

Catalog Home

Graduate Academic Catalog 2013-2014

Southern Polytechnic State University in the University System of Georgia

1100 South Marietta Parkway
Marietta, Georgia 30060-2896

Southern Polytechnic State University is proud to be Georgia's Technology University. 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.

General 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. Information on changes will be available in the Office of the Registrar and major academic program offices. 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.

Student Rules and Regulations

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

Responsibility for Notices

Students are expected to be aware of the contents of all general notices including those appearing on official campus bulletin boards and in the official school newspaper. Students are also expected to keep the university apprised of their current mailing address and to regularly check their SPSU email address. All official notifications are issued by way of email.

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 hundred 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 police.spsu.edu.

Accreditation

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

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

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

The Construction Engineering and Software Engineering programs are accredited by the Engineering Accreditation Commission of ABET (www.abet.org).

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

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

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

The Bachelor of Science program in Construction Management is accredited by The American Council for Construction Education (ACCE) at 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) at www.acbsp.org.

Quick Facts for Prospective Students

Certificates

In addition to the above degree programs, SPSU also offers certificates in the following areas:

Graduate

- Graduate Certificate in Business Continuity (Information Technology)
- Graduate Transition Certificate in Computer Science (Computer Science)
- Graduate Certificate in Information Security and Assurance (Information Technology)
- Graduate Certificate in Information Technology (Information Technology)
- Graduate Transition Certificate in Information Technology (Information Technology)
- Graduate Certificate in Quality Assurance (Industrial Engineering Technology)
- Graduate Certificate in Software Engineering (Software Engineering)
- Certificate in Systems Engineering
- Advanced Certificate in Systems Engineering
- Graduate Certificate in Technical Communication (English, Technical Communication and Media Arts)
- Advanced Certificate in Visual Communication and Graphics
- Advanced Certificate in Content Development
- Advanced Certificate in Instructional Design
- Advanced Certificate in Communications Management
- Advanced Certificate in User Experience

Undergraduate

- Certificate in Apparel Product Development (Industrial Engineering Technology)
- Professional Certificate in Land Development (Construction Management)
- Certificate in Engineering Sales (ETM)
- Certificate in Land Surveying (Civil Engineering Technology)
- Certificate in Logistics (Industrial Engineering Technology)
- Certificate in Production Design (Industrial Engineering Technology)
- Professional Certificate in Project Management:

Construction (Construction Management)
Certificate in Facilities Management (Construction Management)
Professional Certificate in Programming (Computer Science)
Certificate in Quality Principles (Industrial Engineering Technology)
Professional Certificate in Specialty Construction (Construction Management)
Professional Spanish (International Studies)

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

Students who wish to pursue a Masters degree, a transition certificate, or a graduate certificate at SPSU are admitted to the School of Graduate Studies. The admissions requirements are outlined below.

What are the qualifications I must possess in order to be considered for admission into a graduate program at SPSU?

You must have:

- Graduated from a regionally accredited institution with a bachelor's degree
- Attained a 2.75 undergraduate grade point average (on a 4.0 scale) (Some degrees require higher GPA's.)

If you are an international student, see the special section in this catalog for additional requirements.

The following graduate programs have additional requirements:

M.S. in Electrical Engineering Technology:

Undergraduate engineering or engineering technology degree in the areas of electrical, computer, or telecommunications

M.S. in Information Design and Communication:

A timed, proctored, on-campus essay written in response to a given assignment

M.S. in Software Engineering:

Documentation of at least one year of software project-related work experience (or comparable co-op work)

M.S. in Systems Engineering:

Undergraduate engineering, engineering technology, computer science or physical science degree

Some departments require the GRE or GMAT. See admissions requirements for the specific major you are interested in for details.

What if I don't meet these qualifications?

If you do not meet the criteria above, you might still be admitted, but a committee will review your overall application and make a determination based on:

- Your undergraduate work,
- Your professional industry experience,
- Any other indicators that might point to your potential to succeed. You may submit anything you feel might help the committee to understand your background for consideration.

If you are admitted by the review committee, you will be admitted on probation. If you attain a 3.0 GPA at SPSU after 9 hours of graduate work (or three courses) you will be removed from probation and will be allowed to continue as a graduate student. If you do not attain a 3.0 GPA after 9 hours, your academic record will be reviewed and you may be dismissed.

What documents should I submit in order to be considered for admission?

In order for an application to be complete, all required documents must be submitted and evaluated.

- An application for admission to a graduate program
- An official transcript from each college previously attended
- Three letters of recommendation from faculty, work supervisors, clients, or professional colleagues
- A description of relevant work experience, if applicable

- A Statement of Purpose, describing professional career goals and how completion of the graduate program will help achieve them

If you are an **international student**, see the special section in this catalog for additional requirements.

Are the graduate programs at SPSU eligible for federal and other types of financial aid?

Yes.

Are the graduate programs at SPSU accredited?

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

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

The Master of Business Administration is accredited by The Association of Collegiate Business Schools and Programs (ACBSP) at www.acbsp.org.

When do I have to have my application and other documents submitted in order to be considered for the coming term?

SPSU uses a rolling admission process. This means you can apply at any time up until the term has started. However, the number of seats in each program is limited and you are encouraged to apply early in order to be assured of there being sufficient space. You will dramatically decrease the chances of having problems with your admission and your application for financial aid if you will meet the following priority deadlines:

Fall Term: July 1st
Spring Term: November 1st
Summer Term: April 1st

Some departments require much earlier applications in order to meet review board requirements.

In order for an application to be complete, all required documents must be submitted and evaluated. If, for some reason, you cannot assemble all of your documents in time, submit the materials you have and then follow up with other documents when they become available. The earlier you have everything submitted before a term starts, the easier it will be to have a seamless and trouble-free start to your academic pursuit.

Graduate Admissions

General Information

This section contains information that pertains to all graduate programs.

The Office of Graduate Studies welcomes you to apply to any of our graduate programs or certificate programs in a variety of disciplines. The admissions office strives to make your admission process seamless and straightforward. Please review the admission process to begin your graduate studies.

Admission Procedures and Deadlines

Admission Requirements

All applications for admission to Southern Polytechnic State University's Graduate Programs must complete the online [Application for Graduate Admission](#).

- All applications must be accompanied by a non-refundable \$50.00 application fee. Checks should be made out to Southern Polytechnic State University.
- Official transcript to the Office of Graduate Studies. Note: If you have attended Southern Polytechnic State University, you need only the transcripts that are not already on file.
- Baccalaureate degree from a regionally accredited institution
- [Statement of Purpose](#)
- Three references
- Resume
- Submit individual graduate program requirements as indicated.
- Lawful Presence (for those who wish to receive in-state tuition)
- Complete the Certificate of Immunization and return it to the Office of Graduate Studies . Note: If you attended Southern Polytechnic State University, you are not required to complete the Certificate of Immunization.

All supporting materials must be received by the dates in the following schedule:

Term	Deadline for Admission
Fall	July 1
Spring	November 1
Summer	April 1

Materials received after the deadline dates will be processed, but may not be processed in time to allow students to begin that term.

Each program has unique entrance requirements. For details, see the admissions requirements for the program you are interested in the pages that follow.

Regular student

Students who fully meet the admission criteria specified by the admissions requirements for the university and the specified graduate program are classified as regular admits to the degree program.

Provisional student

Provisional students are regular students who have additional specified GPA/degree/course requirements to satisfy program deficiencies.

International Students

All international applicants are required to submit all admissions documents to the Office of Graduate Studies at least **60 days before** the registration date of the semester in which the student plans to enroll.

ALL of the above admission requirements as well as those listed below

- Students whose native language is not English must submit Official English Proficiency Test scores
- Minimum TOEFL 213 computer-based, 79 Internet-based **OR** IELTS 6.5

- Students who have academic work outside of the U.S. must have an official course-by-course transcript evaluation with GPA calculation completed. Official transcript translation if coursework is not in English. From an accredited institution.
- Accepted credentialing agencies: [World Education Services](#) and [Josef Silny](#). (MS-Electrical **only** accept WES)
- All international students must purchase medical insurance made available through Southern Polytechnic State University or provide proof of alternate coverage through a comparable policy.
- International students applying from outside the United States must submit all admissions documents, including immunization certificates, at least 60 days prior to the above deadlines.

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.

