft and automobile fabrication and assembly, cable manufacture, and textile mills.

The MET bachelor degree with a manufacturing concentration is obtained by the appropriate selection of elective courses. These courses emphasize a variety of topics in modern manufacturing and are as shown below. The following courses must be completed to obtain this designation. A student may take some, but not all of the listed courses and elect the General Concentration if desired. A student in the General Concentration would need to petition to use Project Management as an MET elective.

MET 3331 Tool Design

MET 4133 Advanced Engineering Materials

MET 4341 Automation Systems and Controls

MET 4342 Numerical Control of Machines

MGNT 4135 Project Management

NOTE: In approximately 40 states in the U.S., including Georgia, bachelor degree Engineering Technology graduates with the appropriate work experience are eligible to take examinations for registration as Professional Engineers.

*Since Physics I and II are requirements for the degree, it is strongly recommended that they be taken to satisfy the Lab Science component of Area D of the Core Curriculum. It is also recommended that you discuss Lab Science options with your assigned Faculty Advisor and/or the Mechanical Engineering Technology Department Chair.

Mechanical Engineering Technology - Bachelor of Science Requirements

Mechanical Engineering Technology — Bachelor of Science Requirements

CHEM 1211	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry I Lab	1
ECON 2107	Intro to Economics and Engineering Economics (Recommended for Area E-3)	3
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
MATH 1113	Pre-calculus (the extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2306	Ordinary Differential Equations	3

MATH 2253	Calculus I (the extra hour is applied to Major Req.)	4
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I Lab	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II Lab	1
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 4	Cultures and Societies	3
MET 4501	Engineering Computation using MATLAB	3
ECET 3000	Electrical Principles	4
EDG 1211	Engineering Graphics I	3
EDG 1212	Engineering Graphics II	4
ENGR 2214	Statics	3
ENGR 3122	Dynamics	3
ENGR 3131	Strength of Materials	3
ENGR 3132	Strength of Materials Lab	1
MET 3101	Fluid Mechanics Principles & Applications	3
MET 1000	MET Orientation	1
SPSU 1001	Hitchhiker's Guide to SPSU	1
MET 1311	Manufacturing Processes	3
MET 1321	Machining and Welding	2
MET 2322	Metrology and CNC	3
MET 3132	Engineering Materials	4
MET 3401	Thermodynamics I	3
MET 4141	Machine Design I	4
MET 4421	Instruments and Controls	4
Select **one of the following three courses**		3
MET 3123	Dynamics of Machines	
MET 3331	Tool Design	
MET 3402	Thermodynamics II	3
MET XXXX	Major Electives	12
Free Elective		3
Degree Program Total		**128**

NOTES:

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, 1111L and PHYS 1112, 1112L may be substituted for PHYS 2211, 2211L and PHYS 2212, 2212L.

Note 3. The Free Elective may not be MATH 1111.

Mechatronics Engineering

Offering:

Bachelor of Science in Mechatronics Engineering

Offering the 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 skilled 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.

The Faculty:

Cyril Okhio, Ph.D., C. Eng., Associate Professor

Chan Ham, Ph.D., Assistant Professor

Ying Wang, Ph.D., Assistant Professor

Kevin McFall, Ph.D., Assistant Professor

Mechatronics Engineering - Bachelor of Science

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course, Literature Group	3
Area C Group 2	Take One Course, Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 4	Cultures and Societies	3
ECON 2107	Engineering Economics (Recommended Area E-3)	3
CHEM 1211	Principles of Chemistry	3
CHEM 1211L	Principles of Chemistry Lab	1
MATH 2253	Calculus I (the extra hour is applied to Major Req.)	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2306	Ordinary Differential Equations	3
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I Lab	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II Lab	1
EDG 1211	Engineering Graphics I	3
EE 2301	Circuits Analysis I	4
ENGR 2214	Statics	3
MATH 3312	Engineering Calculations	4
EE 3401	Engineering Electronics	4
ENGR 2501	Engineering Materials	3
ENGR 3122	Dynamics	3
ENGR 3343	Fluid Mechanics	3
ENGR 3345	Fluid Mechanics Laboratory	1
EE 3601	Electric Machines	4
ENGR 4421	Instruments and Controls	4
EE 4201	Control Systems	4
MTRE 1000	Introduction to Mechatronics Engineering	2
SPSU 1001	Hitchhiker's Guide to SPSU	1
MTRE 3710	Mechantronics Engr Fundamentals	4
EE 2501	DIgital Logic Design	4
ENGR 3131	Strength of Materials	3
ENGR 3132	Strength of Materials Lab	1
ENGR 3125	Technical Elective	7
MTRE 4000	Advanced Controls	3
MTRE 4200	Robotics Analysis and Synthesis	3
CSE 1301E	Programming and Problem Solving I	4
MATH Elective	Math Elective	3

Degree Program Total	**130**

The Mechatronics Engineering degree requires a grade of "C" or better in all MTRE, EE, ME and ENGR courses applied to degree requirements.

Modern Languages

Offering:

Bachelor of Science in International Studies--

Concentration in Spanish

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 Modern Language 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 an International Studies degree with a concentration in Spanish, SPSU seeks to produce graduates who not only understand the historical, political and economic processes of globalization, but who also possess the technological skills and knowledge that will allow them to deal with the new demands of a more global society.

The International Studies—Spanish degree will prepare graduates for employment in:

- International business
- Pre-law
- Intelligence
- Government
- Graduate study
- Public policy
- The non-profit sector

Students pursuing this degree must complete:

The Core Curriculum	60
Required Upper Division Core in international studies	24
The Spanish concentration	15
Directed International Electives	9
Free Electives	12

Any courses taken to satisfy degree program requirements in International Studies Required Upper Division Core, the student's Concentration, and the student's Directed International Electives must be passed with a grade of "C" or better.

International Studies Bachelor of Science —Spanish Requirements

COMM 2400	Public Speaking	2
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two Courses in Laboratory Science	8
Area E1	Course in American Perspective	3
Area E2	Course in World History	3
Area E3	Course in Behavioral Sciences	3
Area E4	Course in Cultures and Societies	3
ECON 1101	Introduction to Economics	3
HIST 3801	Contemporary World History Since 1945	3
POLS 2401	Global Issues	3
POLS 2801	Comparative Politics	3
POLS 3101	International Political Economy	3
PSYC 3101	International Social Psychology	3
SIS 1000	International Studies Orientation	1
SIS 2100	Introduction to Quantitative Research Methods	3
SIS 400x	Two Courses in Regional Studies	6
SIS 4100	Cross National Technology Policy Analysis	3
SPAN 2001	Intermediate Spanish I	3
SPAN 2002	Intermediate Spanish II	3
STS 4000	International Issues in Science and Technology	3
STS 4800	Capstone Seminar	3

International Electives: Take any two of the following courses: 6

ECON 2106	Microeconomics
GEOG 3101	World Regional Geography
HIST 3200	History of Science Survey
HIST 3301	Diplomatic and Military History since 1815
HIST 3401	Colonization and Rebellion in the Transatlantic World
HIST 3501	Modern Social and Cultural History
HIST 3601	History of the Pacific Rim
HIST 390x, 490x	Special Topics with topic-specific departmental approval
POLS 2903, 4903	Special Topics with topic-specific departmental approval
POLS 3301	Modern Political Theory
POLS 3601	Contemporary World Politics
POLS 4101	Political Economy of Post-Communist Transformation
POLS 4201	International Relations of the Americas
PSYC 2903, 4903	Special Topics with topic-specific departmental approval
PSYC 4000	International Psychology
RELG 1200	World Religions
SIS 390x	Special Topics in International Studies

SIS 400x	Regional Studies (multiple courses on different regions may be taken)	
SIS 4600	Global Technology Internship	
SPAN 300x, 400x	Spanish (or other language at similar level)	
STS 4400	Topical Studies in Science and Technology	
Spanish Electives		15
Any three 3000 level Spanish courses		
AND Any two 4000 level Spanish courses		
Free Electives		12
Degree Program Total		**120**

Spanish Minor

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

SPAN 2001	Intermediate Spanish I
SPAN 2002	Intermediate Spanish II

9 hours of Spanish at the 3000 level

Professional Spanish Undergraduate Certificate

To be eligible for the Certificate in Professional Spanish, the student must complete the following:

All the courses needed for the Spanish Minor

2 of the following:

SPAN 4001	Professional Spanish
SPAN 4002	Techniques of Translation
SPAN 4903	Special Topics for Professional Spanish

Must also take SPAN 4003 Service Learning Project

And after all course work is completed: OPI (Oral Proficiency Interview)

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*
Carol Barnum, *Professor*
Terry Carter, *Associate Professor*
Donna Colebeck, Instructor
Laura Beth Daws, Instructor
Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Keith B. Hopper, *Professor*
Monique Logan, *Instructor*
Matthew McCool, *Assistant Professor*
Michelle Nichols, *Lecturer*
Mark Nunes, *Associate Professor and Department Chair*
Betty Oliver, *Professor*
Iraj Omidvar, *Assistant Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Assistant Professor*
Ann Parker, *Lecturer*
Cassie Race, Instructor
Nancy L. Reichert, *Associate Professor*
Cheryl Shinall, *Instructor*
Erin Sledd, Instructor
Herbert J. Smith, *Professor*
Charlotte Stephenson, *Instructor*
Mark K. Stevens, *Associate Professor*
Laurie Strauss, Instructor
Beth Stutzmann, *Lecturer*
Katherine Taylor, Instructor
Jim Werner, *Assistant Professor*
Misty York, 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*** major courses.

Included below are the complete requirements for the programs.

New Media Arts Bachelor of Arts Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus I	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3

Area F Core Course in the Major (3 credits)

ARTS 2020	History and Principles of Design	3

Area F Core Studio Course in the Major (9 credits; choose 3)

ARTS 2010	Introduction to Drawing	3
ARTS 2110	Introduction to Painting	3
ARTS 2220	2D & 3D Design	3
ARTS 2903	Music Theory	3

Area F Elective Courses in the Major (6 credits; choose 2)

ARTS 2001	Art Appreciation	3
ARTS 2002	Drama Appreciation	3
ARTS 2003	Music Appreciation	3

COMM 2170	Introduction to Media Studies	3

Basic Required Courses in the Major (24 credits)

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

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

ARTS 3170	Digital Photography	3
ARTS 4600	Directed Study	3
CGDD 3103	Application Extensions and Scripting	3
CGDD 4003	Digital Media and Interaction	3
CGDD 4203	Mobile & Casual Game Development	3
COMM 3060	Media, Culture, and Society	3
ENGL 3180	Film as Literature	3
ENGL 4170	Media and Narrative	3
TCOM 4040	Applied Graphics	3
TCOM 4045	Foundations of Multimedia	3
TCOM 4170	Film and Video	3
TCOM 4175	2D Animation	3
TCOM 4400	Advanced Design for the Web	3

Free Electives	18
Degree Program Total	121

For additional information about the B.A. program, contact the English, Technical Communication, and Media Arts Department at 678-915-7202, or email to TCOM@spsu.edu.

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:

Ratnappuli Kulasiri, Lecturer
Russell S. Patrick, *Professor*
Philip E. Patterson, *Assistant Professor and Department Chair*
Kisa Ranasinghe, *Assistant Professor*
Michael G. Thackston, *Professor*
James B. Whitenton, *Professor*

BS Degree in Physics with a concentration in Electrical Engineering

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2306	Ordinary Differential Equations	3
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I - LAB	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II - LAB	1
PHYS 2213	Intro to Thermal & Modern Physics	2
PHYS 3220	Electromagnetism I	3
PHYS 3410K	Electronics Laboratory	2
PHYS 3500K	Introduction to Computational Physics	2
PHYS 3710	Modern Physics	4
PHYS 3720L	Modern Physics Laboratory	1
PHYS 4210	Quantum Physics	4
PHYS 4230	Thermal Physics	4
PHYS 4240	Solid State Physics	3
EE 3301	Circuits Analysis I	4
EE 2501	Digital Logic Design	4
EE 2401	Semiconductor Devices	3

EE 3705	Signals and Systems	3
EE 3401	Engineering Electronics	4
EE 4201	Control Systems	4
ENGR 2214	Engineering Mechanics - Statics	3
Free Electives		4
Degree Program Total		**121**

BS Degree in Physics with a concentration in Teacher Education

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences (Physics or Chemistry Recommended)	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2306	Ordinary Differential Equations	3
PHYS 22111	Principles of Physics I	3
PHYS 2211L	Principles of Physics I - LAB	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II - LAB	1
PHYS 2213	Intro Thermal and Modern Physics	2
PHYS 3210	Mechanics I	4
PHYS 3220	Electromagnetism I	3
PHYS 3410K	Electronics Laboratory	2
PHYS 3500K	Introduction to Computational Physics	2
PHYS 3710	Modern Physics	4
PHYS 3720L	Modern Physics Laboratory	1
PHYS 4210	Quantum Physics	4
PHYS 4230	Thermal Physics	4
PHYS 4410K	Advanced Measurements Laboratory	2
Physics Education		
EDUC 1101	Step 1	1
EDUC 1102	Step 2	1
EDUC 2010	Knowing and Learning	3
EDUC 2020	Classroom Interactions	3
EDUC 4030	Project-based Instruction	3
RSCH 3610	Research Methods	3
STS 3347	Perspectives on Science & Math	3
EDUC 4401	Apprentice Teaching Seminar	1
EDUC 4406	Apprentice Teaching	6
Degree Program Total		**121**

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.