All international students must purchase medical insurance made available through Southern Polytechnic State University or provide proof of alternate coverage through a comparable policy.

Readmission

Students who have an absence of two or more consecutive terms of matriculation at Southern Polytechnic State University and who are not academically dismissed must apply for readmission.

- Students must complete the Graduate Application for Readmission
- If the student has attended any other institution since last attending SPSU, transcripts are required.

General Information

Admission to Southern Polytechnic State University is made without regard to race, color, national origin, sex, sexual orientation, disability or age. 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 Georgia 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.

During the October 2010 meeting, the Board of Regents of the University System of Georgia approved 2 new policies: Policy 4.1.6, Admission of Persons Not Lawfully in the United States, and Policy 4.3.4, Verification of Lawful Presence

Policy 4.3.4, Verification of Lawful Presence

Each University System institution shall verify the lawful presence in the United States of every successfully admitted person applying for resident tuition status, as defined in the section 7.3 of this Policy Manual, and of every person admitted to an institution referenced in Section 4.1.6 of this Policy Manual.

Students may provide any of the following to verify Lawful Presence:

- Certified Copy of a U.S. Birth Certificate showing the student was born in the U.S. or U.S. territory.
- U.S. Certificate of Naturalization (USCIS form N-550 or N-570)
- U.S. Certificate of Citizenship (USCIS form N-560 or N-561)
- U.S. Certificate of Birth Abroad issued by the Department of State (SD-1350) or Consular Report of Birth Abroad (FS-240)
- Current U.S. Passport
- Current Driver's License issued by the State of Georgia after Jan. 1, 2008
- Current ID issued by the State of Georgia after Jan. 1, 2008
- Current Military ID (service member **only**, not dependent)
- Current, valid Permanent Resident Card (USCIS form I-151 or I-55)

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 Graduate Studies. Contact the Office of Graduate Studies for additional instructions on the appeal process.

Special Accommodations

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

Financial Aid Information

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 $(128 \times 150\%) - 50 = 142$. 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 66.7% 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

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 spring 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 3.00 and/or students with a completion rate less than the required 66.7%.

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.

Steps to Apply for Financial Aid

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.

Types of Financial Aid

Graduate students may be eligible for both subsidized and unsubsidized Federal Direct Loans based on the evaluation of FAFSA information. Once the FAFSA has been received and evaluated, the student will be awarded applicable loans.

The maximum subsidized loan for one academic year is \$8500 and the maximum unsubsidized is \$12500 for a total of \$20500 in one academic year. A student can always borrow less and we encourage you to only borrow what is needed for educational related expenses.

After the student is awarded these loans, the offer must be accepted electronically via the SPSU email account. At that time instructions will be provided about completing the Master Promissory Note (MPN) and on line counseling. Once all of these requirements are completed, loan proceeds can be disbursed to the students account.

Financial Information

Student Fees

The Board of Regents of the University System of Georgia establishes matriculation and Non-Resident fees. All fees and charges are subject to change without notice; however, Southern Polytechnic will make every effort to communicate changes as they occur.

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 spsu.edu

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
- Nelnet Payment Plan at spsu.edu/fiscalaffairs/paymentplan.htm

Registration fees may be paid in the Business Office, by mail or on Banner (VISA accepted in office only). Online 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).

Cancellation of Registration

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

Delinquent Accounts

All delinquent debts and/or obligations to the university 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 of twenty five percent in addition to the original debt owed to the university.

Refund of Fees and Charges

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.

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.

Residence hall charges are refunded on a pro-rata basis, only by separate application to the Director of Housing and Residence Life. Refunds are subject to the rules and regulations regarding student responsibilities in the residence halls, as outlined in the Student Handbook.

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.

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.

Graduation Fee

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

International Student Health Insurance

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

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 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.
- Meet all University System and Southern Polytechnic State University admission requirements.
- Meet all University System, Southern Polytechnic State University, and legislated degree requirements if they are degree-seeking students.

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.

Student Services

Southern Polytechnic State University is a member of the National Association of Intercollegiate Athletics (NAIA) and the Southern States Athletic Conference (SSAC). The University competes in four intercollegiate sports, including men's soccer in the fall, men's and women's basketball during the winter, and baseball in the spring. All four of the Southern Polytechnic teams have enjoyed much success over the years. The squads use the nickname "Hornets" and the school colors are forest green, white and black.

Southern Polytechnic State University features several on-campus athletic facilities. An athletic training room located in the Hornets Nest, the University's gymnasium, serves the medical needs of all student-athletes.

The men's soccer team plays at Neusoft Technologies Field, located on the far west side of campus. Locker room space and a building for storage are near the field.

Serving as the home court for the Southern Polytechnic men's and women's basketball squads is the Hornets Nest, located on the south side of campus. The athletic training room is just a few steps from the court and locker room space for Southern Poly's teams, visiting squads and game officials is nearby.

Sir Walter J. Kelly Sr. Memorial Field, located near the gymnasium on the far south end of campus, is where the Hornets play baseball. The facility features new seating, a new scoreboard and a new press box. An indoor facility, located down the left-field line just a few steps from SPSU's dugout, includes two full-size batting cages, two soft-toss areas, a bullpen with a mound and weight training equipment. There is locker room space and buildings for storage near the field.

For more information, please visit us at www.SPSUHornets.com.

- Assisting in resume preparation
- Offering job search skillshops and mock interviews
- On-Campus interviews, Employer Information Sessions, and Career Fairs

Employment opportunities are provided in the Career Link database. **Degree candidates should begin the job search process at least two semesters prior to their graduation.** Students already employed in their field will still find it beneficial to visit the Center's website and/or to register in the database to enhance their professional opportunities.

Experiential Education (Internship and Cooperative Education)

Advantages of participating in the Experiential Education Program 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

Internship Program

The Southern Polytechnic State University Internship program involves short-term or time-limited work in a professional environment. It is designed to enhance academic, personal, and professional development and will assist students without work experience in their field in making a smooth transition from the classroom to the world of work. 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 Requirements:

- Must be a registered student the semester prior to going to work
- Must have completed at least one semester at SPSU
- Must have maintained at least a 3.00 GPA at SPSU
- Must attend an internship/co-op orientation session (can be online) and a small group meeting with the program coordinator

International Students

In addition to meeting the internship eligibility requirements, International Students **MUST** obtain written eligibility authorization from the SPSU International Services Office before beginning EACH working assignment. Due to the INS regulations, International students are not permitted to intern more than one academic year for graduates. Once an Internship is obtained, International students **MUST** return to the International Services Office to complete additional paper work. International students failing to do so will be **DROPPED** from the Internship Program.

Cooperative Education Program (Co-op)

Students alternate semesters of full-time paid work assignments with full-time classroom instruction semesters. These work assignments are also supervised and closely related to the student's academic program.

Co-op Eligibility Requirement:

- Must have completed nine (9) credit hours in a SPSU graduate program
- Must be a registered student the semester prior to going to work
- Must have a 3.0 GPA
- Must have at least three (3) semesters remaining before graduation
- Must commit to work two (2) alternating work periods with the same employer

www.dineoncampus.com/spsu/

www.spsu.edu/cec.

Southern Polytechnic Applied Research Corporation (SPARC)

The Southern Polytechnic Applied Research Corporation (SPARC) provides support to Southern Polytechnic faculty in research, development and the application of technology within their areas of expertise. This support includes the identification of opportunities, development of proposals and the administration of grants and contracts upon award. The Applied Research Corporation is committed to providing growth opportunities for faculty and students and establishing Southern Polytechnic State University as a leading center of applied technology. For more information go to <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 678/915-3159, visit the web site at www.spsu.edu/sponsoredprograms or stop by J-354.

English Language Services (ELS)

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

www.spsu.edu/hornetcard

www.spsu.edu/library/library.html; or, patrons may enter queries via email to reference@spsu.edu.

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

All students who have applied for admission to Southern Polytechnic State University and who have requested information about on-campus housing will be sent an application. Since space is limited, it is important to make requests for housing early. A request for housing consists of:

- The completed and returned Residence Life lease agreement
- A \$100 application fee

The application and fee should be sent to the University's Residence Life Office. However, completing the request does not guarantee housing will be assigned. When the lease agreement and deposit have been received, a notification of housing status will be sent by Residence Life.

The Director of Residence Life is responsible for all room assignments. Preferences for a specific residence hall or apartment will be honored whenever possible. Mutual roommate requests should be so marked on the lease agreements of both students. Consideration of a roommate request will be given providing the request is mutual and space is available.

www.spsu.edu/studentcenter.

Athletics

Southern Polytechnic State University is a member of the National Association of Intercollegiate Athletics (NAIA) and the Southern States Athletic Conference (SSAC). The University competes in four intercollegiate sports, including men's soccer in the fall, men's and women's basketball during the winter, and baseball in the spring. All four of the Southern Polytechnic teams have enjoyed much success over the years. The squads use the nickname "Hornets" and the school colors are forest green, white and black.

Southern Polytechnic State University features several on-campus athletic facilities. An athletic training room located in the Hornets Nest, the University's gymnasium, serves the medical needs of all student-athletes.

The men's soccer team plays at Neusoft Technologies Field, located on the far west side of campus. Locker room space and a building for storage are near the field.

Serving as the home court for the Southern Polytechnic men's and women's basketball squads is the Hornets Nest, located on the south side of campus. The athletic training room is just a few steps from the court and locker room space for Southern Poly's teams, visiting squads and game officials is nearby.

Sir Walter J. Kelly Sr. Memorial Field, located near the gymnasium on the far south end of campus, is where the Hornets play baseball. The facility features new seating, a new scoreboard and a new press box. An indoor facility, located down the left-field line just a few steps from SPSU's dugout, includes two full-size batting cages, two soft-toss areas, a bullpen with a mound and weight training equipment. There is locker room space and buildings for storage near the field.

For more information, please visit us at www.SPSUHornets.com.

Bookstore

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

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

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 individual sessions for students seeking confidential assistance with these and other personal issues.

Part of the career development process involves increasing our self-understanding in such areas as our 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.

Many students find graduate course work more difficult than they expected and find that it strains their abilities. Counselors can assist students with enhancing their skills in stress management, finding balance between work, family and school and with overcoming any barriers to their success while in school.

Counselors provide outreach programs on many topics such as coping with depression and anxiety, improving relationships, and other student concerns. All counseling services are **free of charge**, confidential, and are available by appointment.

Career Services

The Career and Counseling Center provides job search assistance for students seeking full-time or part-time employment. The Center can never guarantee employment for any student or graduate. Services offered include:

- Assisting in resume preparation
- Offering job search skillshops and mock interviews
- On-Campus interviews, Employer Information Sessions, and Career Fairs

Employment opportunities are provided in the Career Link database. **Degree candidates should begin the job search process at least two semesters prior to their graduation.** Students already employed in their field will still find it beneficial to visit the Center's website and/or to register in the database to enhance their professional opportunities.

Experiential Education (Internship and Cooperative Education)

Advantages of participating in the Experiential Education Program 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

Internship Program

The Southern Polytechnic State University Internship program involves short-term or time-limited work in a professional environment. It is designed to enhance academic, personal, and professional development and will assist students without work experience in their field in making a smooth transition from the classroom to the world of work. 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 Requirements:

- Must be a registered student the semester prior to going to work
- Must have completed at least one semester at SPSU
- Must have maintained at least a 3.00 GPA at SPSU
- Must attend an internship/co-op orientation session (can be online) and a small group meeting with the program coordinator

International Students

In addition to meeting the internship eligibility requirements, International Students MUST obtain written eligibility authorization from the SPSU International Services Office before beginning EACH working assignment. Due to the INS regulations, International students are not permitted to intern more than one academic year for graduates. Once an Internship is obtained, International students MUST return to the International Services Office to complete additional paper work. International students failing to do so will be DROPPED from the Internship Program.

Cooperative Education Program (Co-op)

Students alternate semesters of full-time paid work assignments with full-time classroom instruction semesters. These work assignments are also supervised and closely related to the student's academic program.

Co-op Eligibility Requirement:

- Must have completed nine (9) credit hours in a SPSU graduate program
- Must be a registered student the semester prior to going to work
- Must have a 3.0 GPA
- Must have at least three (3) semesters remaining before graduation
- Must commit to work two (2) alternating work periods with the same employer

Extended University

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

Continuing Education Center (CEC)

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

- A+/Net+ Certificate
- AutoCAD User Certification

- CISCO Certified Network Associate (CCNA)
- E-Business Solutions in Java Certificate
- Oracle 11g Database Certificate
- Professional Project Management Certificate Program
- Lean Six Sigma Certification Training
- Accelerated Training in Healthcare Information Technology

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

Southern Polytechnic Applied Research Corporation (SPARC)

The Southern Polytechnic Applied Research Corporation (SPARC) provides support to Southern Polytechnic faculty in research, development and the application of technology within their areas of expertise. This support includes the identification of opportunities, development of proposals and the administration of grants and contracts upon award. The Applied Research Corporation is committed to providing growth opportunities for faculty and students and establishing Southern Polytechnic State University as a leading center of applied technology. For more information go to <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 678/915-3159, visit the web site at www.spsu.edu/sponsoredprograms or stop by J-354.

English Language Services (ELS)

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

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 www.spsu.edu/library/library.html; or, patrons may enter queries via email to reference@spsu.edu.

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.

Recreational Sports

The Department of Recreational Sports 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, and softball.

There are also individual competitive tournaments such as billiards, golf, tennis, and racquetball.

- In addition to the intramural sports program, the department offers:
- A club sport program
- A wellness program
- Special events
- An outdoor recreation program

The outdoor recreation program sponsors various adventure trips throughout the year.

The Recreation and Wellness Center, opened in the summer of 1996, offers many recreational opportunities to the student. A state of the art weight room that includes free weights, Cybex weight training, 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 and one large multipurpose field for student use. The intramural sports program makes use of these fields throughout the year with flag football, soccer, and softball leagues. Also included in the complex are 9 tennis courts and a half-mile jogging trail.

Student Center

Southern Polytechnic State University's Student Center includes:

- Food service and dining areas
- A 467 seat theater for films, concerts, and entertainment productions
- A bookstore
- A post office
- A large recreation room featuring pool and ping-pong tables
- Additional meeting rooms, lounges, and TV/video viewing areas
- A Cyber Café offering 8 internet & e-mail computer stations

Offices for the Dean of Students, Student Activities, Student Center Operations, and Counseling & Career Services are also located in the student center.

The student center is the focal point for the majority of entertainment activities provided by the Campus Activities Board including concerts, dances, and videos. Also, the student government, newspaper, radio station, fraternity/sorority and other student organization offices are located here. The Student Center is where the Southern Polytechnic State University community comes together to eat, meet, relax, and be entertained.

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. If the nurse cannot provide sufficient medical treatment, she may refer the student to a medical 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.

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 for any student paying the Student Health Fee.

Student Housing

SPSU offers nearly 1800 on-campus student housing beds. In addition to providing a convenient and economical home for students, on-campus living also provides a great learning opportunity. Living on campus contributes to the educational development of each student through exposure to students of varied backgrounds, experiences, and personal philosophies. The Department of Housing and Residence Life is staffed by 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.

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University Transportation

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

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

HornetCard

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

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

Dining Services

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

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

Emergency Locator Service

Emergency assistance in locating a student is provided by the Office of the Dean of Students (678-915-7374) during normal school hours, 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.

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.

Tutoring

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

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

Disability Services

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

International Student Services

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

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

Academic Regulations

Introduction and Student Responsibility

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

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

Student Records

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

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

Directory Information

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

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

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

Student Email

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

Grading System

Grades

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

Lab Grades

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

Other Grades

Grade	Definition

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

Grade Point Average

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

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

Credit earned at other institutions, credit by examination, credits for which quality points are not assigned, institutional credit courses, and courses otherwise excluded by institutional policy are not considered when calculating the cumulative grade point average for graduation purposes. For graduate students, this graduation grade point average for the program is computed using only those courses in the major department and those courses approved by the program faculty. Academic standing and other computations depend on all graduate work taken unless work is excluded via an official petition to the faculty where allowed.

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

Grade Changes

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

Grade Appeals

Grade appeals fall into a special category. Grades are assigned by professors based on an evaluation of a student's academic performance. A student who wishes to appeal a grade must present clear evidence that a grade was assigned by some criteria other than an evaluation of academic performance. Appeals that proceed beyond the professor who issued the grade, must be in writing. The SPSU Student Handbook includes procedures for the appeal of grades.