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:

PHYS 3210	4
PHYS 3220	3
PHYS 3410K	2
PHYS 3500K	2
PHYS 3710	4
PHYS 3720L	1
PHYS 4230	4
PHYS 4410K	2

BS Degree in Physics (Traditional Curriculum)

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2306	Ordinary Differential Equations	3
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I LAB	1

PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II LAB	1
PHYS 2213	Introduction to Thermal and Modern Physics	2
PHYS 3210	Mechanics I	4
PHYS 3220	Electromagnetism I	3
PHYS 3410K	Electronics Laboratory	2
PHYS 3500K	Introduction to Computational Physics	3
PHYS 3710	Modern Physics	4
PHYS 3720L	Modern Physics Laboratory	1
PHYS 4210	Quantum Physics	4
PHYS 4230	Thermal Physics	4
PHYS 4410K	Advanced Measurements Laboratory	2
PHYS 4430	Capstone Physics Project	1
PHYS 4250	Quantum Theory of Two-State Systems	2
PHYS 4430	Capstone Physics Project	1

Directed Electives approved by the program	9 - 15
Upper Division Physics Electives/Concentrations	4 - 10
Degree Program Total	**121**

BS Degree in Physics with a concentration in Mechanical Engineering

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2306	Ordinary Differential Equations	3
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I - LAB	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II - LAB	1
PHYS 2213	Introduction to Thermal and Modern Physics	2
PHYS 3220	Electromagnetism I	3
PHYS 3410K	Electronics Laboratory	2
PHYS 3500K	Introduction to Computational Physics	2
PHYS 3710	Modern Physics	4
PHYS 3720L	Modern Physics Laboratory	1
PHYS 4210	Quantum Physics	4
PHYS 4230	Thermal Physics	4
PHYS 4240	Solid State	3
EDG 2160	Engineering Graphics	3
ENGR 2214	Engineering Mechanics-Statics	3
ENGR 3122	Dynamics	3
ENGR 3131	Strength of Materials	3
ENGR 3132	Strength of Materials Lab	1
ENGR 3343	Fluid Mechanics	3
ENGR 3345	Fluid Mechanics Lab	1
ENGR 2501	Material Science	3
ME 3201	Product Realization	2
ENGR 3125	Machine Dynamics & Vibrations	3
ME 3501	Dynamics Systems Y Control Theroy	3
ME 4501	Vibration Control Lab	1
Free Electives		2
Degree Program Total		**121**

Concentration in Mechanical Engineering

EDG 2160	Engineering Graphics	3
ENGR 2214	Engineering Mechanics-Statics	3
ENGR 3122	Dynamics	3
ENGR 3131	Strength of Materials	3
ENGR 3132	Strength of Materials Lab	1
ENGR 3343	Fluid Mechanics	3
ENGR 3345	Fluid Mechanics Lab	1
ENGR 2501	Material Science	3
ME 3201	Product Realization	2
ENGR 3125	Machine Dynamics & Vibrations	3
ME 3501	Dynamics Systems Y Control Theroy	3
ME 4501	Vibration Control Lab	1

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.

Political Science Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two Courses in Laboratory Science	8
Area E1	Course in American Context	3
Area E2	Course in World History	3
Area E3	Course in Behavioral Sciences	3
Area E4	Course in Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
ECON 1101	Introduction to Economics	3
GEOG 4101	Geographic Information Systems	3
POLS 2100	Basic Quantitative Research Methods for Political Science and International Studies Majors	
POLS 2401	Global Issues	3
POLS 3001	Comparative Politics	3
POLS 3100	Intermediate Quantitative Research Methods	3
POLS 4301	International Political Economy	3
POLS 3209	U.S. Constitutional Law	3
POLS 3301	Modern Political Theory	3
POLS 3601	Contemporary World Politics	3
POLS 3701	American Institutions	3
POLS 3801	Political Behavior	3
POLS 4100	Advanced Multivariate Statistical Analysis	3
POLS 4801	Capstone: Political Science Practicum	3
SIS 400x	Regional Studies	3
SPAN 2001	Elementary Spanish I*	3
SPAN 2002	Elementary Spanish II*	3

** or other language at equivalent level*

International Electives: Take any four of the following courses: 12

GEOG 3101	World Regional Geography
HIST 3301	Diplomatic and Military History since 1815`
HIST 3401	Social and Cultural History during the 20th Century
HIST 3501	Colonization & Rebellion in the Trans-Atlantic World
HIST 3601	History of Pacific Rim
HIST 3801	World HIstory since 1945
IT / POLS 4063	Political Issues in Electronic Government
LANG 300x	any 3000-level language course
POLS 3401	Regulatory and Environmental Law
POLS 3501	Intellectual Property Issues
POLS 4101	Political Economy of Post-Communist Transformation
PSYC 3101	International Social Psychology
SIS 3600	Comparative World Cultures
SIS 4100	Cross-National Technology Policy Analysis
SIS 400x	Regional Studies (up to six additional hours)
STS 4000	International Issues in Science and Technology
STS 4400	Topical Studies in Science and Technology
STS 4800	Capstone Seminar in International Studies
Free Electives	15

Degree Program Total	**121**

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 international studies	24
A particular area of concentration	14-21
Directed International Electives	9
Free Electives	5-12

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.

Psychology Bachelor of Science Requirements

COMM 2400	Public Speaking	2
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two Courses in Laboratory Science	8
Area E1	Course in American Perspective	3
Area E2	Course in World History	3
Area E3	Course in Behavioral Sciences	3
Area E4	Course in Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
IET 2227	Introduction to Statistics	3
MGNT 3105	Management and Organizational Behavior	3
PSYC 1000	Orientation to Psychology	2
PSYC 1101	Introduction to General Psychology	3
PSYC 2011	Cognitive Psychology	3
PSYC 2100	Basic Quantitative Methods for Psychology Majors	3
PSYC 2270	Engineering Psychology	3
PSYC 2401	Psychology of Diversity	3
PSYC 3020	Physiological Psychology	3
PSYC 3031	Experimental Psychology	4
PSYC 3101	International Social Psychology	3
PSYC 4050	History and Systems of Psychology	3
PSYC 4800	Psychology Capstone Seminar	3
PSYC XXXX	Any psychology elective	3
TCOM 2010	Technical Writing	3

Choose and complete one of the tracks below:

Engineering Psychology

CSE 1301	Programming & Problem Solving I	4
IET 2305	Principles of Industrial Systems and Processes	4
IET 3322	Work Measurement and Ergonomics	4
IT 1324	Advanced Programming Principles	4
SWE 4324	User-Centered Design	3
SWE 4783	User-Interaction Engineering	3
Free Electives		10
	TOTAL HOURS IN TRACK:	32

Industrial / Organizational Psychology

PSYC 3301	Psychological Testing	3
IET 3410	Principles of Team Dynamics	3
MGNT 4115	Human Resources Management	3
Choose Three of the Following:		9
PSYC 3010	Educational Psychology	
PSYC 3015	Theories of Personality	
PSYC 4220	Psychoactive Drugs, Behavior, and Society	
PSYC 4000	International Psychology	
PSYC 4600	Conflict Resolution	
Free Electives		14
	TOTAL HOURS IN TRACK:	32

General Psychology

PSYC 3301	Psychological Testing	3
Choose three of the following:		9
PSYC 3010	Educational Psychology	
PSYC 3015	Theories of Personality	
PSYC 3230	Abnormal Psychology	
PSYC 3305	Developmental Psychology	

PSYC 4130	Psychology of Aging	
PSYC 4000	International Psychology	
PSYC 4600	Conflict Resolution	
Free Electives		20
	TOTAL HOURS IN TRACK:	32
Degree Program Total		**121**

Psychology Minor

To be eligible for a minor in Psychology, the student must complete the following (including at least 9 upper-division hours) with a grade of C or better:

1. Complete all of the following:

PSYC 1101	Introduction to General Psychology*
PSYC 2100	Basic Quantitative Research Methods for Psychology Majors
PSYC 3101	International Social Psychology

* If PSYC 1101 is used to fulfill core, select and additional course from the list below.

2. Select two courses from the following:

PSYC 2011	Cognitive Psychology
PSYC 2270	Engineering Psychology
PSYC 2401	Psychology of Diversity
PSYC 3010	Educational Psychology
PSYC 3015	Theories of Personality
PSYC 3020	Physiological Psychology
PSYC 3031	Experimental Psychology**
PSYC 3230	Abnormal Psychology
PSYC 3301	Psychological Testing**
PSYC 3305	Developmental Psychology
PSYC 4000	International Psychology
PSYC 4050	History and Systems of Psychology
PSYC 4130	Psychology of Aging
PSYC 4220	Psychoactive Drugs, Behavior, and Society
PSYC 4600	Conflict Resolution
MGNT 3105	Management and Organizational Behavior

**prerequisite IET 2227 Industrial Statistics

International Studies Bachelor of Science —Concentration in Psychology Requirements

COMM 2400	Public Speaking	2
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two Courses in Laboratory Science	8
Area E1	Course in American Perspective	3
Area E2	Course in World History	3
Area E3	Course in Behavioral Sciences	3
Area E4	Course in Cultures and Societies	3
ECON 1101	Introduction to Economics	3
HIST 3801	Contemporary World History post 1945	3
POLS 2401	Global Issues	3
POLS 2801	Comparative Politics	3
POLS 3101	International Political Economy	3
PSYC 3101	International Social Psychology	3
SIS 1000	International Studies Orientation	1
POLS 2100	Basic Quantitative Research Methods for Political Science and International Studies Majors	3
SIS 400x	Two Courses in Regional Studies	6
SIS 4100	Cross National Technology Policy Analysis	3
SPAN 2001	Intermediate Spanish I*	3
SPAN 2002	Intermediate Spanish II*	3
STS 4000	International Issues in Science and Technology	3
STS 4800	Capstone Seminar	3

**Or other language at a similar level*

International Electives: Take any three of the following courses: 9

ECON 2106	Microeconomics
GEOG 3101	World Regional Geography
HIST 3200	History of Science Survey
HIST 3301	Diplomatic and Military History since 1815
HIST 3401	Colonization and Rebellion in the Transatlantic World
HIST 3501	Modern Social and Cultural History
HIST 3601	History of the Pacific Rim
HIST 390x, 490x	Special Topics with topic-specific departmental approval
POLS 2903, 4903	Special Topics with topic-specific departmental approval
POLS 3301	Modern Political Theory
POLS 3601	Contemporary World Politics
POLS 4101	Political Economy of Post-Communist Transformation
POLS 4201	International Relations of the Americas
PSYC 2903, 4903	Special Topics with topic-specific departmental approval
PSYC 4000	International Psychology
RELG 1200	World Religions
SIS 390x	Special Topics in International Studies
SIS 400x	Regional Studies (multiple courses on different regions may be taken)
SIS 4600	Global Technology Internship
SPAN 300x, 400x	Spanish (or other language at similar level)
STS 4400	Topical Studies in Science and Technology

Psychology Concentration Group A: Select three of the following*: (9)

PSYC 2011	Cognitive Psychology	
PSYC 2700	Engineering Psychology	
PSYC 2401	Psychology of Diversity	
PSYC 3020	Physiological Psychology	
PSYC 3031	Experimental Psychology**	
PSYC 3301	Psychological Testing**	
PSYC 4050	History and Systems of Psychology	
MGNT 3105	Management and Organizational Behavior	

**prerequisite IET 2227 Industrial Statistics

Psychology Concentration Group B: Select two of the following*:	(6)
PSYC 3010 Educational Psychology	
PSYC 3015 Theories of Personality	
PSYC 3230 Abnormal Psychology	
PSYC 3305 Developmental Psychology	
PSYC 4000 International Psychology	
PSYC 4130 Psychology of Aging	
PSYC 4220 Psychoactive Drugs, Behavior and Society	
PSYC 4600 Conflict Resolution	

*At least three of the courses selected for the concentration must be numbered 3000 or higher.

Free Electives	12
Degree Program Total	**120**

Social Science

Offering:

Bachelor of Science in International Studies

Concentration in Social 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 Social 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 an International Studies degree with a concentration in Social Science, SPSU seeks to produce graduates who not only understand the historical, political and economic processes of globalization, but who also possess the technological skills and knowledge that will allow them to deal with the new demands of a more global society.

The International Studies—Social Science degree will prepare graduates for employment in:

- International business
- Intelligence
- Government
- Graduate study
- Pre-law
- Public policy
- The non-profit sector

Students pursuing this degree must complete:

The Core Curriculum	60
Required Upper Division Core in International Studies	24
The Social Science concentration	15
Directed International Electives	9
Free Electives	12

Any courses taken to satisfy degree program requirements in International Studies Required Upper Division Core, the student's Concentration, and the student's Directed International Electives must be passed with a grade of "C" or better.

International Studies Bachelor of Science —Concentration in Psychology Requirements

COMM 2400	Public Speaking	2
ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
STS 2400	Science, Technology and Society	2
Area C1	Course in Literature	3
Area C2	Course in Art and Culture	3
Area D	Two Courses in Laboratory Science	8
Area E1	Course in American Perspective	3
Area E2	Course in World History	3
Area E3	Course in Behavioral Sciences	3
Area E4	Course in Cultures and Societies	3
ECON 1101	Introduction to Economics	3
HIST 3801	Contemporary World History post 1945	3
POLS 2401	Global Issues	3
POLS 2801	Comparative Politics	3
POLS 3101	International Political Economy	3
PSYC 3101	International Social Psychology	3
SIS 1000	International Studies Orientation	1
POLS 2100	Basic Quantitative Research Methods for Political Science and International Studies Majors	3
SIS 400x	Two Courses in Regional Studies	6
SIS 4100	Cross National Technology Policy Analysis	3
SPAN 2001	Intermediate Spanish I*	3
SPAN 2002	Intermediate Spanish II*	3
STS 4000	International Issues in Science and Technology	3
STS 4800	Capstone Seminar	3

**Or other language at a similar level*

International Electives: Take any three of the following courses: 9

ECON 2106	Microeconomics
GEOG 3101	World Regional Geography
HIST 3200	History of Science Survey
HIST 3301	Diplomatic and Military History since 1815
HIST 3401	Colonization and Rebellion in the Transatlantic World
HIST 3501	Modern Social and Cultural History
HIST 3601	History of the Pacific Rim
HIST 390x, 490x	Special Topics with topic-specific departmental approval
POLS 2903, 4903	Special Topics with topic-specific departmental approval
POLS 3301	Modern Political Theory
POLS 3601	Contemporary World Politics
POLS 4101	Political Economy of Post-Communist Transformation
POLS 4201	International Relations of the Americas
PSYC 2903, 4903	Special Topics with topic-specific departmental approval
PSYC 4000	International Psychology

RELG 1200	World Religions	
SIS 390x	Special Topics in International Studies	
SIS 400x	Regional Studies (multiple courses on different regions may be taken)	
SIS 4600	Global Technology Internship	
SPAN 300x, 400x	Spanish (or other language at similar level)	
STS 4400	Topical Studies in Science and Technology	
Social Science Orientation: Select any two of the following courses:		6
ANTH 1102	Introduction to Anthropology	
GEOG 1101	Introduction to Human Geography	
POLS 3601	Contemporary World Politics	
RELG 1200	World Religions	
Note: If not used to satisfy other requirements		
Social Science Electives: Select any three of the following courses:		9
HIST Any 3000- or 4000- level History course		
PSYC Any 3000- or 4000- level Psychology course		
POLS Any 3000- or 4000- level Political Science course		
SIS Any 3000- or 4000- level SIS course		
SPAN 3003 Hispanic Cultures and Civilizations		
Note: Only one course may be selected from each discipline.		
Free Electives		12
Degree Program Total		**120**

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.

Barbara V. Bernal, *Professor*
Venu G. Dasigi, *Professor and Chair of Computer Science and Software Engineering*
Sheryl L. Duggins, *Professor*
Patricia Roth Pierce, *Senior Lecturer*
Hassan Pournaghshband, *Professor*
Abi Salimi, *Associate 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.

Sudent 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.