Academic Standing

In order to graduate a graduate student must achieve a cumulative grade point average of 3.00. In the event that a graduate student repeats a course, only the last attempt counts in the institutional GPA.

Good Standing

To be considered in good academic standing a graduate student must have a cumulative GPA of 3.00 or better.

Academic Probation

Academic probation is assigned to graduate students whose cumulative GPA falls below 3.00.

Continued Probation

A student whose cumulative grade point average remains below 3.00 for two or more consecutive terms of enrollment, but whose term average is 3.00 or higher, may continue enrollment on probation.

A student may continue enrollment while on probation. However, if a student on probation fails to achieve a term grade point average of at least 3.00 (for graduate students) the student will be placed on dismissal.

Suspension

Any student whose semester grade point average is below 3.00 and whose cumulative grade point average is below 3.00 for at least two consecutive terms of enrollment shall be academically dismissed for unsatisfactory scholarship. To appeal the suspension or to seek reinstatement, see the Director of Graduate Admissions.

Repeated Courses

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

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

GPA's calculated for financial aid and other purposes may count all attempts.

Credit Hour

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

Maximum Credit Hours/Course Load

Graduate students may register for a maximum of 12 hours each term. Academic department chairs may authorize additional hours under unusual circumstances. The maximum number of hours during summer term is 8.

Auditing Classes

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

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

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

Enrollment Classification/Status

Graduate students enrolled for 8 or more credit hours are considered full-time students. Graduate students enrolled for 6 or more hours are considered full-time during summer term.

Note that the federal government and some other agencies have different definitions of student status.

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.

Withdrawal from Classes

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

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

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

Withdrawals After the Midpoint

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

Military Withdrawal

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

Transient Authorization

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

Cross Registration

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

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

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

Attendance

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

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

Engagement Status Reporting

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

Student Activity Absence

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

Late Instructor

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

Disruptive Behavior and Academic Dishonesty

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

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

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

Catalog and Curriculum Appeals

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

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

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

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

- The student should discuss the petition with the Registrar to determine the basis for refusal, to be informed of the appeals procedure in his or her particular case, and to be informed of any additional information or documentation that may be desirable, helpful, and/or required.
- Upon written request for appeal to the Registrar's Office, all related information is forwarded to the Vice President for Academic Affairs for review. The Vice President may approve or refuse the appeal.
- If the Vice President for Academic Affairs denies the appeal, upon written request to the Vice President for Academic Affairs, the student may appeal to the President. All related information will at that time be forwarded to the President for review.
- The President may approve or deny the appeal. The President is the final level of appeal.

Graduation

Catalog for Graduation Evaluation

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

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

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

For further information on the selection of an appropriate catalog, contact your major Department Chair or the Registrar's Office.

General Requirements

A graduate student is eligible for graduation when he or she has:

- Completed satisfactorily the required number of hours for the degree
- Passed all required courses for the degree
- Achieved the necessary grade point average (3.00 for graduate students)
- Paid all required fees, fines, and other financial obligations
- Filed an official "Petition of Admission to Candidacy for a Degree" through the Department Chair to the Registrar's Office.
- Satisfied any program related requirements
- Merited the recommendation for the degree by the faculty and the President of the university
- Earned 75% of the total hours required for the degree in residence at SPSU

In all graduate programs, a minimum of a 3.0 GPA is required. No grades below C may be applied to a graduate program's requirements, and a maximum of two C grades at the level of 6000 or above may be applied to a graduate program's requirements.

Graduation Petitions

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

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

Certificate Programs

Students admitted to a certificate program may apply the courses completed for the certificate toward a degree program if they are accepted into 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.

Credit for Courses Completed More than Eight Years Prior to Graduation

Graduate work completed more than eight 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.

Credit by Examination

SPSU does not Award Credit by Examination for Graduate Students.

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 for graduate degree programs (credit earned in any way except in a resident program course) is normally limited to a maximum of 9 hours. When there is a dual-degree agreement in place, students may transfer up to a maximum of 12 hours.

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. 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 "B" 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

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,
- Be accepted for admission to SPSU,
- Provide course descriptions, syllabi, or other documentation on course content, if requested by SPSU

Students may be required to demonstrate proficiency by passing an examination in order to be awarded some credit.

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.

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 State 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
- Must be offering degrees and course work at the college or university level and
- Must have a well-established international reputation for quality instruction

Graduate Degree Programs

Southern Polytechnic State University

Accounting

Master of Science in Accounting

The MSA is designed to be a 30-hour, online program that can be completed in one year, starting in the fall semester and ending after the summer session. Online courses are delivered in two seven-week sessions within the fall and spring semesters and one session in the summer. Students may proceed through the program at their own pace.

SPSU Accreditation Information

SPSU and the Business Administration program are accredited by the Southern Association of Colleges and Schools (SACS) and the Association of Collegiate Business Schools and Programs (ACBSP).

Admission

Admission to the MSA program is open to persons holding a bachelor or higher degree from a regionally accredited college and who meet the following admission criteria:

Admission Criteria

An undergraduate degree in accounting with a minimum GPA of 2.75 on a scale of 4.0. Special consideration will be given to applicants with GPAs below 2.75 who have obtained the CPA or CMA designations and/or who have substantial relevant experience.

An undergraduate degree in any field with a minimum GPA of 2.75 on a scale of 4.0; at least 24 hours in general business courses; and completion of the following six courses (or equivalent) with a minimum passing grade of "B":

- Intermediate Accounting I
- Intermediate Accounting II
- Advanced Financial Accounting
- Cost Accounting/Management
- Principles of Accounting I
- Principles of Accounting II

Those with a CPA and/or 5 years of experience in the accounting field will receive special consideration.

Provisional admission will be given to students who do not have all of the six required transitional accounting courses listed above. These six courses are offered as transition courses. Students who earn a B average in the transitional courses will be fully admitted into the program; otherwise a student will be placed on probation or dismissed from the program.

International Student Admission Requirements:

International students must meet all of the above requirements, and submit official TOEFL scores (if English is not your native language) of 213 (computer based score) or 79 (Internet based score) or an IELTS score of 6.5.

Academic work or degree completed outside of the U.S. must submit a course-by-course evaluation that includes a GPA calculation from an approved agency. SPSU approved agencies include:

- WES www.wes.org
- Silny & Associates www.jsilny.com
- Education Credential Evaluators www.ece.org

Students with accounting degrees from non-US accredited colleges/universities, may be required to take one or more accounting transition courses or pass challenge exams.

International students are required to submit an International Student Affidavit of Financial Support.

These requirements are subject to change. For current requirements go to:

<http://www.spsu.edu/business/webx/curriculum/msaadd.htm>

Admission Procedure

Applications are reviewed on an ongoing basis. Once an application packet is complete and submitted, an admission decision will be issued from the Graduate Studies Office within 10 business days. All applications must be made online through the SPSU Graduate Studies Office. Once admitted, students may begin classes at the next available session. There are two sessions in the fall and spring and one in the summer.

To apply, please go to:

http://spsu.edu/gradstudies/admissions/admission_process.htm

Official transcripts should be mailed to:

Office of Graduate Studies
Southern Polytechnic State University
1100 South Marietta Parkway
Marietta, GA 30060-2896

A complete application packet includes:

- An application for admission to a graduate program
- An official transcript from each college previously attended
- Three letters of recommendation from faculty, work supervisors, clients, or professional colleagues (submitted by mail or online)
- A description of relevant work experience, if applicable
- A Statement of Purpose, describing professional career goals and how completion of the graduate program will help achieve them

For additional information please visit the SPSU Graduate Studies Admission page at: <http://spsu.edu/gradstudies/>

Admission Deadlines

Following are the dates by which your application must be complete for admission during the sessions offered in the fall and spring semesters for academic year 2013-2014.

Fall Session 1	July 1
Fall Session 2	October 1
Spring Session 1	November 1
Spring Session 2	March 1
Summer Session	April 1

Fees

The SPSU per hour cost for online courses is \$303 per credit hour for both Georgia residents and for non-resident students. There is also a tech fee per semester. (Fees are established by the Board of Regents of the University System of Georgia and are subject to change without notice, though SPSU will make every effort to communicate changes to students as they occur.) Fees are subject to change by the Board of Regents. For current information, please go to: http://spsu.edu/fiscalaffairs/student_accounts/tuition_fees.htm

Accounting, Master of Science

Requirements

Academic Standing

In all graduate programs, a minimum of a 3.00 G.P.A. is required to be in good standing and to be eligible to graduate. No grades below "C" may be applied to a graduate program's requirements, and a maximum of two (2) "C" grades at the level of 6000 or above may be applied to a graduate program's requirements.

In the 5000-level transition courses, a grade of "C" or better is required for each course and an overall "B" average (3.0) is required. Students must maintain a 3.00 average to remain in good standing.

Transfer Courses

A maximum of nine (9) credit hours may be approved for use toward the degree. A course substitution form may be required to use the courses as a required course or an elective.

MSA Degree Curriculum

ACCT 6003 - Accounting Theory

Prerequisite: Undergraduate degree in Accounting or ACCT 5011
3-0-3

This course is a study of the theoretical structures of accounting, income recognition, and the influence of changing professional standards.

3 Credits

ACCT 6007 - Advanced Accounting Information and Control Systems

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

This course focuses on the design, implementation, and evolution of accounting information with emphasis on ERP systems.

3 Credits

ACCT 6006 - Advanced Management Accounting

Prerequisite: Undergraduate degree in accounting or ACCT 5013 or ACCT 6000
3-0-3

An advanced-level discussion of variance analysis, cost allocation, transfer pricing, and the use of modeling to solve business problems.

3 Credits

ACCT 6012 - Auditing

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

Auditing processes and concepts involved in performing an examination of the financial statements and internal controls of public and privately held business entities.

3 Credits

ACCT 6021 - Professional Judgment

Prerequisite: Undergraduate degree in accounting or ACCT 6012
3-0-3

This course reviews the research on moral development and ethical choices, the dilemmas and accepted solutions for accounting professionals.

3 Credits

ACCT 6030 - Taxation of Entities

Prerequisite: Undergraduate degree in Accounting or ACCT 5009
3-0-3

This course addresses the fundamental principles and exceptions related to the taxation of various forms for entities.

3 Credits

ACCT 6058 - Financial Statement Analysis

Prerequisite: Transitional Courses, if required
3-0-3

A review of financial statements for fairness and completeness in reporting, with focus on analysis of financial statements and related footnotes from the standpoint of different users of financial reports.

3 Credits

ACCT 6078 - Fund Auditing

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

This is an in-depth exposition of the current standards and specialized accounting practices of state and local government, school systems, universities and hospitals, by use of case studies.

3 Credits

- MGNT 6059 Legal Environment of Business - 3 credits

Electives:

ACCT 6045 - Forensic Accounting

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

This course covers the practice of forensic accounting in which the knowledge of advanced accounting is combined with investigative expertise and applied to legal problems.

3 Credits

ACCT 6053 - Business Valuation and Performance

Prerequisite: Transitional Courses, if required
3-0-3

This course provides students with the skills necessary to understand, analyze, evaluate, and use the information available in corporate financial reports. It also investigates corporate mergers, acquisitions, and corporate restructuring framework. Consideration is given to issues faced by corporate managers as they design reporting strategy.

3 Credits

ACCT 6068 - International Accounting

Prerequisite: Transitional Courses, if required
3-0-3

This course focuses on the evolution of the international dimensions of accounting and the national differences in accounting thought, practice, problems, and issues from other accounting systems. There is also a survey of international standards.

3 Credits

ACCT 6075 - Tax Research and Planning

Prerequisite: Transitional Courses, if required
3-0-3

This course uses student's tax research skills to discover new knowledge on advanced tax topics such as passive activity losses,

alternative minimum taxes, international taxation, and multi-state taxation. The course also includes gift and estate tax compliance and tax planning as well as deferred compensation.

3 Credits

Transition Courses

MGNT 5002 - Survey of Financial Accounting

1.5-0-1.5

This course is a study of the application of accounting principles and the accounting cycle used in business of corporations to record historical economic transactions reported in financial statements to be used by decision makers internally and externally.

1.5 Credits

MGNT 5004 - Survey of Managerial Accounting

Prerequisite: MGNT 5002 or an undergraduate financial accounting course
1.5-0-1.5

This course is a study of the application of accounting principles to specialized problems in business of corporations, special reports, and analyses of accounting information, fundamentals of management accounting, information and analysis for planning and controlling, decision analyses, cost management, and continuous improvement.

1.5 Credits

ACCT 5007 - Intermediate Accounting I

Prerequisite: MGNT 5002 and MGNT 5004, or undergraduate financial accounting and managerial accounting courses
3-0-3

This course covers a review of the accounting process, detailed analysis of financial statements, time value of money concepts, and current and operational assets.

3 Credits

ACCT 5009 - Intermediate Accounting II

Prerequisite: ACCT 5007
3-0-3

This course covers a review of the financial statements with respect to investments, current liabilities and contingencies, bonds and other long term debt, leases and tax.

3 Credits

ACCT 5011 - Advanced Accounting

Prerequisite: Undergraduate degree in accounting or ACCT 6059
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.

3 Credits

ACCT 5013 - Cost Accounting

Prerequisite: MGNT 5004 or MGNT 5004 (Please see Sandra)
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, and cost-volume-profit analysis.

3 Credits

Note: In the 5000-level transition courses, a grade of "C" or better is required for each course and an overall "B" average (3.0) is required. Students must maintain a 3.0 average to remain in good standing.

Note:

Transition courses are not included in the 30 hour degree requirement. Admission will be provisional if any transition courses are required. A grade average of "B" or better is required for the transition courses.

MSA Sequence

The MSA course offerings are sequenced. For student with an undergraduate degree in accounting, there are generally no prerequisites. This allows students to be admitted at any point during an academic year.

Prerequisite exceptions are as follows:

1. for students with an undergraduate degree in accounting whose course of study did not include Advanced Accounting. ACCT 5011 is a prerequisite for ACCT 6003;
2. for students with a non-accounting undergraduate degree, ACCT 6012 is a prerequisite for ACCT 6021.

Also, ACCT 6030 is a prerequisite for ACCT 6075.

MSA students can complete the degree in one year by taking two courses per session or in two years by taking one course per session. The fall and spring semesters are divided into 2 seven-week sessions, with two courses being offered in each session, while in summer we offer a single seven-week session.

Note: a student must take a minimum of four hours per semester to receive financial aid for a semester.

Degree Requirements (Course Sequence)

MSA Degree Curriculum (May be completed in one or more years):

Fall Semester

1st Session

ACCT 6003 - Accounting Theory

Prerequisite: Undergraduate degree in Accounting or ACCT 5011

3-0-3

This course is a study of the theoretical structures of accounting, income recognition, and the influence of changing professional standards.

3 Credits

MGNT 6059 - Legal Environment

Prerequisite: Undergraduate degree in accounting or business or MGNT 5010 /equivalent law course (applies to MBA students required prerequisites)

3-0-3

3 Credits

2nd Session

ACCT 6006 - Advanced Management Accounting

Prerequisite: Undergraduate degree in accounting or ACCT 5013 or ACCT 6000

3-0-3

An advanced-level discussion of variance analysis, cost allocation, transfer pricing, and the use of modeling to solve business problems.

3 Credits

ACCT 6030 - Taxation of Entities

Prerequisite: Undergraduate degree in Accounting or ACCT 5009

3-0-3

This course addresses the fundamental principles and exceptions related to the taxation of various forms for entities.

3 Credits

Spring Semester

1st Session

ACCT 6007 - Advanced Accounting Information and Control Systems

Prerequisite: Undergraduate degree in accounting or ACCT 5009

3-0-3

This course focuses on the design, implementation, and evolution of accounting information with emphasis on ERP systems.

3 Credits

ACCT 6078 - Fund Auditing

Prerequisite: Undergraduate degree in accounting or ACCT 5009

3-0-3

This is an in-depth exposition of the current standards and specialized accounting practices of state and local government, school systems, universities and hospitals, by use of case studies.

3 Credits

2nd Session

ACCT 6012 - Auditing

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

Auditing processes and concepts involved in performing an examination of the financial statements and internal controls of public and privately held business entities.

3 Credits

ACCT 6058 - Financial Statement Analysis

Prerequisite: Transitional Courses, if required
3-0-3

A review of financial statements for fairness and completeness in reporting, with focus on analysis of financial statements and related footnotes from the standpoint of different users of financial reports.