Software Engineering — Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
ECON 2107	Introduction to Economics and Engineering Economy	3
MATH 2253	Calculus I (extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2345	Discrete Mathematics	3
MATH 2260	Probability & Statistics I	3
Math/Science Electives	(Math at the level of MATH 2253 or higher; Science at the level of Area D or higher)	6
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area D	Take Two Courses From the Laboratory Sciences Group (excluding PHYS 1111, 1111L & 1112, 1112L)	8
PHYS 2211	Principles of Physics I (see note below)	3
PHYS 2211L	Principles of Physics I Lab (see note below)	1
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Sciences	3
Area E Group 4	Cultures and Societies	3
SPSU 1001	Hitchhikers Guide to SPSU	1
CSE 1002	Introduction to The Computing Disciplines (institutional credit only)	2
CSE 1301	Programming and Problem Solving I	4
CSE 1302	Programming and Problem Solving II	4
CSE 2642	Professional Practices & Ethics	2
CS 3153	Database Systems	3
CS 3224	Computer Organization & Architecture	4
CS 3424	Data Structures	4
CS 3243	Operating Systems	3
SWE 2313	Introduction to Software Engineering	3
SWE 3623	Software Systems Requirements	3
SWE 3633	Software Architecture & Design	3
SWE 3643	Software Testing & QA	3
SWE 4324	User-Centered Design	4
SWE 4663	Software Project Management	3
SWE 4713	SWE Application Domain	3
SWE 4724	Software Engineering Project	4
SWE Upper Level Electives	Choose 2 courses from the approved list, at least one must be an SWE course	6
Free Electives (Excludes Math 1111, PHYS 1111, 1111L and PHYS 1112, 1112L)		5
Degree Program		**128+**
		2

Note: 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.

A grade of "C" or better must be earned in all CSE, CS, SWE, CGDD, and IT courses applied to degree requirement.

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.

Minor in SWE 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.

Minor in SWE 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 in Software Engineering

CSE 1302	Programming & Problem Solving II	4
SWE 2313	Intro to Software Engineering	3
Three additional upper-level SWE courses		9

Note: CSE 1302 has a pre-requisite of CSE 1301.

Software Engineering Graduate

SWE 6343	User Interface Design and Implementation
SWE 6623	Software Engineering I
SWE 6633	Software Project Management
SWE 6723	Software Engineering II
SWE 6743	Object-Oriented Analysis and Design
SWE 6753	Computer Game Design & Development
SWE 6763	Software Metrics and Quality Management
SWE 6783	User Interaction Engineering
SWE 6813	Component Based Software Development
SWE 6823	Embedded Systems Analysis and Design
SWE 6843	Embedded Systems Construction and Testing
SWE 6883	Formal Methods in Software Engineering
SWE 6901-6903	Special Topics
SWE 7803	Master's Thesis
SWE 7903	Software Engineering Capstone

Systems Engineering

Offering the Bachelor of Science degree in Systems 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 focus options for technical electives for all engineering students. Aeronautics and Nuclear Power Generation.

The focus of aeronautics option will be to provide a comprehensive education to prepare graduates for productive careers with special emphasis on the needs of aviation, aerospace engineering, and related fields. The option will qualify students for entry level engineering jobs in aeronautics / aviation / aerospace industry or related fields, for admission to graduate programs in aeronautics / aviation / aerospace engineering (or related fields), and for continued learning throughout their lives.

In response to the emerging crisis of an energy deficit associated with limits on petroleum availability, operating nuclear power plants are being granted life extensions, and new reactor design orders are expected. Students who study nuclear power generation 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
Kamran Moghaddam, Ph.D. Assistant Professor

Systems Engineering — Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
COMM 2400	Public Speaking	2
TCOM 2010	Technical Writing	3
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 4	Cultures and Societies	3
CHEM 1211	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry I Lab	1
CSE 1301	Programming and Problem Solving I	4
CSE 1302	Programming and Problem Solving II	4
ECON 2107	Introduction to Economics & Engineering Economy	3
SPSU 1001	Hitchhikers Guide to SPSU	1
EE 2301	Circuit Analysis I	4
ENGR 2214	Engineering Mechanics - Statics	3
ENGR 3122	Engineering Mechanics - Dynamics	3
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 3312	Linear Algebra	4
PHYS 2211	Principles of Physics I	3
PHYS 2211L	Principles of Physics I Lab	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II Lab	1
SYE 2100	Systems Analysis and Design	3
SYE 3320	Engineering Economics and Decision Analysis	3
SYE 2600	Applications of Probability	3
SYE 3100	Systems Reliability, Maintainability	3
SYE 3120	Contemporary Technological Systems: Design, Analysis & Architecture	3
SYE 3200	Human Machine Systems	3
SYE 3300	Program Management	3
SYE 3400	Engineering Optimization I: Deterministic Decision Models	3
SYE 3600	Statistics with Applications	3
SYE 3700/10	CHOOSE: Manufacturing & Production OR Logistics & Supply Chain Systems	3
SYE 4400	Engineering Optimization II: Stochastic Decision Models	3
SYE 4500	System Modeling and Simulation	3
SYE 4900	Senior Project	3
Approved technical electives		12

Degree Program Total **130**

The Systems Engineering degree requires a grade of 'C' or better for any course of the following courses: any course with an ENGR, SYE, or MATH prefix and ENGL 1101. A 'D' or better is required for any other course.

If the Core Requirement for Area E is transferred into the university, the student is recommended to take ECON 2107.

Technical Electives

Students may focus their technical electives in the Aeronautics Option or the Nuclear Power Generation Option. Student may choose to customize their program with technical electives with a sequence of 3000 and/or 4000 level course from SYE, SWE, MTRE, ME, CE, EE or MATH. Other courses may be approved by the program director.

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

Bachelor of Arts in Mathematics - Education Track

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
Area D	Any Two Lab Sciences	4
Area D	Any Two Lab Sciences	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course From the Literature Group	3
Area C Group 2	Take One Course From the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
CSE 1301	Computer Science I	4
MATH 1113	Pre-calculus	4
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2260	Intro to Probability and Statistics	3
MATH 2306	Ordinary Differential Equations	3
MATH 2345	Discrete Mathematics	3
MATH 3312	Linear Algebra	3
MATH 3310	Introduction to Advanced Mathematics	3
MATH 3320	Introductory Real Analysis I	4
MATH 3321	Introductory Real Analysis II	4
MATH 3696	Geometry	3
MATH 4407	Vector Analysis	3
MATH 4440	Abstract Algebra	4
MATH 4451	Capstone Mathematics Project	3
EDUC 1101	Step 1	1
EDUC 1102	Step 2	1
EDUC 2010	Knowing and Learning	3
EDUC 2020	Classroom Interactions	3
EDUC 4030	Project-based Instruction	3
MAED 2010	Functions and Modeling	3
RSCH 3610	Research Methods	3
STS 3347	Perspectives on Science & Math	3
EDUC 4401	Apprentice Teaching Seminar	1
EDUC 4406	Apprentice Teaching	6

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

Math Electives	**3 hours**
Degree Program Total	**123**

Bachelor of Science in Biology - Education Track

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
MATH 1113	Pre-calculus	4
MATH 2253	Calculus I	4
MATH 2260	Probability and Statistics	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
CHEM 1211	Principles of Chemistry I	3
CHEM 1211L	Principles of Chemistry I Lab	1
CHEM 1212	Principles of Chemistry II	3
CHEM 1212L	Principles of Chemistry II Lab	1
CHEM 2510	Survey of Organic Chemistry	3
BIOC 2111	Survey of Biochemistry	3
PHYS 1111	Introductory Physics I	3
PHYS 1111L	Introductory Physics I	1
BIOL 3000K	Genetics	4
BIOL 3300K	Ecology	4
BIOL 3400K	Cell Physiology	4
BIOL 4200K	Zoology	4
BIOL 4400K	Human Physiology I	4
BIOL 4460K	Human Anatomy	4
BIOL 4440K	Botany	4
BIOL 4480	Evolution	3
Education Track Area F		6
Education Track		**33 hours**
Degree Program Total		**121**

NOTE: PHYS 2211, 2211L and 2212, 2212L may be taken instead of PHYS 1111, 1111L and 1112, 1112L

Bachelor of Science in Chemistry - Education Track

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Communication	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences (Physics 2211/2212 recommended)	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3
BIOC 3111	Biochemistry	4
CHEM 1211	General Chemistry I	4
CHEM 1212	General Chemistry II	4
CHEM 2511	Organic Chemistry I	4
CHEM 2512	Organic Chemistry II	4
CHEM 3100	Analytical Chemistry	5
CHEM 3300	Instrumental Analysis	4
CHEM 4111K	Physical Chemistry I	4
CHEM 4112	Physical Chemistry II	3
CHEM 4112L	Physical Chemistry II Laboratory	1
CHEM 4411	Inorganic Chemistry	3
MATH 1113	Pre-Calculus	4
MATH 2253	Calculus I	4
MATH 2254	Calculus II	4
Chemistry Education		
EDUC 1101	Step 1	1
EDUC 1102	Step 2	1
EDUC 2010	Knowing and Learning	3
EDUC 2020	Classroom Interactions	3
EDUC 4030	Project-based Instruction	3
RSCH 3610	Research Methods	3
STS 3347	Perspectives on Science & Math	3
EDUC 4401	Apprentice Teaching Seminar	1
EDUC 4406	Apprentice Teaching	6
Chemistry Electives		**6**
Free Electives		**2**
Degree Program Total		**120 hours**

BS Degree in Physics with a concentration in Teacher Education

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
TCOM 2010	Technical Writing	3
SPCH 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences (Physics or Chemistry Recommended)	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3

SPSU 1001	Hitchhikers Guide to SPSU	1
MATH 1113	Pre-calculus (extra hour is applied to area F)	4
MATH 2253	Calculus I (extra hour is applied to area F)	4
MATH 2254	Calculus II	4
MATH 2255	Calculus III	4
MATH 2306	Ordinary Differential Equations	3
PHYS 22111	Principles of Physics I	3
PHYS 2211L	Principles of Physics I - LAB	1
PHYS 2212	Principles of Physics II	3
PHYS 2212L	Principles of Physics II - LAB	1
PHYS 2213	Intro Thermal and Modern Physics	2
PHYS 3210	Mechanics I	4
PHYS 3220	Electromagnetism I	3
PHYS 3410K	Electronics Laboratory	2
PHYS 3500K	Introduction to Computational Physics	2
PHYS 3710	Modern Physics	4
PHYS 3720L	Modern Physics Laboratory	1
PHYS 4210	Quantum Physics	4
PHYS 4230	Thermal Physics	4
PHYS 4410K	Advanced Measurements Laboratory	2
Physics Education		
EDUC 1101	Step 1	1
EDUC 1102	Step 2	1
EDUC 2010	Knowing and Learning	3
EDUC 2020	Classroom Interactions	3
EDUC 4030	Project-based Instruction	3
RSCH 3610	Research Methods	3
STS 3347	Perspectives on Science & Math	3
EDUC 4401	Apprentice Teaching Seminar	1
EDUC 4406	Apprentice Teaching	6
Degree Program Total		**121**

Technical College System of Georgia Transfer Program

TCSG Transfer Program

Southern Polytechnic State University has 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.) and Manufacturing Operations (B.A.S.). Future offerings are being considered in Business Administration (B.A.S.), Electrical Engineering Technology (B.S.), Industrial Engineering Technology (B.S.), and Mechanical/Electromechanical Engineering Technology (B.S.). Also under consideration is Surveying and Mapping (B.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:

- Business Management
- Content Design (Technical Writing)
- Information Technology
- Laboratory Management
- Residential Construction Management
- Supply Chain Logistics
- Manufacturing Operations

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*
Carol Barnum, *Professor*
Terry Carter, *Professor*
Donna Colebeck, Lecturer
Laura Beth Daws, Instructor
Jeff Greene, *Assistant Professor*
Kim Haimes-Korn, *Professor*
Kelsey Harr-Lagin, *Instructor*
Keith B. Hopper, *Professor*
Monique Logan, *Instructor*
Matthew McCool, *Assistant Professor*
Michelle Nichols, *Lecturer*
Mark Nunes, *Professor and Department Chair*
Betty Oliver, *Professor*
Iraj Omidvar, *Associate Professor*
Jeffrey Orr, *Instructor*
Laura Palmer, *Assistant Professor*
Ann Parker, *Lecturer*
Cassie Race, Instructor
Nancy L. Reichert, *Associate Professor*
Cheryl Shinall, *Instructor*
Erin Sledd, Instructor
Herbert J. Smith, *Professor*
Debora Stefani, *Instructor*
Charlotte Stephenson, *Instructor*
Mark K. Stevens, *Associate Professor*
Laurie Strauss, Instructor
Beth Stutzmann, *Senior Lecturer*
Katherine Taylor, *Instructor*
Ava Werner, *Instructor*
Jim Werner, *Assistant Professor*
Misty York, 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 SciencePossible 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 TCOM major courses.

Included below are the complete requirements for the programs.

Technical Communication — Bachelor of Science Requirements

ENGL 1101	Composition I	3
ENGL 1102	Composition II	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus I	4
COMM 2400	Public Speaking	2
STS 2400	Science, Technology, and Society	2
Area C Group 1	Take One Course from the Literature Group	3
Area C Group 2	Take One Course from the Art and Culture Group	3
Area D	Any Two Lab Sciences	8
Area E Group 1	American Context	3
Area E Group 2	World History	3
Area E Group 3	Behavioral Science	3
Area E Group 4	Cultures and Societies	3

Required Area F Foundations Courses (9 credits)

COMM 2000	Business Communication	3
TCOM 2010	Technical Writing	3
TCOM 2020	Intro to Professional & Technical Communication	3

Area F Required Research Methods Course (3 credits; choose one)

TCOM 2030	Research in Technical	

	Communication	
	OR	3
ENGL 2030	Research in Professional and Critical Writing	

Area F Electives (6 credits; choose two)

ARTS 2020	History and Principles of Design	3
ENGL 2xxx	Any 2000-level literature survey	3-6
COMM 2065	Cross-Cultural Communication[1]	3
COMM 2170	Intro to Media Studies	3
COMM 2150	Ethics and Communication	3
Other coursework appropriate to major, as approved by the department (3 credits max)		3
Any foreign language, 2001 or higher		3

Basic Required Courses in the Major (18 hours)

SPSU 1001	Hitchhikers Guide to SPSU	1
ENGL 3030	English Grammar for Professional Writing	3
TCOM 3430	Foundations of Graphics	3
TCOM 3400`	Foundations of Design for the Web	
COMM 4100	Small Group Communication	3
ENGL 3100	Rhetoric: History, Theory, and Practice	3
TCOM 4800	Project Portfolio[2]	3
Technical Communication Electives		12

Take any 3000-level or higher ARTS, COMM, ENGL, or TCOM Course, or

other courses (not to exceed 6 credits) as approved by the department.