3 Credits

Summer Session

ACCT 6021 - Professional Judgment

Prerequisite: Undergraduate degree in accounting or ACCT 6012
3-0-3

This course reviews the research on moral development and ethical choices, the dilemmas and accepted solutions for accounting professionals.

3 Credits

Electives (Select one course from the following list)

ACCT 6045 - Forensic Accounting

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

This course covers the practice of forensic accounting in which the knowledge of advanced accounting is combined with investigative expertise and applied to legal problems.

3 Credits

ACCT 6053 - Business Valuation and Performance

Prerequisite: Transitional Courses, if required

3-0-3

This course provides students with the skills necessary to understand, analyze, evaluate, and use the information available in corporate financial reports. It also investigates corporate mergers, acquisitions, and corporate restructuring framework. Consideration is given to issues faced by corporate managers as they design reporting strategy.

3 Credits

ACCT 6068 - International Accounting

Prerequisite: Transitional Courses, if required
3-0-3

This course focuses on the evolution of the international dimensions of accounting and the national differences in accounting thought, practice, problems, and issues from other accounting systems. There is also a survey of international standards.

3 Credits

ACCT 6075 - Tax Research and Planning

Prerequisite: Transitional Courses, if required
3-0-3

This course uses student's tax research skills to discover new knowledge on advanced tax topics such as passive activity losses, alternative minimum taxes, international taxation, and multi-state taxation. The course also includes gift and estate tax compliance and tax planning as well as deferred compensation.

3 Credits

Architecture

Admission Requirements

Upon receiving all application materials, each application will be carefully reviewed. The review and recommendation is based upon:

- Bachelors Degree from a regionally-accredited institution in Architecture, allied design disciplines, engineering, humanities and liberal arts.
- GRE Scores: Verbal 159, Quantitative 160, Analytical 3.5
- Minimum Grade Point Average of 3.0
- Statement of Purpose: A concise narrative of your design or research focus (2 pages)
- Design Portfolio: Applicants coming from design disciplines (15 pages in pdf format).

International students should refer to the International Students sub-section for additional admission requirements.

International Students

International applicants who do not possess a bachelor's degree from a college within the United States must submit the following additional information to the Admissions Office:

- An official transcript (translated into English) of college-level education,
- Official Course-by Course Equivalency of transcripts by an approved credentialing agency (such as WES),
- Score on the Test of English as a Foreign Language (TOEFL),
- An affidavit indicating financial security.

A minimum TOEFL score of 213 on the computer version, 550 on the paper version or 79 on the Internet version is required. International students on F-1 and J-1 visas must purchase medical insurance made available through Southern Polytechnic State University or provide proof of alternate coverage through a comparable policy.

International applicants applying from outside of the United States must submit all admissions documents, including Immunization Certificate, at least 60 days prior to the deadline dates.

Architecture, Master of Science

The Master of Science in Architecture is 36 credit hour program with two concentrations: Technology in Architecture OR Urbanism.

Essential Skills

ARCH 6000 - Critical Inquiries and Discourses

Prerequisite: Admission to program
3-0-3

This course addresses the relevance of research questions in architecture and the assumptions that underlie them. The course emphasizes the essential role of description for formulating theoretical and methodological questions about the built environment and design. Such descriptions assist in the discovery of regularities that can be translated into theoretical questions and research hypotheses. The course is taught in a combined lecture and seminar format.

Learning Outcomes:

- Students will develop analytic and synthesis skills appropriate for generation of original research questions in architectural theory and design practice.
- Students will demonstrate proficiency in formulating a well structured research hypothesis.

3 Credits

ARCH 6020 - Collaborative Studio

Prerequisite: Admission to program
3-0-3

This course provides an opportunity to all graduate students admitted in the Program to collaborate in groups of two on real-time and real-life design projects assigned to them.

3 Credits

ARCH 6030 - Research Methods

Prerequisite: Admission to program
3-0-3

This course is aimed at research methods for graduate students in architecture. The course combines a survey of current qualitative and quantitative approaches to research with the development of visual methods for constructing arguments. The purpose is to prepare students in various techniques of describing and understanding the built environment. It addresses the nature of scholarly research, the types of evidence, critical reading, and presenting and illustrating scholarship in the various disciplines of architecture.

Learning Outcomes:

- Discuss and implement relevant techniques and skills in formulating research approaches in architecture.
- Understand the mechanics of formulating and conducting a thesis exploration.

3 Credits

ARCH 6100 - Advanced Architectural Practices

Prerequisite: ARCH 6000

3-0-3

This course investigates creative transitions and transactions in the architecture profession that are giving rise to new critical learning models, knowledge and applications. It will underpin temporal, perceptual and analytical trajectories for anticipating the creative disruptions and innovations at human, architectural, urban and global scales. Students will collaborate and share their cross and inter-disciplinary thoughts using heuristic approaches to facilitate their explorations. The course is about self-learning and letting others know what you have learned through your independent investigations.

Learning Outcomes:

- Students will investigate different relations between architecture and the sciences
- Students will learn concepts of human perception and innovative technology, integrated practices and 21st century habitats.
- Students will learn how earlier and existing studies of theoretical and empirical models as programmatic and architectural constructs relate to current practice.

3 Credits

ARCH 6150 - Applied Skills and Approaches

Prerequisite: Admission to program & ARCH 6000

3-0-3

Students upon approval of their advisor will choose a course aiding to their skill-base to support their research relevant to their concentration.

3 Credits

IDC 6001 - Professional Practices of Communication

3-0-3

Overview of technical writing and editing. Emphasis on drafting and editing many documents that reflect the variety of writing done in the field of professional communication. Both experienced and inexperienced writers will benefit from this course, which must be taken the first semester of enrollment in the master's program.

3 Credits

Technology in Architecture

ARCH 6400 - 3D Digital Animation and Multimedia

Prerequisite: ARCH 6000

3-0-3

This course provides students the opportunity to learn and practice effective design presentation techniques through computer generated 3D modeling, rendering, animation and compilation of audiovisual elements through digital editing. This course highlights animation and presentation techniques through a series of projects. The course also focuses on creation of an architectural documentary with information through various audiovisual graphics. From given exercises and projects, students will be expected to learn 3D modeling, lighting, texturing, and animation. By the end of the semester students will be expected to utilize the skills for animation projects highlighting features of a structure and creating documentary on a topic related to architecture.

Learning Outcomes:

- Gain knowledge of geometrical and generative concepts related to digital design.
- Explore the role of information in design, project representation and information processing and its impact on working modes in design and construction
- Explore concepts of digital collaboration among the various design professions
- Experiment with new digital fabrication technologies

3 Credits

ARCH 6470 - Analytical Models of Form

3-0-3

This course examines the interaction of generative rules and descriptions of form relative to representation, exemplification, metaphor and expression. Shape grammars, transformations in design, rule definition and rule application. The geometry of environment, modular spaces, locations and associations, spatial allocation procedures, network distances and routes, space and symbolic form, & symmetry groups in plane are studied.

Learning Outcomes:

- Apply techniques of network theory and spatial computational analysis.
- Develop analytical, investigative and synthesis complex urban and architectural forms.
- Apply spatial analysis to explore solutions to urban problems.

3 Credits

- ARCH 6040 - Directed Study [In Concentration [Advisor's Approval] **3 credits**

Advanced Design Thesis

ARCH 7200 - Design Studio I

Prerequisite: Approval of advisor

6-0-6

Design studio investigates the architectural, urban, communal, technological, historical and sustainable dimensions infused with socio-cultural, contextual and political manifestations that shape urban, communal and physical processes in the synchronic and diachronic development of a city and its architectural edifices. These critical processes are subject to analysis to comprehend planning and design interventions of our time. Urban design and its development must be understood as the unfolding of social, cultural, economic and political processes, and communities are the physical embodiments of these processes within the city. The forms and layout patterns of a block, a neighborhood, a development district, a transportation corridor, a system of open spaces are examined as the physical phenomena and as manifestations of contemporary values, social needs and traditions in communities existing in urban and suburban settings.

Learning Outcomes:

- Prepare a thesis proposal with a "hands on" approach to extensive analysis and synthesis.
- Investigate synchronic and diachronic modus operandi shaping various physical settings within an urban environment.
- Learn to develop various strategies to examine potential spatial and morphological shifts within an urban or suburban environment and their socio-cultural implications on future developments.
- Hone skills and craft to present solutions following their critical research agenda, critical design approach and strategies.

6 Credits

ARCH 7300 - Design Studio II

Prerequisite: ARCH 7200

6-0-6

This studio is a continuation of Arch 7200 with a strong emphasis on completing a comprehensive urban design supported by appropriate research and presented in a quality professional manner.

Learning Outcomes:

- Carry forward the development of Arch 7200 to thesis level completion or address a new scenario in an individual or collaborative mode.
- Refine the essential skills developed in Arch 7200 through repetitive application on defensible analysis and design vectors.

6 Credits

Urbanism Concentration

ARCH 6250 - Housing

3-0-3

This course is a broad investigation of how humankind developed shelter as a function of cultural and physical environmental forces from the recorded dawn of history to our present day. We shall trace the worldwide emergence of diverse forms through pre-urban times and sequentially engage the eastern and western traditions of housing trends in urban settings. The course will marry a study of socio/economic history with a study of complementary design.

Learning Outcomes:

- Able to identify and characterize markets for housing systems.
- Be familiar with the successes and failures of housing systems in the past.
- Understand constraints and opportunities for housing systems.
- Appreciate the dimensions of advanced technology application in systems.
- Be able to effectively critique systems designs of their peers for given scenarios.

3 Credits

ARCH 6350 - Urban Development and Policy

Prerequisite: ARCH 6300

3-0-3

The valued legacy of the past and overlapping design and policy efforts of renewal, redevelopment, revitalization, preservation and conservation of neighborhoods and main urban corridors have always been points of contention, controversy and at the same time indicate a continued resolve to seek solutions to urban problems.

This course examines theory and praxis of the redevelopment process using urban redevelopment case studies of recent history. Knowledge of redevelopment precedents provides foundation to understand the fundamental principles of regenerative urban interventions crucial to the redevelopment of a neighborhood, urban park, housing and mixed used developments -- their failures and successes, why and how.

Learning Outcomes:

- Employ and gain expertise in research, critical thinking, and collaborative skills.
- Gain expertise and understanding in use of precedents and develop skill in analyzing conditions within broader understanding of national and regional traditions.
- Resolve conflicts between environmental conservation and the formal urban order.
- Gain knowledge of human behavior, diversity, and traditions in the context of architecture and urban settings.

3 Credits

- ARCH 6040 - Directed Study [In Concentration] [Advisor's Approval] **3 credit**

Advanced Research Thesis

ARCH 7400 - Applied Research I (Thesis)

Prerequisite: Approval of advisor
6-0-6

The applied research thesis provides student an opportunity to develop Research Designs that integrate inter, cross and multi-disciplinary tenets within design and planning and with other non-design disciplines. Students investigate their research question in light of paradigm shifts and changes using epistemological, theoretical and applied body of work. Their research must contribute to the existing body of knowledge and/or provide new insights to the existing body of knowledge to extend further research in a field of study or development of new exploratory frameworks and/or policies.

Learning Outcomes:

- Prepare an applied Research Design followed by a research methodology and a hypothesis contributing to extensive analysis and synthesis to test the research question.
- Investigate a research question or body of work at a point in time and its significance and its modus operandi to master and contribute to new knowledge.
- Investigate a research question or body of work that developed over time and its modus operandi to master and contribute to new knowledge.
- Hone critical thinking and applied research skills to present solutions to defend their critical research agenda and investigative strategies leading to mastery and contribution to new knowledge.

6 Credits

ARCH 7500 - Applied Research II (Thesis)

Prerequisite: ARCH 7400 & approval of advisor
6-0-6

This second thesis semester is a continuation of Arch 7400 either as an independent effort or in collaboration to complete a defensible Masters level thesis to include findings.

Learning Outcomes:

- Carry forward development of Arch 7400 to thesis level completion or address a new scenario in an individual or collaborative mode.
- Refine the essential skills developed in Arch 7400 through repetitive application on defensible analysis and design vectors.

6 Credits

Business Administration

Offering the Master of Business Administration Degree

Admission to the MBA program is open to persons holding the bachelor or higher degree from an accredited college.

Admission Procedure

Applicants to the MBA program must submit the following to the Graduate Studies Office no later than the semester deadline date before the beginning of the semester in which they plan to enroll:

- An [online application](#) for admission
- An official copy of scores from the GMAT (within the past five years)
- An official transcript from each college the applicant has attended,
- Certificate of immunization
- At least three recommendation forms which have been completed by former or current supervisor, professors, or professional colleagues.
- Statement of purpose
- A resume, while not required, is suggested.

International students should refer to the *International Students* sub-section for additional admission requirements.

Admission Criteria

Applicants for admission to the MBA program are expected to take the GMAT exam prior to being accepted into the MBA program.

Applicants must meet the following criteria:

1. Regular admission index: $GMAT + (200 * \text{undergraduate GPA}) = 925$
2. Transition Certificate: $GMAT + (200 * \text{Transition Certificate GPA}) = 1025$

In order to have scores forwarded to SPSU you must provide our reference code number (5626) on your test application.

Students may also use the GRE using the conversion formula given on the GRE web site.

Incoming students with 3.0 or less on the writing portion of the GMAT or GRE will be required to take the IDC 5001 course in their first semester at SPSU (or as soon as it is offered). Students who do not pass the course would be required to retake it.

Advanced Admission Criteria

A candidate for admission who has already earned a recognized Masters or doctorate degree in another field of study is NOT required to take the GMAT if the advanced degree has been completed at an accredited university in the United States.

Admission Status

The MBA coordinator in conjunction with the department head determines the student's admission status.

Regular admission status applies to students who have met all of the admission requirements of the MBA program. Fully admitted students who have not taken courses in the common professional core (CPC) will be required to take the 5000-level transition courses or equivalent undergraduate courses to fulfill this requirement.

Provisional admission status is offered on an exception basis only. With provisional admission, students are limited to designated courses during a specified time period while they work to fulfill the full admission requirements. Students with provisional admission status are not guaranteed full admission status.

Post-baccalaureate status is available to students who meet the admission criteria but who are NOT seeking a degree.

Master of Business Administration Transition Course Requirement

Accreditation standards require that all students being awarded the Master of Business Administration satisfy the Common Professional Core (CPC). This requirement may be satisfied by completing MBA transition courses or undergraduate courses in the following subject areas: accounting, finance, economics, business law, management and organizational behavior, marketing, and statistics. Applicants who have earned undergraduate credit with a grade of "C" or better for courses such as these will be considered to have satisfied the Common Professional Core for those areas.

Business Administration, MBA

Total Hours: 36

Academic Standing

In all graduate programs, a minimum of a 3.00 G.P.A. is required to be in good standing and to be eligible to graduate. No grades below 'C' may be applied to a graduate program's requirements, and a maximum of 2 'C' grades at the level of 6000 or above may be applied to a graduate program's requirements.

In the 5000-level transition courses, a grade of "C" or better is required for each course and an overall "B" average (3.00) is required. Students must maintain a 3.00 average to remain in good standing.

Special Topics Courses

The Business Administration Department offers **special topics** courses in a variety of areas: accounting, business administration, finance, healthcare, management, management information systems, marketing, and operations and technology management. These courses may fit into a concentration (depending on the subject area) or in a general MBA.

Independent Study

Students interested in research may be able to complete an **independent study** course under the supervision of a professor. Students prepare a one-page proposal for the course and submit it for approval. A course substitution form would be required to apply the course to a concentration.

Cross-Registration

Students who wish to take a graduate course at another university through **cross-registration** at a member institution in ARCHE must complete the appropriate forms, verify that the requirements have been met, and submit the forms to the MBA Coordinator to obtain approval for the course prior to enrollment. Cross-registration has an earlier deadline than SPSU registration. Please check with your advisor early if you are planning to cross-register.

Transfer Courses

In general, a maximum of nine (9) credit hours may be approved for use toward the degree. Students in a master's degree program at a university having a dual-degree agreement with SPSU are allowed to transfer a maximum of 12 credit hours. A course substitution form may be required to use the courses as a required course or an elective.

Degree Requirements

The requirement to complete the degree is **36** semester hours at the 6000 level. Students will complete eight required courses and four electives.