Free Electives	15
Courses in Major Concentrations (Information Design or Digital Media and Graphics)	15

Information Design (15 hours)

TCOM 3020	Proposal Writing	3
TCOM 3030	Instructional Design	3
TCOM 3045	Fundamentals of Info Design	3
TCOM 4000	Professional Editing	3
TCOM 3145	Social Media Integration	3
TCOM 4045	Foundations of Multimedia	3
TCOM 4070	User Documentation	3
TCOM 4120	Usability Testing	3
TCOM 4130	Online Documentation	3

or

Digital Media and Graphics (15 hours)

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

Degree Program Total **121 hours**

Minor Technical Communication

- Required Foundational Courses (6 credits)
- TCOM 2010 Technical Writing
- TCOM 2020 Intro to Professional & Technical Comm or
- TCOM 2030 Research in TCOM
-
- Additional Upper-Level Coursework (9 credits)
- Any class with the TCOM course prefix, 3000-level or higher

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

C or better is required in ALL courses.

Online Certificate in Technical Communication

Our online Undergraduate Certificate in Technical Communication is in demand for working professionals or current students who want a value-added credential in technical communication.

The 15-credit certificate will introduce you to the fundamentals of technical communication. Your courses will include writing, graphics, research, and website design. A certificate in technical communication is a strategic addition to any degree. You'll increase your effectiveness as a communicator and, in turn, your value in the workplace.

The five courses for the certificate are:

TCOM 2010 Technical Writing
TCOM 2030 Research in Technical Communication
TCOM 3045 Fundamentals of Information Design
TCOM 3400 Fundamentals of Design for the Web
TCOM 3430 Foundations of Graphics

Core Course Descriptions

Anthropology Core Courses

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.

Arts Core Courses

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.

Astronomy Core Courses

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
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.

Biology Core Courses

BIOL 2107K Principles of Biology I
3-3-4
An introduction to biology including the chemistry of life, cell structure and functions, bioenergetics, genetics, basic statistics, biotechnology, and evolution. The laboratory exercises supplement the class work.

BIOL 2108K Principles of Biology II
Prerequisite: BIOL 2107K
3-3-4
Topics include organ system anatomy and physiology, a survey of the diversity of life, animal behavior, and ecology. The laboratory exercises supplement the class work.

Chemistry Core Courses

CHEM 1211 Principles of Chemistry I
Prerequisite: MATH 1111
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) class (3-0-3).

CHEM 1212 Principles of Chemistry II
Prerequisite: CHEM 1211
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 (3-0-3).

Ethnic Studies Core Courses

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).

English Core Courses

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 eCore (online) 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 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.

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.

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.

French Core Courses

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.

Geography Core Courses

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.

German Core Courses

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.

History Core Courses

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 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.

Mathematics Core Courses

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 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.

Physics Core Courses

PHYS 1111 Introductory Physics I
Prequisite: MATH 1113 Co-requisite PHYS1111L
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 PHYS1111L as a co-requisite.

PHYS 1112 Introductory Physics II
Prerequisite: PHYS 1111 or PHYS 2211 Co-Requisite: PHYS1112L
3-0-3
PHYS1112 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 PHYS1112 must also register for PHYS1112L as a co-requisite

PHYS 2211 Principles of Physics I
Pre-requisite: Math 2253 Caluclus
co-requisite: 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 2212 Principles of Physics II
Prerequisites: MATH 2254, PHYS 2211, Co-requisite: PHYS2212L
3-0-3
PHYS2212 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 PHYS2212 must also register for PHYS2212L as a co-requisite.

Political Science Core Courses

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 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.

Psychology Core Courses

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.

Spanish Core Courses

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.

Religion Core Courses

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.

Science, Technology, Society Core Courses and Communication Courses

STS 2400 Science, Technology, and Society
Prerequisites: 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.

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.

Sociology Core Courses

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.

Degree Course Descriptions

In Alphabetical Order

Course Descriptions

Accounting Courses

ACCT 2101 Accounting I
3-0-3
This course is a study of the underlying theory and application of financial accounting concepts. It presents the theory and methodology of interpretation of economic transaction; and the recording, and reporting of monetary data arising from economic transactions and daily events. Although the initial emphasis is on the use of accounting information in decision-making ("user perspective"), equal attention will be devoted to the preparation of financial statements ("prepare perspective"), as well as understanding and analysis of the financial statements ("user perspective"). This is an introductory course that presupposes no prior knowledge of accounting. The emphasis with respect to business structures will be on corporations.

ACCT 2102 Accounting II
Prerequisite: ACCT 2101
3-0-3
This course is a study of the application of accounting principles to specialized problems of corporations, special reports, and formation cost of sales and manufacturing, fundamentals of management accounting, information and analysis for planning and controlling, decision analyses, cost management, and continuous improvement.

ACCT 3230 Intermediate Accounting I
Prerequisite: ACCT 2102 and MGNT 1000
3-0-3
The theory and practice of financial accounting and reporting. A study of the conceptual framework and process by which accounting standards are established; preparation of financial statements and disclosures; applications of fair value concepts and present value measurements to accounting events; and accounting for current assets, plant assets, natural resources, intangible assets, current and long-term liabilities, and related income and expense elements.

ACCT 3231 Intermediate Accounting II
Prerequisite: ACCT 3230
3-0-3
The theory and practice of financial accounting and reporting. A study of stockholders' equity, dilutive securities, earning per share, investments, revenue recognition, deferred income taxes, pensions, leases, accounting changes, error analysis, the statement of cash flows and full disclosure in financial accounting.

ACCT 3530 Cost Accounting
Prerequisite: ACCT 2102
3-0-3
Focus on cost accounting concepts, with emphasis on developing and evaluating information that management needs to plan, make key decisions, and monitor business performance. Key topics include cost typology and behavior and how each impacts decision making process and product costing, cost-volume-profit analysis, flexible budgeting, incremental decision analysis, and performance evaluation.

ACCT 4530 Advanced Accounting
Prerequisite: ACCT 3231 and MGNT 1000
3-0-3
The theory and practice of financial accounting and reporting pertaining to business combinations and consolidated financial statements, accounting for partnerships and related business forms, foreign currency transactions and financial statement translations, and other advanced accounting topics.

ACCT 4535 Accounting Information Systems
Prerequisite: **ACCT 2102**
3-0-3
A study of the structure, flow, and use of accounting data in computer-based and networked environments. Topics include systems development and documentation, internal control, business processes, databases, and software applications.

ACCT 4555 Auditing and Assurance
Prerequisite: ACCT 4535, IET 2227
3-0-3
Practice and theory of auditing financial statements. A study of most of the major activities performed during the conduct of a financial statement audit, from client acceptance to issuance of an audit report.

ACCT 4560 Taxation I
Prerequisite: ACCT 3231
3-0-3
Students are introduced to a broad range of tax concepts and tax policies. Students should develop an understanding of how tax laws affect most business and personal financial decisions. Tax reporting, tax planning, and basic tax research skills will be emphasized.

ACCT 4562
Prerequisite: ACCT 4560
3-0-3

Concepts and principles governing the federal income taxation of partnerships. corporations and their shareholders. The source and application of U.S. tax authority as it relates to the formation, operation, and liquidation of a corporation. The S Corporation is explored as an alternative to the regular corporation and other modes of operation.

ACCT 4565 Fraud Examination
Prerequisite: ACCT 2102
3-0-3

Emphasis on the conduct of fraud examiniations, including a discussion of specific procedures used in forensic accounting examiniations and the reasoning behind the use of these procedures. Coverage extends to detection, investigation, and prevention of specific types of fraud committed against organizations and individuals.

ACCT 4568
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 Course

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 Courses

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. The principles of marketing and distribution to a global market are also discussed.

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 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
Prerequisites: EDG 1210 or ATT1200
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
Prerequisites: 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
Prerequisites: ATT 1400
2-2-3
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
Prerequisites: 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
Prerequisites: ATT 3505
3-2-4
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
Prerequisites: ATT 1300, and ATT 2600, and ATT 3602
3-0-3
Evaluation of the comprehensive factors that determine sound business practices for planning, scheduling and production of apparel products. Analysis includes the determination of production methods, equipment, personnel, materials, training, manufacturing capacities, lead times, and delivery schedules. Laboratory assignments include the use of software systems in predicting, gathering, manipulating, analyzing, and managing production by planning the optimum production cycle for a product from receipt of raw materials to the finished item.

ATT 4750 Advanced Design and Product Development
Prerequisites: 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.

IET 4810 Ethics and Safety
1-0-1
Students are provided information pertaining to ethics and safety regulations applicable to the textile industry.

ATT 4820 Senior Internship
3-0-3
This course focuses on the student's completing a project with a company under the supervision of the industry partner and SPSU faculty. The course requires a written and oral presentation.

ATT 4840 Textile/Apparel Business Project
Prerequisites: ATT 4670 and ATT 4750
1-4-3
This course is designed to provide the student with integrated knowledge from previous courses. The course focuses on the planning and control functions required in textile and apparel production systems, including design of facilities, inventories, and planning. A formal written report is required and an oral presentation will be evaluated by faculty members.

Architecture Courses

ARCH 3011 Architecture Studio I
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 II
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
Pre-Req ARCH 3116
3-0-3
A continuation of the Architecture Culture series, additionally examining the relationship between architecture and other cultural discourses such as philosophy, aesthetics, science, religion, politics and technology. While continuing in the aim of developing an understanding of how architecture manifests the socio-cultural conditions of a given moment in aesthetic form, it takes as its central concern the search for a definition of 'Modernity', and how it might be translated into a style. Particular attention is paid to the various 'isms' of the Modern Movement and the key historical figures that shaped them.

ARCH 3116 Urban Planning and Design Theory
Prerequisite: DFN 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: DFN 2211
3-3-4
This course offers lecture and pracitum. It is a continuation of DFN 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 39X1-39X4* Special Topics
Prerequisite: Admission to the professional program
1 to 4 hours
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 4013 Architecture Studio III
Prerequisite: ARCH 3116 & ARCH 3012
0-12-4
This course focuses on the design of multi-use projects with emphasis on the integration of construction technology and the application of knowledge acquired in the concurrent history theory course sequence. It emphasizes urban revitalization and mixed use design and development as an underlying studio thematic. The studio uses a three tier strategy.

ARCH 4014 Architecture Studio IV
Prerequisite: ARCH 4013
0-12-4
This course continues with the students undertaking a studio problem in architectural design of multi-use project with emphasis on the integration of technology and the application of knowledge acquired in the concurrent Architectural Theory course.

ARCH 4114 Architecture Cultures IV: 1945-Current
Prerequisite: ARCH 3113, Co-requisite: ARCH 4013
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 Environmental Technology IV: Codes and Technical Documentation
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 4411 Design 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 49X1-49X4* Directed Study
Prerequisite: Admission to the professional program
1 to 4 hours
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 5313 Professional 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/Research
Co - Requisite: 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 who will broaden their area of interest in a subject-based studio. Focus Studio aims to produce a much higher student performance and a broader range of experiences than is possible in a traditional studio structure. The goal is that both the invited studio critic and students learn and grow through mutual interest and research. The focus studio must meet and exceed applicable NAAB learning outcomes [Student Performance Criteria] set by faculty at the level of final year of B. Arch Program.

ARCH 5999R: Thesis Research

S/U
Prerequisite: ARCH 4014, ARCH 5593

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 Project
Prerequisite: ARCH 5593, ARCH 5998 ARCH 5999R
1-12-5
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 Courses

ARTS 2005 University Bands
Prerequisite: Instructor's approval
1-0-1 (may be repeated for credit)
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.

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 Introduction to Painting
Prerequisite: Introduction to Drawing
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 different types of paint, such as acrylic and oil, studying the differences between the mediums and how to apply them to create artworks.

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 290x Special Topics
1 to 3 hours.
Special topics in the arts - especially music, art, or drama. Offered by the program at its discretion.

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
Prerequisites: 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 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
Prerequisites: 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 4600 Directed Study
Prerequisites: 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 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 ENGL 4800 and TCOM 4800.

Biochemistry Courses

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 4200 Medicinal Chemistry and Drug Discovery
Prerequisite or Co-requisite: 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 3901-3905 Special Topics
1 to 5 hours
Special topics selected by the department. Offered on a demand basis.

BIOC 4200 Medicinal Chemistry and Drug Discovery
Prerequisite or Co-requisite: 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 4901-4905 Special Topics
1 to 5 hours
Special topics selected by the department. Offered on a demand basis.

Biology Courses

BIOL 2100K Bioinformatics Tools and Databases
Prerequisites: BIOL 2107K
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 2107K Principles of Biology I
3-3-4
An introduction to biology including the chemistry of life, cell structure and functions, bioenergetics, genetics, basic statistics, biotechnology, and evolution. The laboratory exercises supplement the class work.

BIOL 2108K Principles of Biology II
Prerequisite: BIOL 2107K
3-3-4
Topics include organ system anatomy and physiology, a survey of the diversity of life, animal behavior, and ecology. The laboratory exercises supplement the class work.

BIOL 2800 Drug Development and Regulation
Prerequisites: CHEM 1211, 1211L and CHEM 1212, 1212L, a "C" or better in BIOL 2107K and BIOL 2108K

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 2107K
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
1-9-4
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
Prerequisite or concurrent: 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 2108K, CHEM 1211, 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.

BIOL 3300K Ecology
Prerequisite: BIOL 2108K or ENV 2100K
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 2108K, 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 2108K
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 2108K

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 2108K
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 2108K
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 2108K
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 2108K
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 2108K, 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: BIOL 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 2108K, CHEM 1212, 1212L, PHYS 1111, 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 2108K
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 2108K, CHEM 1211, 1211L
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 func3tion 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 2108K
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 2100K
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
Prerequisites: 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 4900-4905 Special Topics
Prerequisite: senior standing or permission of department
1-5
Special research projects offered by the program faculty on a student demand/need basis.

Business, Marketing and Finance Courses

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
Prerequisites: 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 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 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 390x Special Topics
Prerequisite: Junior standing
1 to 5 hours.
Special topics offered by the department on a demand basis.

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: CS 1113 or equivalent programming 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 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: MGNT 3105
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
Prerequisites: Junior standing, ECON 1101, MGNT 3125, 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
Prerequisites: MGNT 3105, IET 2227
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
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 4595 Business Strategy
Prerequisites: 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.

MGNT 490x Special Topics
Prerequisite: Senior standing
1 to 5 hours
Special topics offered by the department on a demand basis.

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.

Chemistry Courses

CHEM 1211 Principles of Chemistry I
Prerequisite: MATH 1111
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) class (3-0-3).

CHEM 1212 Principles of Chemistry II
Prerequisite: CHEM 1211
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 (3-0-3).

CHEM 2510 Survey of Organic Chemistry
Prerequisite: CHEM 1211, 1211L
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, 1212L
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, 1212L
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, 1212L
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, 1212L 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.

CHEM 3200K Atmospheric Chemistry
Prerequisites: CHEM 1212, 1212L PHYS 1112, 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
2-6-4
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 3901-3905 Special Topics
1 to 5 hours
Special topics selected by the department. Offered on a demand basis.

CHEM 4111K Physical Chemistry I
Prerequisites: 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
Pre- or 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
Prerequisites: 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 4901-4905 Special Topics
1 to 5 hours
Special topics selected by the department. Offered on a demand basis.

Civil and Construction Engineering Courses

CE 1000 Orientation to Engineering and Surveying Professions
1-0-1
Introduction to the professional practice and options within the disciplines of civil engineering, civil engineering technology, construction engineering and surveying and mapping: 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
Prerequisites: ENGR 3131
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 3501 Materials for Civil & Construction Engineering
Prerequisites: ENGR 3131 and ENGR 3132
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: co-requisite 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
Prerequisites: ENGR 3131, ENGR 3132 and ENGR 3343
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
Prerequisites: ENGR 3343 and CHEM 1212, 1212L
3-0-3
An overview of chemistry concepts and environmental regulations and their implications in construction and civil engineering practices. Consideration of environmental risk and environmental impact studies on engineering projects, as well as identification of major objectives and design of basic water and wastewater treatment systems.

CE 3703 Environmental Engineering II
Prerequisite: CE 3702
3-0-3
Environmental Engineering II covers advanced topics in water and wastewater treatment. This course addresses technical issues associated with sludge treatment and disposal, nutrient removal, effluent disposal, on-site systems, water reclamation and reuse.

CE 3708 Geotechnical Engineering Lab
Prerequisite: ENGR 3131 ENGR 3132 and ENGR 3343
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 3901-3903 Special Topics
Prerequisites: Junior standing, consent of the Program Coordinator.
1 to 4 hours
Special topics offered by the program on a demand basis.

CE 4103 Design of Steel Structures
Prerequisite: CE 3201
3-0-3

AISC design procedures for steel beams, joints, girders, columns, base plates, and connections.

CE 4105 Foundation Design
Prerequisites: CE 3701 , CE 3708
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
Prerequisites: ENGR 3305
4-0-4
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
Prerequisites: CE 4177
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 4202 Steel and Concrete Design
Prerequisite: CE 3201
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 4703 Engineering Hydrology
Prerequisites: ENGR 3343
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
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
Prerequisites: CE 3201 and CE 3701
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
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 4709 Matrix Structural Analysis
Prerequisite: CE 3201
3-0-3

The course offers computer oriented methods for solving determinate and indeterminate structures including matrix

analysis of two-and three-dimensional trusses, continuous beams, and frames. The class emphasizes on the displacement method and stiffness matrix development. Matrix analysis method will be applied to problems in structural engineering and mechanics using the Structural Analysis Program 2000.

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CE 4800 Senior Project
Prerequisite: Senior Standing, consent of the Program Coordinator.
2-3-3
Capstone design experience for graduating Construction Engineering majors.

CE 4901-4903 Special Topics
Prerequisites: Junior standing, consent of the Program Coordinator.
1 to 4 hours
Special topics offered by the program on a demand basis.

Civil Engineering

CE 3202 Design of Concrete Structures
Prerequisite: CE 3201
3-0-3

ACI design procedures for reinforced concrete beams, columns, footings, slabs and other members, Introductory to masonry design.

CE 4103 Design of Steel Structures
Prerequisite: CE 3201
3-0-3

AISC design procedures for steel beams, joints, girders, columns, base plates, and connections.

CE 4105 Foundation Design
Prerequisites: CE 3701 , CE 3708
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.

Civil Engineering Technical Elective Courses
CE 3501 (3-0-3) Materials for Civil & Construction Engineering
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. Prerequisites: ENGR 3131

CE 4704 (3-0-3)
Engineering Hydraulic Analysis and Design

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. Prerequisite: ENGR 3343

CE 4705 (3-0-3)
Advanced Soil Mechanics

The course is offered as a technical elective to junior and senior undergraduate students who have already completed CE 3701-geotechnical engineering, and represents a transition between the introductory and fundamental nature of the material covered in ENGR 3131 and the more detailed and applied subject material contained in CE 4105 - Foundation Design. 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. Prerequisites: CE 3701

CE 4706 (3-0-3)
Pavement Engineering

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. Prerequisite: CE 3201 and CE 3701

CE 4707 (3-0-3)
Design of Wood Structures

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. Prerequisite: CE 3201

CE 4709 (3-0-3)
Matrix Structural Analysis

The course offers computer oriented methods for solving determinate and indeterminate structures including matrix analysis of two-and three-dimensional trusses, continuous beams, and frames. The class emphasizes on the displacement method and stiffness matrix development. Matrix analysis method will be applied to problems in structural engineering and mechanics using the Structural Analysis Program 2000. Prerequisite: CE 3201

Civil Engineering Technology Courses

CE 1000 Orientation to Engineering and Surveying Professions
1-0-1
Introduction to the professional practice and options within the disciplines of civil engineering, civil engineering technology, construction engineering and surveying and mapping: career opportunities, professional licensing, and industry expectations in the professional disciplines, as well as department policies on advisement and curriculum requirements to graduation.

CET 1002 Orientation to CET Computer Practices
Prerequisite: MATH 1113
0-2-1
A general introduction to computer methods and tools used in practice. Various software applications including spreadsheets, word processors and network programs will be covered.

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.

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).

CET 2200 Introduction to Structures
Prerequisite: PHYS 1111, 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).

ENGR 2214 Engineering Mechanics - Statics
Prerequisites: 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.

CET 2215 Engineering Mechanics - Dynamics
Prerequisite: ENGR 2214.
2-0-2
A study of kinematics and kinetics of particles and rigid bodies. Topics include principles of displacement; velocity and acceleration; relative and absolute motions; force, mass and acceleration; work and energy; and impulse momentum.

CET 3110 Construction Materials and Sustainability
Prerequisites: CHEM 1211, 1211L, ENGR 3131, ENGR 3132
3-3-4
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 3120 Cost Estimating and Scheduling in CET
Prerequisites: CET 3110 or CET 3302 or SURV 3222
4-0-4
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.

CET 3130 Applied Fluid Mechanics and Hydraulics
Prerequisite:
2-3-3
A study of basic physical principles applied to fluids under static and dynamic conditions. This course includes the study of fluid properties, pipe flow analysis, pump analysis and selection, types of open channel flow, and flow measuring devices and their application.

CET 3210 Structural Mechanics
Prerequisites: ENGR 3131, ENGR 3132
2-3-3
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 or CET 3316
2-3-3
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
Prerequisites: CET 3110 and CET 3210 or (CET 3302 and CET 3316).
2-3-3

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
Prerequisites: CHEM 1211, 1211L, and (CET 3130 or CET 3343).
2-3-3
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 3320 Wastewater Collection and Treatment
Prerequisite: (CET 3310 or concurrent CET 3344) and MATH 2306
2-3-3
Application of hydraulics in the design of wastewater collection systems and ancillary structures. This course also includes a description of the metabolic processes and its application in wastewater treatment, design of conventional and individual wastewater treatment processes.

CET 3410 Soil Properties and Site Exploration
Prerequisites: CHEM 1211, 1211L, ENGR 3131, ENGR 3132, and (CET 3130 or CET 3343)
3-3-4
This course provides an introduction to geotechnical engineering with a strong practical "hands-on" experience. Students will study index properties, soil classification, site exploration, stress distribution, settlement and consolidation, permeability, shear strength and soil stability, and lateral earth pressure. Each lecture topic is supported by standard lab experiment(s) such as index property tests, proctor compaction, permeability, direct shear, consolidation and triaxial tests. Strong emphasis will be given to site exploration procedures. Students will utilize mechanical and non-destructive field testing methods to determine the soil profile.

CET 3510 Traffic Analysis and Road Design
Prerequisite: SURV 2221, and MATH 2260
2-3-3
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 3901-3904 Special Topics
Prerequisites: Junior standing, consent of the Program Head.
Variable 1 to 4 hours
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 Project
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 small design teams, choose a proposed or ongoing project in the metropolitan area of Atlanta and redesign the project. 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.

CET 4210 Computer Methods in Structures
Prerequisite: CET 3210 or CET 3316
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 or CET 3371.
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 or CET 3381.
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 4310 Stormwater Management and Erosion Control
Prerequisite: CET 3130 or CET 3343
2-3-3
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 4320 Unit Operations in Environmental Engineering
Prerequisite: CET 3310 and 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 3321.
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
Prerequisites: 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 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 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 4418 Engineering Geology
Prerequisites: CET 3301, CET 3302.
2-3-3
Introductory geology, including rock types, geneses, formations, strength, permeability, and weathering. Investigation of the effects of geologic structure, groundwater, rock properties and mineralogy on design and construction of highways, buildings, tunnels and dams. Problems of construction excavation and de-watering, tunneling methods, evaluation of slope stability and determination of geologic substructure through use of maps and subsurface investigations.

CET 4450 Pavement Design and Maintenance
Prerequisites: CET 3301, CET 3302, CET 3321.
3-3-4
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 evaluation of paving materials, design of pavement drainage systems recognition of pavement distress, and the design of repair measures. Standard techniques and computer software such as that of PCA, ACPA, the Asphalt Institute and AASHTO will be utilized in pavement thickness design.

CET 4484 Hydraulic Analysis and Design
Prerequisite: CET 3343.
4-0-4
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, base flood elevation studies using HEC-RAS, non-uniform flow, gutters and inlets, water distribution, open channel design.

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 Courses

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

Prerequisites: 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 2000 Business Communication
Prerequisites: 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 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 shich 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 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 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 and 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
Prerequisites: 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 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
Prerequisites: 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, TCOM 4030
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 4100 Small Group Communication
Prerequisite: TCOM 2010; either TCOM 2020 or 2030 or concurrently
3-0-3
Study of the theory and practice of group interaction and teamwork as it applies to group process. Focuses on such topics as the function of roles in groups, conflict resolution, leadership in the small group, gender differences, listening and negotiation skills, and managing meetings. A collaborative project and workshop activities reinforce these principles.

COMM 4600 Directed Study
Prerequisites: Twenty-one hours of courses in the major
variable credit 1-3 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.

Computer Game Design and Development (CGDD) Courses

CGDD 2002 - Fundamentals of Game Design

Prerequisite: None

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: CGDD2002

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: CGDD2002 or CS3424

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: CGDD3103 and CS4363

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: CGDD4003

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: CGDD4003

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: TCOM3030 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: CGDD4113 and SWE3643

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: MATH2260

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: CGDD4003

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: CGDD4803

1-9-4

This course continues the studio experience from CGDD4803 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.

CGDD 490x – Special Topics in Game Design and Development

Prerequisite: Senior standing

Variable credit (1-4 credit hours)

Special topics selected by the department. Offered on a demand basis.

Computer Science (CS) Courses

CS 2123 C Programming
Prerequisite: MATH 1113 or concurrently
3-0-3
This course covers the beginning concepts of programming logic and algorithms using the C Programming Language. Procedural programming style is used in the labs. (CSE majors may only receive free elective credit for this course).

CS 2223 Digital Design
Prerequisite: MATH 2345
3-0-3
A study of the digital devices and circuits used in the implementation of computer systems. Pertinent topics include Boolean algebra and logic concepts, design and minimization of combinational and sequential logic circuits, and modern digital-design software tools such as VHDL.

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 3153 Database Systems
Prerequisite: (CSE 1302C or CSE1302J 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.

CS 3223 Computer Architecture
Prerequisite: CS 2223 and CSE 1301
3-0-3
A study of instruction set architectures; basic processor components such as control units, ALU's, and registers; memory; input/output; and performance enhancement using caches and pipelines. Design of the major processor components is discussed in terms of the concepts presented in CS 2223. Some coverage of assembly language programming is included.

CS 3224 Computer Organization & Architecture
Prerequisite: (CSE 1302C or CSE1302J or CSE 1302E) and MATH 2345
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
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 3901-3904 Special Topics
Prerequisite: Junior standing
1 to 4 hours
Special topics selected by the department. Offered on a demand basis.

CS 4133 Programming PDA's
Prerequisite: CS 3243
4-0-4
This course offers a first-hand programming experience with Personal Digital Assistants. The course addresses issues particular to small, portable devices, such as their GUI, storage and synchronization. It also explores the wireless environment where these devices would interact.

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, Networ, 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 4423 Logical Foundations of Computer Science
Prerequisite: CS 3424, MATH 2345 and senior standing
3-0-3
An elective course surveying computability theory, finite state machines, automata, parsing, grammars, and selected aspects of compiler construction. Particularly useful for students contemplating attending graduate school in computer science.

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 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 4543 Neural Computation
Prerequisite: MATH 2345 and CS 3424
3-0-3
Application of brain-style computing models. Topics include fundamentals of artificial neural networks, pattern classification, perceptrons, back-propagation, counter-propagation networks, Hopfield nets, bi-directional associative memories, competitive learning algorithms, and adaptive resonance theory.

CS 4553 Expert Systems
Prerequisite: SWE 3613
3-0-3
An introduction to the development of expert systems, with emphasis on the roles of domain knowledge, knowledge acquisition, expert knowledge representation, and implementation. A major project is required.

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 4901-4904 Special Topics
Prerequisite: Senior standing
1 to 4 hours
Special topics selected by the department. Offered on a demand basis.

Computing & Software Engineering (CSE) Courses

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
Prerequisite: MATH 1113 (or concurrently) or permission of the department
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
Prerequisite: MATH 1113 (or concurrently) or permission of the department
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
Prerequisite: MATH 1113 (or concurrently) or permission of the department
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
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
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
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 2642 Professional Practices and Ethics
Prerequisite: CSE 1302 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 Course Descriptions

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 2901-2904 Special Topics
Prerequisite: Consent of the department head
1 to 4 hours
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 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 Commercial and Heavy Construction Methods
Prerequisite: CM 1000, CM 2000
2-2-3
A study of the materials, techniques, and methods used in nonresidential and heavy/civil construction. Site setup, earthwork, foundations, structural frames are included, as well as construction equipment planning and operation.

CM 3160 Commercial and Heavy Construction Methods
Prerequisite: CM 2000
2-2-3
A study of the materials, techniques, and methods used in non-residential and heavy/civil construction. Site setup, earthwork, foundations, structural frames, and building envelopes are included, as well as construction equipment planning and operation.

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 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.

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

4-0-4

Prerequisite: CM 3180

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
Prerequisites: 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 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
3-0-3
Prerequisite: CM 2000, CM 3000

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 3901-3904 Special Topics
Prerequisite: Consent of the department head
1 to 4 hours
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 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, MGT 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 4760 Construction and Real Property Law
Prerequisite: MGT 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 4570 Development Process I
Prerequisites: 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

3-0-3

Prerequisite: CM 4570, CM 3620

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 4710 Construction Safety
Prerequisites: 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 4770 Development Law
Prerequisite: CM 3310
3-0-3
An examination of real property law, elements of land ownership, title of land in Georgia, eminent domain questions, estates and interest in land, zoning and easements, tenant landlord law, real property contracts, deeds, covenants, title examination and closing, and environmental regulations.

CM 4800 Construction Process Simulation
Prerequisites:
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
Prerequisites:
General Concentration Students: CM 4800
Specialty Concentration Students: CM 4800, CM 4710, CM 4480, CM 3280, CM 3500
Development Concentration Students: MGT 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.

Design Foundation

DFN 1000 Orientation to Architecture (Summer Design Workshop)
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.

DFN 1001 Design Foundation I
Prerequisite: MATH 1111 / Successful Completion of DFN 1000
0-12-4
DFN 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.

DFN 1002 Design Foundation II
Prerequisites: DFN 1001
0-12-4
DFN 1002 builds and elaborates upon the skills and subjects Introduced in DFN 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.

DFN 1111 Architecture Culture I: Early Civilizations & Midieval
Prerequisites: MATH 1113
3-0-3

The history of architecture is presented as a collection of buildings, each of which is seen as a concrete solution to a given set of culturally derived problems and issues. These buildings, as precedents, are not to be analyzed based on composition or aesthetic image, but rather as design solutions to complex socio-cultural problems. History is used as a didactic device to aid the design student in problem solving by presenting examples of how architects have successfully transformed the intellectual concerns of their day into built form.

DFN 1241 Design Communication I
Prerequisite: DFN 1000
1-3-2
This course offers lecture and practicum. It provides fundamentals of design communication through principles of drawing conventions and related techniques including orthographic projections, axonometrics, 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.

DFN 2003 Design Foundation III
Prerequisite: DFN 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.

DFN 2004 Design Foundation IV
Prerequisite: DFN 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.

DFN 2112 Architecture Culture II - The Renaissance through 1850
Pre-Req: DFN 1111
3-0-3
A continuation of Architecture Culture to examining the relationship between architecture and other cultural discourses such as philosophy, aesthetics, science, religion, politics and technology. While continuing in the aim of developing an understanding of how architecture manifests the socio-cultural conditions of a given moment in aesthetic form, simultaneously examines the development of an autonomous architecture culture, one that we refer to as theory.

DFN 2211 Introduction to Structures
Prerequisite: PHYS 1111, 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.

DFN 2242 Design Communication II
Prerequisite: DFN 1241 or Approval of the Instructor
1-3-2
This course offers lecture and practicum. It introduces techniques and conventions of graphic communication as an aid for architectural design process and is seen as a continuation of Design Communication I. Techniques include hand drawing, 3D computer modeling, and computer 3D architectural animation. This course advances levels of visualization and representation of architectural building and related design ideas. The goal is to link digital modeling and animation techniques to various studio works both at process level and final presentation level. Variety of representation techniques include hand drawings, rendered drawings, hand constructed models, electronic 3D models, and computer animations. Highlighting 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 base information to represent concepts of design and techniques of representation

DFN 2311 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.

Economics Courses

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 Macro Economics
Prerequisite: MATH 1111
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 Micro Economics
Prerequisite: MATH 1111
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

Prerequisite: MATH 2253
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.

Electrical and Computer Engineering Technology Courses

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
Prerequisites: 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
Prerequisites: 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
Prerequisites: ECET 2111, BIOL 2107, Co-requisite: 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
Prerequisites: ECET 1101 , MATH 2254 or concurrently, PHYS 1111, 1111L or 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
Prerequisites: 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
Prerequisites: ECET 2111 or concurrently, MATH 2254 or concurrently, PHYS 1111, 1111L or 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
Prerequisites: 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
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
Prerequisites: 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
Prerequisites: 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
Prerequisites: 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
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
Prerequisites: ECET 2310, PHYS 1112, 1112L
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
Prerequisites: ECET 2310, PHYS 1112, 1112L
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 2111
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
Prerequisites: 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
Prerequisites : 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 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 3901-3904 Special Topics
Prerequisite: Junior standing
1 to 4 hours
Special topics selected by the department. Offered on a demand basis.

ECET 4010 Virtual Biomedical Instrumentation
Prerequisites: 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
Prerequisites: ECET 3020, PHYS 2212, 2212L
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
Prerequisites: 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
Prerequisites: 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 (Project)
Prerequisites: Senior Standing
3-3-4
In this capstone course, the students implement the design and development of an approved bioengineering project. 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 report and oral presentation are required

ECET 4050 BMET Capstone (Internship)
Prerequisites: 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
Prerequisites: 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
Prerequisites: ECET 2310, PHYS 1112, 1112L
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
Prerequisites: ECET 2310, ECET 3410, PHYS 1112, 1112L
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 4520 Industrial Distribution Systems, Illumination, and the NEC
Prerequisites: 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
Prerequisites: 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
Prerequisites: 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 4550 Alternate Energy
Prerequisite: ECET 2310
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 move 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.

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
Prerequisites: 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
Prerequisites : 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
Prerequisites: 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
Prerequisites: 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
Prerequisites: 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
Prerequisites: 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
Prerequisites: 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
Prerequisites: 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 4901-4904 Special Topics
Prerequisite: Senior standing
1 to 4 hours
Special topics selected by the department. Offered on a demand basis.

Electrical Engineering Courses

EE 1000 Orientation and Foundations of Electrical Engineering
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: MATH 2253, 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
Prerequisites: MATH 2306, PHYS 2212, EE2301
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
Prerequisites: CHEM 1211, 1211L , 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 3501 Microprocessors & Embedded Systems
Prerequisite: EE 2501
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
Prerequisite: EE 3401
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
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
Prerequisites: EE3701
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
Prerequisites: MATH 2306, EE 2301
3-3-4
The focus of this course is a study of feedback control systems theory including practical applications of compensation and P,PI, and PID concepts. Control system modeling, transient and steady state characteristics and response, 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.

EE 4701 Professional Practice
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
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.

Engineering Courses

ENGR 2214 Engineering Mechanics - Statics
Prerequisites: 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 2500 Solid Mechanics & Materials
Prerequisites: CHEM 1211, 1211L, ENGR 2214
3-3-4
This course is made of two distinct parts. The first part of the course is a study of stress and strain of deformable bodies in tension, compression, bending, and torsion. Topics covered include: axial stress and strain; thermal stress and strain; statically indeterminate systems; torsional stress and strain; bending stresses in beams; beam deflections; combined stresses; and finite element analysis methods. The second part of the course is a study of metals and alloys, ceramics, polymers, and composites as related to design. Areas include corrosion, atomic structure, mechanical properties, fatigue, and the effects of

alloying, hot- and cold-working and heat treating. The lab work includes tensile testing, heat treating, impact testing, hardness testing, and corrosion.

ENGR 2710 Engineering Calculations
Prerequisites: 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
Prerequisites: 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
Prerequisites: CSE 1301, ENGR 3122
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
Prerequisites: 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
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
Prerequisites: MATH 2254.
3-3-4
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 one of CM 3110 or CM 3160 (or concurrent enrollment)
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
Prerequisites: ENGR 2214: Co-requisite: 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-Mechanical
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
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.

ENGR 4421 Instruments and Controls
Prerequisites: EE 2110, ENGR 3343, MATH 2306
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.

Engineering Design Graphics Courses

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: ENGR 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 3212 Advanced Engineering Graphics

Prerequisites: EDG 1212

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 Advanced Surface Modeling
Prerequisites: 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
Prerequisites: 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 Graphics for Manufacturing
Prerequisites: MET 2322
3-0-3
This course covers manufacturing application in engineering graphics. Subjects covered include sheet metal, mold design, electrical & pip routing, and weldments.

English Courses

ENGL 1000 Writing Skills for International Students
Prerequisites: 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 eCore (online) 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.

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.

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 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 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
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 3050 Journalism
Prerequisite: TCOM 2010; either TCOM 2020 or 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 and COMM 3050.

ENGL 3045 N
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.

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 1000 Integrated Skills for International Students

Prerequisite: Department Approval
3-0-3
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.

ENGL 3100 Rhetoric: History, Theory, and Practice
Prerequisite: TCOM 2010; either TCOM 2020 or 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.

COMM 3150 Public Relations Practice
Prerequisites: 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.

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 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
Prerequisites: 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 4901-4903 Special Topics
Prerequisite: Consent of the Department Chair
1 to 3 hours
Special topics in literature, professional writing, and professional communication. Offered by the department at its discretion.

Environmental Science Courses

ENV 2100K Introduction to Environmental Science
Prerequisites: None
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.

ENV 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.

ENV 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.

ENV 3150K Environmental Toxicology

Prerequisite: BIOL 2108K, CHEM 1211, 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.

ENV 3250 Natural Resource Management
Prerequisite: ENV 2100K
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.

ENV 3350 Oceanography
Prerequisites: CHEM 1212, 1212L, BIOL 2108K
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.

ENV 3450 Conservation Biology
Prerequisites: BIOL 2108K
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.

ENV 4000K Wetlands and Mitigation
Prerequisites: BIOL 2107K, ENV 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.

ENV 4120 Senior Project
Prerequisites: 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.

ENV 4500 Environmental Science Internship
Prerequisites: 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.

Ethnic Studies Courses

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).

Fashion Design (Apparel and Textiles) Courses

ATT 1000 Orientation

1-0-1

This course is designed to provide Apparel Textile Technology students with expectations of college life at SPSU, academic expectations and opportunities in the apparel and soft goods industries

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. The principles of marketing and distribution to a global market are also discussed.

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 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
Prerequisites: EDG 1210 or ATT1200
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 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
Prerequisites: ATT 1400
2-2-3
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 3100 Fashion Merchandising
Prerequisites: 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 3602 Apparel Computer-Aided Technical Design II
Prerequisites: 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
Prerequisites: ATT 3505
3-2-4
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
Prerequisites: ATT 1300, and ATT 2600, and ATT 3602
3-0-3
Evaluation of the comprehensive factors that determine sound business practices for planning, scheduling and production of apparel products. Analysis includes the determination of production methods, equipment, personnel, materials, training, manufacturing capacities, lead times, and delivery schedules. Laboratory assignments include the use of software systems in predicting, gathering, manipulating, analyzing, and managing production by planning the optimum production cycle for a product from receipt of raw materials to the finished item.

ATT 4750 Advanced Design and Product Development
Prerequisites: 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
3-0-3
This course focuses on the student's completing a project with a company under the supervision of the industry partner and SPSU faculty. The course requires a written and oral presentation.

ATT 4840 Textile/Apparel Business Project
Prerequisites: ATT 4670 and ATT 4750
1-4-3
This course is designed to provide the student with integrated knowledge from previous courses. The course focuses on the planning and control functions required in textile and apparel production systems, including design of facilities, inventories, and planning. A formal written report is required and an oral presentation will be evaluated by faculty members.

French Courses

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 Courses

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.

German Courses

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 Courses

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 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
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. Prerequisite: Junior standing or consent of the department chair.

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 390x Special Topics
Prerequisite: Consent of the department chair.
1 to 3 hours.
Special topics in American or world history. Offered by the department on a demand basis.

HIST 490x Special Topics in the History of Science and Technology
Prerequisite: Consent of the department chair.
1 to 3 hours.
Special Topics in the History of Science and Technology. Offered by the department on a demand basis.

Other Relevant Course Descriptions:

Core Courses

International Studies (SIS)

Modern Languages (FREN, SPAN)

Political Science (POLS)

Social Sciences (including ANTH, ES, GEOG, PSYC, RELG, STS)

HNRS (Honors) Courses

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 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.

HNRS 3102: Honors Peer Mentoring

0 or 2 credits (can be taken for academic or for service credit.)

Prerequisite: Students should be in their third or fourth year of study when possible.

Description:

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

0 or 3 credit hours (can be taken for academic or for service credit.)

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.

Description:

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

IET 1000 Orientation
1-0-1

An orientation for entering level students to the IET program, college life at SPSU, academic expectations and to the field of Industrial Engineering Technology

IET 2227 Industrial 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 2449 Logistics Planning and Control
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 2305 Principles of Industrial Systems/Processes
3-2-4
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 3320 Advanced Logistics
Pre-requisite: 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
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
3-0-3
Quality system principles, methodology, elements, and standards will be discussed. Emphasis will be given to the management, organization, creation, and evaluation of quality systems necessary to assure organizational and functional compliance with stated quality system requirements (of national and international standards, including the ISO/Q 9000 Series) and extensions thereof. Alternative quality systems are also explored, including more comprehensive Total Quality Systems.

IET 3403 Industrial Experimentation
Prerequisite: IET 2227
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 Concepts
Prerequisite: IET 3339
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
As an introduction to the effect of the time value of money this course will use equivalent annual cost, present worth, internal rates of return, and benefit to cost ratios in making economic analysis. Tax consequences, replacement theory and economic life will be examined in the analysis of engineering problems.

IET 3433 Engineering Product and Process Cost Estimating II
Prerequisites: ACCT 2101
3-0-3
This second course in a two-course sequence is devoted to a study of 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
This course focuses on the science, engineering and ethics of ecological, social environmental issues and the impact human population has on the current environment and explores new sources of energy, air and water quality, waste treatment, reclamation, conservation efforts and how engineers can partner to meet the challenges.

IET 4111 Design of Experiments
Prerequisites: 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 3407
3-0-3

Current trends in Quality will be examined.

IET 4326 Wage and Salary
3-0-3
The course is a study of the concepts and practices of compensation administration with emphasis on its motivational aspects. Essential stages of the compensation - reward system are included such as job design, job descriptions, job evaluation, and market comparison techniques for compensation program development.

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 Principles of Operations Research
Prerequisite: IET 2227
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 theory, decision analysis and computer simulation.

IET 4422 Plant Layout and Materials Handling
Prerequisites: 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
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
Prerequisites: 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
Prerequisites: 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 4901-4905 Special Topics

Prerequisite: Department Chair Approval

1 to 5 hours

Special problems selected by the department. Offered on a demand basis.

Information Technology Courses

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

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: 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

Prerequisites: 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: None

3-0-3

This course provides an overview of the importance of information technology and information systems in the health care industry.

IT 3653 Client Server System Administration

Prerequisites: CS 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: IT 3123 or CSE 1302

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

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 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 Design
Prerequisite or Co-Requisite: 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 4683 Management of Information Technology and Human Computer Interaction
Prerequisite: CS 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 4723 IT Policy and Law
Prerequisites: 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
Prerequisites: MATH 2345 and CS 3153, 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
Prerequisites: CS 3153, IT 3123 or CS 3224
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.

WBIT 1100 Introduction to Information Technology

3-0-3

This course is an introductory course in information technology. Topics include foundation in hardware, software, data, and an overview of the use of information technology in organizations. Additional topics include structured programming techniques, systems development, database design and networking, with an emphasis on appropriate business ethics, interpersonal skills and team building.

WBIT 1310 Programming and Problem Solving
Prerequisites: WBIT 1100 "C" or better, "C" or better in Area A MATH
3-0-3

This course helps students to develop basic problem-solving skills using the Java programming language. Students are introduced to fundamentals of Java programming language with emphasis on primitive data types, control structures, methods, arrays, classes, objects, abstraction, inheritance and polymorphism. Students learn basic techniques of good programming style, design, coding, debugging, and documentation. Students are able to create programs to solve basic practical problems.

WBIT 2000 The Enterprise and IT

3-0-3

This course will look at the structure and management of an information technology infrastructure. From the management aspect, the course will touch on principles and practices of managing both people and technology to support an organization. The course will emphasize how to make an information technology infrastructure effective, efficient, and productive. The management of hardware, software, data, networks and other supporting IT functions will be studied.

WBIT 2300 Discrete Mathematics for IT
Prerequisites: MATH 1113, MATH 2240
3-0-3

Discrete (as opposed to continuous) mathematics is of direct importance to the fields of Computer Science and Information Technology. This branch of mathematics includes studying areas such as set theory, logic, relations, graph theory, and analysis of algorithms. This course is intended to provide students with an understanding of these areas and their use in the fields of Computer Science and Information Technology.
The general idea of the course is to introduce terms and concepts that are useful in describing and explaining ideas, concepts, and models in the computing disciplines, such as Information Technology. For instance, logic allows for precise communication, and proof methods may be viewed as formal ways of creating and making arguments to support a position or a hypothesis. Sets, functions, relations, matrices, graphs, and trees, etc. are all tools useful in describing and communicating the structure of data, concepts, and algorithms. As your instructor, I believe the usefulness of the ideas from this course is not limited to the computing and information disciplines, but extends to other real-life situations involving precise communication, thinking, and arguments.

WBIT 2311 Programming and Problem Solving II

The emphasis of this course is on advanced programming techniques in Java including GUI's, software reuse through component libraries, recursion, event-driven programming, database processing, file processing, and exception handling. Students are able to create event-driving, graphical programs or text-based programs solving practical problems incorporating databases and external files.

WBIT 3010 Technical Communication
Prerequisites: ENGL 1102
3-0-3

This course covers workplace communication at the intermediate level. Topics include audience analysis, research proposal and report writing, document and visual design, editing and presentation design.

WBIT 3110 Systems Analysis and Design
Prerequisites: WBIT 1310, WBIT 2000
3-0-3

This course introduces the fundamental principles of the design and analysis of IT applications. In this course, students will learn to apply the tools and techniques commonly used by systems analysts to build and document IT applications. Classical and structured tools for describing data flow, data structure, process flow, file design, input and output design, and program specification will be studied, as will object-oriented techniques.

WBIT 3111 Information Technology Project Management
Prerequisites: WBIT 3110, WBIT 3010
3-0-3

Project management techniques and tools as applied to information systems projects including resource and personnel management and allocation, product testing, scheduling, and project management software. Students will study examples of both successful and unsuccessful projects and apply lessons learned to a class project.

WBIT 3200 Database Design, Development and Deployment
Prerequisites: WBIT 2311
3-0-3

This is an advanced course in database design, development and deployment. Course emphasizes database design, drawing distinctions between data modeling and process modeling using various modeling techniques including Entity-Relationship Modeling, Object Modeling and Data Flow Diagramming; database development using the relational model, normalization, and SQL; database deployment including control mechanisms, forms, reports, menus and web interfaces. Additional topics include procedures, functions, packages and triggers. Students will design, create and process a database to demonstrate competency in the course content.

WBIT 3400 Introduction to Multimedia
Prerequisites: WBIT 1100
3-0-3

This course covers the basic design principles and tools for creating and editing digital media elements. Examples of these elements include graphics, animation, audio, video, virtual space and simulation.

WBIT 3410 Web Applications Development
Prerequisites: WBIT 1100, WBIT 1310
3-0-3

The course provides a survey of techniques and tools for developing basic web pages for delivery of text and graphic

information; focus on page markup languages, client-side scripting, page design principles, page layout techniques, markup language syntax, and page styling methods.

WBIT 3500 Architecture and Operating Systems
Prerequisites: WBIT 2300
3-0-3

This course introduces students to the architectures of computer systems and the operating systems that run on them. It explores and gives experience with some common computer designs and operating systems. Topics include basic computer architecture, instruction set architecture, memory, memory management, processes, and file systems.

WBIT 3510 Data Communications and Networking
Prerequisites: WBIT 3500 "C" or Better
3-0-3

This course covers computer network and communications concepts, principles, components, and practices; coverage of common networking standards, topologies, architectures, and protocols; design and operational issues surrounding network planning, configuration, monitoring, troubleshooting, and management.

WBIT 3600 Introduction to E-Commerce

The emphasis of this course is on basic principles and practices of E-business and E-commerce. Topics include infrastructures and applications of E-commerce, E-Tailing, E-Marketing, advertisement, B2B, B2C, C2C, E-Government, M-Commerce, E-Learning, electronic payment systems, security, and legal issues. Students also learn to build simple dynamic E-commerce sites using server-side scripting.

WBIT 4020 Professional Practices and Ethics

This course covers historical, social, economic and legal considerations of information technology. It includes studies of professional codes of ethical conduct, philosophy of ethics, risk analysis, liability, responsibility, security, privacy, intellectual property, the internet and various laws that affect an information technology infrastructure.

WBIT 4030 Senior Project
Prerequisite: Senior Standing and Advisor Approved
3-0-3

A capstone course for WebBSIT majors, students will be expected to complete a final team or individual project. The project may be an approved industry, internship or a project developed and designed by faculty of the WebBSIT. Students will apply skills and knowledge from previous WebBSIT courses in project management, system design and development, digital media development E-commerce, database design, and system integration.

WBIT 4112 Systems Acquisition, Integration and Implementation

Most IT applications used by organizations are configured from components that have been purchased from third-party vendors. This includes both hardware components and, increasingly, software components. In this course, students will study the component acquisition process, and methods and techniques for integrating these components into an existing IT infrastructure.

WBIT 4120 Human-Computer Interaction
Prerequisites: WBIT 2311, WBIT 3400
3-0-3

The emphasis of this course is on fundamentals of human-machine interfaces, both cognitive and physical. Learning styles and effects of short-term memory on cognition and reaction will affect hardware and software development. Students will design a prototype interface.

WBIT 4520 Information Security
Prerequisites: WBIT 3500, Pre or Co-requisite: WBIT 3510

This course is an introduction to information assurance and security in computing. Topics include computer, network (distributed) system and cyber security, digital assets protection, data backup and disaster recovery, encryption, cryptography, computer virus, firewalls, terrorism and cyber crimes, legal, ethical and professional issues, risk management, information security design, implementation and maintenance.

WBIT 4601 Customer Relationship Management
Prerequisites: WBIT 3600, WBIT 3200
3-0-3

The use of IT applications has allowed many organizations to collect large amounts of data on their clients and to use such data to improve the relationships with their customers. In this course, students will study customer relationship management systems, including the reasons for their emergence, the functionalities that they provide and the issues one would have to face to successfully introduce and Customer Relationship Management System into an organization.

WBIT 4602 IT Strategy Seminar
Prerequisites: WBIT 3600, WBIT 3200, WBIT 3111, WBIT 4120
3-0-3

Students will participate in research and discussion on a topic of current interest. A term paper on the topic (or related subtopic) is required. A designated faculty member will select the topic in advance based on his/her expertise and lead the seminar.

WBIT 4610 IT Policy and Law
Prerequisites: WBIT 3600
3-0-3

This course will focus on the legal implications of conducting business in the information technology age. Topics will include current understanding of internet contracts, copyright, trademark and patent law. Further, this course will examine cutting-edge cases relating to security, e-commerce, and emerging ethical issues and trends.

International Studies Courses

SIS 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, and facilities; and introduced to the departmental faculty.

POLS 2100 Basic Quantitative Research Methods for International Studies and Political Science
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.

SIS 3600 Comparative Culture
Prerequisite: Proficiency in second language or consent of the department head
3-0-3
Compares cultures of the Pacific Rim, the Americas, the Middle East, Europe, and Africa with that of the United States with the purpose of diminishing cultural conflict. Includes life-issues of a culture: ceremonies and customs of birth, death, marriage, dating, meals, body language, etc. Lab simulations provide students with experience in dealing with culturally-conflictive situations.

SIS 3901-3903 Special Topics in International Studies
1 to 5 hours.
Special topics in international issues. Offered by the department on a demand basis.

SIS 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 Social and International Studies department approval.

SIS 4001 Regional Studies/Latin America
3-0-3
Focuses on the political, economic, and social forces within Latin America.

SIS 4002 Regional Studies/Asia: China
3-0-3
Focuses on the political, economic, and social forces within China.

SIS 4003 Regional Studies/Asia: Japan
3-0-3
Focuses on the political, economic, and social forces within Japan.

SIS 4004 Regional Studies/Middle East
3-0-3
Focuses on the political, economic, and social forces within the Middle East.

SIS 4005 Regional Studies/Russia/Eastern Europe
3-0-3
Focuses on the political, economic, and social forces within Russia and/or Eastern Europe.

SIS 4006 Regional Studies/Western Europe
3-0-3
Focuses on the political, economic, and social forces within Western Europe.

SIS 4007 Regional Studies/Africa
3-0-3
Focuses on the political, economic, and social forces within Africa.

SIS 4100 Cross-National Technology Policy Analysis
Prerequisite: Completion of core Area E, group 2 or group 4 or permission of the instructor
3-0-3
In a comparative context, the course explores the role of public, as well as private, institutions in the formulation of technology policies and regulatory frameworks. Also examines international law to address trans-national issues in technology policy. The course relies heavily upon case studies.

SIS 4600 Global Technology Internship
Prerequisite: Junior status
3-0-3
Students may choose to undertake a semester-long internship for academic credit with an Atlanta-area employer. The employer may be a multi-national corporation or one that conducts significant business dealings in foreign markets.

Other Relevant Course Descriptions:

Core Courses

History (HIST)

Modern Languages (FREN, SPAN)

Political Science (POLS)

Social Sciences (including ANTH, ES, GEOG, PSYC, RELG, STS)

Materials Science Courses

MSCI 3101K Introduction to Material Science
Prerequisites: CHEM 1212, 1212L, PHYS 2212, 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 Courses

MATH 1101 Intro to Mathematical Modeling
Prerequisite: None
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
Prerequisites: 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: 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: MATH 1113
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
Prerequisites: 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: 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 2901-2905 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
Prerequisites: 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
Prerequisites: 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 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 3901-3905 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
Prerequisites: 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
Prerequisites: MATH 2306, MATH 2255
Prerequisites or Co-requisites: 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 4901-4905 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

Mechanical Engineering Technology

The Bachelor of Science degree program in Mechanical Engineering Technology is accredited by the Technology Accreditation Commission; ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012. Telephone: 410-347-7700; email accreditation@abet.org; website: http://abet.org.

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 1901-1905 Special Topics
Prerequisite: Consent of the Department Chair
1 to 5 hours
Special topics selected by the program. Offered on a demand basis.

MET 2322 Metrology and CNC Machining
Prerequisites: EG 1212 or ENG 1212 or EDG 1212, MET 1000, MET 1321
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 2901-2905 Special Topics
Prerequisite: Consent of the Department Chair
1 to 5 hours
Special topics selected by the program. Offered on a demand basis.

MET 3101 Fluid Mechanics Principles & Applications
Prerequisites: ENGR 2214 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
Prerequisites: CS 2123, ENGR 3122
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 3132 Engineering Materials
Prerequisites: CHEM 1211, 1211L; Co-requisite: ENGR 3131
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
Prerequisites: MET 2322, ENGR 3131
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 3400 Thermodynamics and Heat Transfer
Prerequisites: 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
Prerequisites: MATH 2253, PHYS 1111.1111L or PHYS 2211, 2211L
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
Prerequisites: ENGR 3101, 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.

ME 3410 Thermodynamics
Prerequisites: MATH 2255 or MATH 2306
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.

MET 3901-3905 Special Topics
Prerequisite: Consent of the Department Chair
1 to 5 hours
Special topics selected by the program. Offered on a demand basis.

MET 4112 Computer Aided Engineering & Analysis

Prerequisites: EDG 1212, ENGR 3131, MET 3101

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
Prerequisites: 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, 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
Prerequisites: EG 1212 or ENGR 1212 or EDG 1212, ENGR 3122, 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
Prerequisites: CS 2123, 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
Prerequisites: 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
Prerequisites: 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
Prerequisites: MET 3402 or concurrently, ENGR 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
Prerequisites: ECET 3000 or concurrently; CS 2123, MATH 2306, ENGR 3131
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 4501 Engineering Computation using Matlab
Prerequisites: 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 4801-4805 Special Projects
Prerequisite: Consent of the Department Chair
1 to 5 hours
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 4901-4905 Special Topics
Prerequisite: Consent of the Department Chair
1 to 5 hours
Special topics selected by the program. Offered on a demand basis.

Mechatronics Engineering Courses

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 3710 Mechatronics Engineering Fundamentals
Prerequisite: ENGR 2710, CSE 1302E
3-3-4
A study of several skills necessary in Mechatronics Engineering, to include: lab orientation with simple machines and circuits; critical thinking concepts; an introduction to C++ programming and mathematics software such as MATLAB®; and writing formal lab reports. The basic concepts of Electrical Circuits and System Dynamics will be presented.

MTRE 4000 Advanced Controls
Prerequisite: EE 4201
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 4200 Robotics Analysis and Synthesis
Prerequisites: MTRE 3710, EE 4201, ENGR 3122, MATH 2255
3-0-3
The technology of integrating automation equipment for use in manufacturing process is covered. Students design demonstrations and complete projects involving the interfacing of flexible automation devices Programming and sensory techniques, as well as identification systems are investigated. Data collection, quality management and control are included.

MTRE 4400 Mechatronics System Design
Prerequisites: EE 4201, ECON 2107
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.

Modern Foreign Languages

MFLA 190x Special Topics

1-3 Credits.

A course for individualized instruction of modern foreign languages.

MFLA 290x Special Topics

1-3 credit hours.

A course for special study of modern foreign language or literature, above the 1000 level.

New Topic (12)

Physics Courses

PHYS 1111 Introductory Physics I
Prequisite: MATH 1113 Co-requisite PHYS1111L
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 PHYS1111L as a co-requisite.

PHYS 1112 Introductory Physics II
Prerequisite: PHYS 1111 or PHYS 2211 Co-Requisite: PHYS1112L
3-0-3
PHYS1112 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 PHYS1112 must also register for PHYS1112L as a co-requisite

PHYS 1211 Principles of Physics I
Prerequisite: Completion of Calculus I (MATH 1501 or MATH 2253) (differentiate, integrate, simple functions) Co-requisite PHYS2211L
3-0-3
PHYS2211 is the first course in a two-semester sequence that includes mechanics, thermodynamics, and waves. Elementary differential calculus will be used. Registering for PHYS2211 includes a 1hour/week recitation. Students registering for PHYS2211 must also register for PHYS2211L as a co-requisite.

PHYS 2211 Principles of Physics I
Pre-requisite: Math 2253 Caluclus
co-requisite: 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 2212 Principles of Physics II
Prerequisites: MATH 2254, PHYS 2211, Co-requisite: PHYS2212L
3-0-3
PHYS2212 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 PHYS2212 must also register for PHYS2212L as a co-requisite.

PHYS 2213 Introduction to Thermal and Modern Physics
Prerequisites: MATH 2254, (PHYS 2211, 2211L or PHYS 1111, 1111L) and (PHYS 2212, 2212L or PHYS 1112, 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
Prerequisites: MATH 2306,a grade of C or better in PHYS 2211, 2211L
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 (4-0-4).

PHYS 3220 Electromagnetism I
Prerequisites: MATH 2255, a grade of C or better in PHYS 2212, 2212L
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, 2212L
3-0-3

Fundamentals and applications of geometric and physical optics.

PHYS 3410K Electronics Laboratory
Prerequisite: a grade of C or better in PHYS 2212, 2212L
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: a grade of C or better in PHYS 2212, 2212L
2-3-3
An introduction to computational physics problem solving, primarily using Windows-based MathCad but also including an introduction to Maple. 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, 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 or concurrently
0-3-1
A selection of experiments from Modern Physics that complement the material in PHYS 3710, Modern Physics.

PHYS 3730 Relativity
Prerequisite:a grade of C or better in PHYS 2212, 2212L
3-0-3
A thorough exposition of the principles of Special Relativity and an introduction to the General Theory of Relativity.

PHYS 3901-3905 Special Topics
Prerequisite: Junior standing
1 to 5 hours
Special topics selected by the department. Offered on a demand basis.

PHYS 4210 Quantum Physics
Prerequisite: PHYS 3710
4-0-4
A systematic development of quantum mechanical laws, emphasizing solutions to Schrodinger's equation.

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 4230 Thermal Physics
Prerequisite: PHYS 2213K, a grade of C or better in PHYS 2212, 2212L
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.

CE Materials for Civil & Construction Engineering
Prerequisite: Math 2254, PHYS 2212, 2212L or PHYS 1112, 1112L
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 Measurements Laboratory
Prerequisite: a grade of C or better in both PHYS 3410K and PHYS 3720L
1-3-2
An introduction to instrument control, data acquisition, and data analysis of the type used in research labs. The student w ill 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 4250 Quantum Theory of Two-State Systems
Prerequisite: Math 2254, PHYS 2212, 2212L or PHYS 1112, 1112L
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 4901-4905 Special Topics
Prerequisite: PHYS 2212, 2212L or PHYS 1112, 1112L
1 to 5 hours
Special topics selected by the department. Offered on a demand basis.

Political Science Courses

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 Basic Quantitative Research Methods for International Studies and Political Science
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 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 2903 Special Topics in Political Science
3-0-3

Special topics in political science. Course offered by the department on a demand basis.

POLS 3100 Intermediate Quantitative Research Methods
Prerequisite: POLS 2100 Basic Quantitative Research Methods
3-0-3

This course builds upon the material learned in POLS 2100. 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. Students will learn to conduct analysis using datasets relative to political science under the guidance of the instructor.

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 3209 U. S. Constitutional Law
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 Regulatory and Environmental Law
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.

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 American Institutions
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 branch- and 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 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 Advanced Multivariate Statistical Analysis
Prerequisite: POLS 3100
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.

Other Relevant Course Descriptions:
Core Courses
History (HIST)
International Studies (SIS)
Modern Languages (FREN, SPAN)
Social Sciences (including ANTH, ES, GEOG, PSYC, RELG, STS)

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 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
3-0-3

Special topics in political science. Course offered by the department on a demand basis.

Professional Program: Architecture

ARCH 3011 Architecture Studio I
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 II
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.

DFN 2112 Architecture Culture II - The Renaissance through 1850
Pre-Req: DFN 1111
3-0-3
A continuation of Architecture Culture to examining the relationship between architecture and other cultural discourses such as philosophy, aesthetics, science, religion, politics and technology. While continuing in the aim of developing an understanding of how architecture manifests the socio-cultural conditions of a given moment in aesthetic form, simultaneously examines the development of an autonomous architecture culture, one that we refer to as theory.

ARCH 3113 Architecture Culture III - 1850 through 1945
Pre-Req ARCH 3116
3-0-3
A continuation of the Architecture Culture series, additionally examining the relationship between architecture and other cultural discourses such as philosophy, aesthetics, science, religion, politics and technology. While continuing in the aim of developing an understanding of how architecture manifests the socio-cultural conditions of a given moment in aesthetic form, it takes as its central concern the search for a definition of 'Modernity', and how it might be translated into a style. Particular attention is paid to the various 'isms' of the Modern Movement and the key historical figures that shaped them.

ARCH 3211 Architecture Structures II: Steel and Wood
Prerequisite: DFN 2211
3-3-4
This course offers lecture and pracitum. It is a continuation of DFN 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 39X1-39X4* Special Topics
Prerequisite: Admission to the professional program
1 to 4 hours
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 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.

DFN 2311 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 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 4013 Architecture Studio III
Prerequisite: ARCH 3116 & ARCH 3012
0-12-4
This course focuses on the design of multi-use projects with emphasis on the integration of construction technology and the application of knowledge acquired in the concurrent history theory course sequence. It emphasizes urban revitalization and mixed use design and development as an underlying studio thematic. The studio uses a three tier strategy.

ARCH 4014 Architecture Studio IV
Prerequisite: ARCH 4013
0-12-4
This course continues with the students undertaking a studio problem in architectural design of multi-use project with emphasis on the integration of technology and the application of knowledge acquired in the concurrent Architectural Theory course.

ARCH 4114 Architecture Cultures IV: 1945-Current
Prerequisite: ARCH 3113, Co-requisite: ARCH 4013
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 3116 Urban Planning and Design Theory
Prerequisite: DFN 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 4224 Environmental Technology IV: Codes and Technical Documentation
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 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 4411 Design 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 49X1-49X4* Directed Study
Prerequisite: Admission to the professional program
1 to 4 hours
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 5313 Professional 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/Research
Co - Requisite: 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 who will broaden their area of interest in a subject-based studio. Focus Studio aims to produce a much higher student performance and a broader range of experiences than is possible in a traditional studio structure. The goal is that both the invited studio critic and students learn and grow through mutual interest and research. The focus studio must meet and exceed applicable NAAB learning outcomes [Student Performance Criteria] set by faculty at the level of final year of B. Arch Program.

ARCH 5999T Thesis Project
Prerequisite: ARCH 5593, ARCH 5998 ARCH 5999R
1-12-5
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.

Psychology Courses

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+)
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 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 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 and SIS 2100
3-0-3

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 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: SIS 2100.
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 390x Special Topics
Prerequisites: Consent of the Department Head
Special Topics in psychology. Offered by the department on a demand basis.

PSYC 4000 International Psychology
Prerequisite: PSYC 1101.
3-0-3

The course will examine mainstream as well as alternative theoretical, methodological, 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: Completion of Psychology 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 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
3-0-3

Special topics in psychology. Course offered by the department on a demand basis.

Regents' Remedial Courses

RGTR 0198 Reading for the Regents' Test
(Institutional Credit Only)
3-0-3
Prepares the student for taking the Reading component of the Regents' Test by providing simulated experience in the test-taking

situations. Covers general test-taking strategies, reading strategies, and strategies for controlling test anxiety.

RGTE 0199 Writing for the Regents' Test
(Institutional Credit Only)
3-0-3
Prepares students for taking the Writing component of the Regents' Test by providing instruction in such skills as grammar, usage, and mechanics through the writing of practice essays.

Religion Course

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.

Science, Technology, Society Courses

STS 2400 Science, Technology, and Society
Prerequisites: 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 390x Special Topics
1 to 5 hours.
Special Topics in Social, Technology, and Society. Offered by the department on a demand basis.

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 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.

STS 4400 Topical Studies in Science and Technology
Prerequisite: ENGL 1101and 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 4800 Global Technology Seminar
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.

Other Relevant Course Descriptions:

Core Courses
History (HIST)
International Studies (SIS)
Modern Languages (FREN, SPAN)
Political Science (POLS)

STS 490x Special Topics
1 to 5 hours.
Special Topics in Science, Technology, and Society. Offered by the department on a demand basis.

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 Courses

SWE 1301 Software Development I (has been replaced with CSE 1301)

SWE 1302 Software Development II (has been replaced with CSE 1302)

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 2642 Professional Practices and Ethics (has been replaced with CSE 2642)

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
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 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
Prerequisites: 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 CSE1302J 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 4901 - 4904 Special Topics
Prerequisite: As determined by the instructor and Department Chair
1 to 4 hours
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 Courses

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.

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.

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 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 3901-3905 Special Topics
Prerequisite: SPAN 2002 or equivalent, but SPAN 3001 and 3002 recommended.
1-5 hours
Arranged through agreement with and permission of instructor. This might include an internship abroad, Spanish for business, science and technology, management, or other topics. Readings, writings, and discussions in Spanish.

SPAN 4001 Professional Spanish
Prerequisites: 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
Prerequisites: 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 4901-4905 Special Topics for Professional Spanish
Prerequisites: Nine hours minimum of Spanish on the 3000 level, and prior agreement with faculty of Spanish.
1-5 hours.
A repeatable course that may be used for the Service Learning project, and for study abroad on the advanced level.

Other Relevant Course Descriptions:

Core Courses

History (HIST)

International Studies (SIS)

Political Science (POLS)

Social Sciences (including ANTH, ES, GEOG, PSYC, RELG, STS)

Surveying and Mapping Courses

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
Prerequisites: EDG 2160, MATH 1113.
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 3222.
2-3-3
Analysis and interpretation of photographic and satellite imagery; vertical and orthography; ground control; project planning; digital softcopy methods.

SURV 3330 Construction Surveying
Prerequisite: SURV 3222.
3-3-4
Layout of designed structures from land boundaries, right of way parcels, applications of coordinate geometry, hydrographic surveying.

SURV 3421 Geographic Information Systems I
Prerequisite: SURV 2221
3-3-4
GIS concepts; spatial data analysis; information systems; digital elevation models; surveying and mapping components of GIS development.

SURV 3901-3904 Special Topics
Prerequisites: Junior standing, consent of the program head
1 to 4 hours
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
Prerequisites: MATH 2260, 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 3222.
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 4423 Advanced Field Operations
Prerequisite: SURV 3222
2-6-4
Emphasis placed on production surveying; use of codes to develop maps; extensive data collection; computer drafting and plotting.

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
Prerequisites: 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 4901-4904 Special Topics
Prerequisites: Senior standing, consent of the program head
Variable credit 1 to 4 hours

Systems Engineering Course Descriptions

SYE 1101 Systems Engineering Orientation
Prerequisite: none
This course examines the field of Systems Engineering in today's world. The students will become familiar with what is expected in this field and the types of opportunities available. Speakers will be brought in for various topics.

SYE 2100 Systems Analysis and Design
Prerequisite: sophomore standing
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 3320 Engineering Economics and Decision Analysis
Prerequisites: MATH 2253, ECON 2107
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 2600 Applications of Probability
Corequisite MATH 2253
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, Maintainability
Prerequisite: SYE 2600
This course introduces engineering principles and methods used for system reliability, maintainability and risk assessment and mitigation. Accelerated testing, FMEA, system safety, and sustainability are introduced.

SYE 3120 Contemporary Technological Systems: Design, Analysis, and Architecture
Prerequisites: SYE 2100, SYE 3100
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
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
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 3400 Engineering Optimization I: Deterministic Decision Models
Prerequisite: MATH 3312
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
Prerequisites: PHYS 2212, 2212L and MATH 2254
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
Prerequisites: SYE 3501
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
This course covers point and interval estimation, hypothesis testing, analysis of variance, and introduction to regression analysis, with applications to engineering problems.

SYE 3700 Manufacturing and Production Systems
Prerequisites: SYE 2600, SYE 3400
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
Prerequisites: SYE 2600, SYE 3400
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)
Prerequisites: MATH 2254
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)
Prerequisites: SYE 3801
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 4400 Engineering Optimization II: Stochastic Decision Models
Prerequisites: SYE 2600, SYE 3400
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
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
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
Prerequisites: SYE 3501
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
Prerequisites: SYE 3501
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
Prerequisites: SYE 3801
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
Prerequisites: SYE 3801
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
Prerequisites: SYE 3802 and SYE 4801 or SYE 4803
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: student must be in his/her last spring semester
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.

Systems Engineering Elective Courses

SYE 3650 Process Engineering and Improvement
Prerequisite: SYE 3600
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 3850 Experimental Design
Prerequisite: SYE 3600
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 4804 Special Topics
Prerequisite: as determined by the instructor
Special Topics selected by Department Chair. Offered on a demand basis. A student may repeat this course with a different topic with special permission.

Technical Communication Courses

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 Intro to Professional & Technical Communication
Prerequisite: ENGL 1101
3-0-3
Introduction to technical communication through a survey of the field's evolution and current status; its theoretical foundations, key concerns and issues, core competencies and specializations, and the technologies and societal trends that will impact the work of technical communicators in the future. Emphasis is placed on developing a strong professional identity and in beginning the process of career planning.

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 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 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 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 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 3901-3903 Special Topics
Prerequisite: Consent of the department chair
1 to 3 hours
Special topics in communications. Offered by the program at its discretion.

TCOM 4000 Professional Editing
Prerequisites: TCOM 2010; either TCOM 2020 or 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 4040 Applied Graphics for Technical Communicators
Prerequisite: TCOM 4030
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 training.

TCOM 4045 Foundations of Multimedia
Pre- or co-requisite: 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 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
Prerequisites: 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 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
Prerequisites: TCOM 2010, TCOM 4030; either TCOM 2020 or 2030 or concurrently
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.

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.

TCOM 4175 Animation Design, 2D
Prerequisite: TCOM 3400
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
Prerequisites: 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 Independent Study
Prerequisites: 21 hours of TCOM course work and a 3.0 or higher GPA
3-0-3
A directed study for an undergraduate student who wishes to pursue a special interest in technical and professional communication not covered in the curriculum. The student submits to the TCOM Undergraduate Program Coordinator a proposal that clearly defines the course of study and the benefits to be obtained. The proposal, which must be submitted at least one semester prior before taking the course, must be approved by the student's advisor and the TCOM faculty committee. Upon approval, the student is assigned a faculty advisor.

TCOM 4600 Directed Study
Prerequisites: Twenty-one hours of courses in the major
variable credit 1-3 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
Prerequisites: 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.

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Institutions of the University System of Georgia

Research Universities

Georgia Institute of Technology	Atlanta
Georgia State University	Atlanta
Medical College of Georgia	August
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
Augusta State University	August
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
North Georgia College & State University	Dahlonega
Savannah State University	Savannah
Southern Polytechnic State University	Marietta
University of West Georgia	Carrolton

State Colleges

Abraham Baldwin Agricultural College	Tifton
Dalton State College	Dalton
Gainesville State College	Gainesville
Georgia Gwinnett College	Lawrenceville
Gordon College	Barnesville
Macon State College	Macon
Middle Georgia College	Cochran

Two-Year Colleges

Atlanta Metropolitan College	Atlanta
Bainbridge College	Bainbridge
Coastal Georgia Community College	Brunswick
Darton College	Albany
East Georgia College	Swainsboro
Georgia Highlands College	Rome
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South Georgia College	Douglas

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