Required Courses 24 Credits

ACCT 6000 - Managerial Accounting

Prerequisite: MGNT 5002 and MGNT 5004, or undergraduate financial accounting and managerial accounting courses
3-0-3

This course deals with the procedures and concepts of computing and allocating costs for reporting, pricing, planning and control, and internal decisions making. It will focus mainly on the principles and techniques dealing with merchandise and manufacturing costing, job order and process costing, standard and conventional costing, and make or buy decision-making.

3 Credits

MGNT 6002 - Corporate Finance

Prerequisite: MGNT 5006 or undergraduate accounting and finance courses
3-0-3

This course includes a review of capital budgeting and ratio analysis, making further extensions in the areas of probability-dependent project analysis, co-varying risks and optimal capital structure. Other topics include working capital management, insurance, and hedging strategies.

3 Credits

MGNT 6004 - Service and Production Operations Management

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in management principles and an undergraduate course in statistics
3-0-3

A survey of service and production operations management. Topics include productivity, forecasting, competitiveness, operations strategy, product and service design, process design selection, capacity planning, facility layout, design of work systems, and location planning.

3 Credits

MGNT 6005 - Managerial Economics

Prerequisite: MGNT 5012 and MGNT 5014 or an undergraduate course in principles of economics and an undergraduate course in statistics
3-0-3

An analysis of economics that applies microeconomic techniques to business decisions. In particular, it connects economic theory and economics in business practice. Course contents include risk analysis, production analysis, capital budgeting, decision theory, and financial economics.

3 Credits

MGNT 6008 - Marketing Management

Prerequisite: MGNT 5008 or an undergraduate course in marketing principles
3-0-3

This course will present the logic and common sense associated with sound marketing management principles under changing global conditions. The student will be able to apply these principles, not only to specific managerial environments, but also to understanding events occurring on a daily basis in today's dynamic global marketplace. Through cases and projects students

examine strategic and tactical planning and decision making for marketing situations.

3 Credits

MGNT 6010 - Management of Information Technology

3-0-3

A comprehensive study of the concepts and issues involved in managing information technology within organizations. Includes focus on information technologies, acquiring and applying information technologies and systems, and their utilization in managing and decision-making activities.

3 Credits

MGNT 6025 - Managing Professionals

Prerequisite: MGNT 5000 or an equivalent undergraduate course in management and organizational behavior

3-0-3

An applied management skills course which covers principles of management using behavioral guidelines grounded in research. Students develop and apply leadership and team-building skills through experiential learning. Topics include communication, creative problem solving, motivation, power and influence, and conflict management.

3 Credits

MGNT 6090 - Strategic Management CAPSTONE COURSE

Prerequisite: Students should take this course within the last two semesters of the degree program, requires instructor approval.

3-0-3

Exposes the student to the process of strategic decision-making. Emphasis is placed on the use of SWOT analyses in development of the strategic plan and the determination of the long-term character of the enterprise. Cases will be analyzed, and classroom presentations will be made by distinguished industrial executives and leaders.

3 Credits

Electives/Concentrations (12 hours)

In consultation with their advisor, MBA students select four elective courses, either for a concentration or a general MBA degree (with no concentration). Concentrations include accounting, finance, management, management of information systems, marketing, quality management, or operations and technology management.

MBA students who wish to take electives via cross-registration or from another graduate program at SPSU should consult with their advisor to make sure that course(s) they wish to take would be appropriate for their degree. Approval may also be required by the host department.

Accounting Concentration

Prerequisite courses for graduate Accounting electives:

ACCT 5007 - Intermediate Accounting I

Prerequisite: MGNT 5002 and MGNT 5004, or undergraduate financial accounting and managerial accounting courses

3-0-3

This course covers a review of the accounting process, detailed analysis of financial statements, time value of money concepts, and current and operational assets.

3 Credits

ACCT 5009 - Intermediate Accounting II

Prerequisite: ACCT 5007
3-0-3

This course covers a review of the financial statements with respect to investments, current liabilities and contingencies, bonds and other long term debt, leases and tax.

3 Credits

ACCT 6000 - Managerial Accounting

Prerequisite: MGNT 5002 and MGNT 5004, or undergraduate financial accounting and managerial accounting courses
3-0-3

This course deals with the procedures and concepts of computing and allocating costs for reporting, pricing, planning and control, and internal decisions making. It will focus mainly on the principles and techniques dealing with merchandise and manufacturing costing, job order and process costing, standard and conventional costing, and make or buy decision-making.

3 Credits

Four of the following courses (in addition to ACCT 6000 Managerial Accounting):

ACCT 6006 - Advanced Management Accounting

Prerequisite: Undergraduate degree in accounting or ACCT 5013 or ACCT 6000
3-0-3

An advanced-level discussion of variance analysis, cost allocation, transfer pricing, and the use of modeling to solve business problems.

3 Credits

ACCT 6007 - Advanced Accounting Information and Control Systems

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

This course focuses on the design, implementation, and evolution of accounting information with emphasis on ERP systems.

3 Credits

ACCT 6012 - Auditing

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

Auditing processes and concepts involved in performing an examination of the financial statements and internal controls of public and privately held business entities.

3 Credits

ACCT 6030 - Taxation of Entities

Prerequisite: Undergraduate degree in Accounting or ACCT 5009
3-0-3

This course addresses the fundamental principles and exceptions related to the taxation of various forms for entities.

3 Credits

Other graduate accounting courses as approved.

Note: Students interested in professional accounting certification should meet with the Graduate Accounting advisor.

Finance Concentration

Four of the following courses:

MGNT 6232 - Financial Planning and Capital Budgeting

Prerequisite: MGNT 6002 or equivalent
3-0-3

This course is designed to provide students with an in depth background in financial planning and corporate capital budgeting decisions.

3 Credits

MGNT 6231 - Financial Institutions Management

Prerequisite: MGNT 6002
3-0-3

The purpose of this course is to provide a broad overview of the organization and management of financial institutions. It introduces a set of theories and empirical evidence that form the foundations of the finance discipline.

3 Credits

MGNT 6233 - Investment Theory and Portfolio Management

Prerequisite: MGNT 6002
3-0-3

This course introduces the major concerns of investors. It covers the skills to conduct an assessment of investment decisions, security analysis, portfolio risk measurement and asset allocation.

3 Credits

MGNT 6234 - International Finance

Prerequisite: MGNT 6002
3-0-3

This course examines the risks and constraints facing a multinational corporation. There is a special emphasis on managerial decisions regarding exchange rate exposure, international capital budgeting, and management economic exposure and translation exposure. It also provides an in-depth coverage of foreign exchange rates determination, factors and forecasting.

3 Credits

MGNT 697x - Special Topics in Finance

1 to 5

Special Topics in finance offered by the department on a demand basis.

1 to 5 Credits

Note: MGNT 6002 Corporate Finance is a prerequisite for all finance electives.

Management Concentration

Four of the following courses:

MGNT 6001 - Management Communications

3-0-3

Effective communication skills are essential for managers in high technology environments. This course emphasizes skill building in writing, oral presentations, interpersonal communication, and research.

3 Credits

MGNT 6015 - Technology and Innovation Management

Prerequisite: MGNT 5000 or an undergraduate course in management principles
3-0-3

This course emphasizes innovation and creativity, and evaluation and analysis of new technology. The objective is to learn how to evaluate new technologies (either hard or soft) in order to be able to determine whether or not to make significant investments in them.

3 Credits

MGNT 6020 - R&D Management

Prerequisite: MGNT 6015
3-0-3

A systematic examination of product innovations ranging from planning and research to development and commercialization or implementation of new product technology. Topics include pertinent business policy and strategic management issues, the process of innovation, concepts and interconnections between product and process creativity management, technology transfer, and relevant marketing issues. Students will analyze cases and complete a project.

3 Credits

MGNT 6060 - Entrepreneurship

Prerequisite: MGNT 5000 or an undergraduate course in management principles, MGNT 5006 or an undergraduate course in finance, MGNT 5008 or an undergraduate course in marketing principles, and MGNT 6005 or equivalent
3-0-3

This course addresses the management challenges associated with starting and successfully running a new venture. It provides students with an opportunity to apply the theories and tools that they have learned elsewhere in the curriculum to the venture creation process.

3 Credits

MGNT 6065 - Issues in International Management

Prerequisite: MGNT 5000 or undergraduate management principles, MGNT 5006 or undergraduate finance, MGNT 5008 or

undergraduate marketing) and MGNT 6005
3-0-3

This course deals with cultural, institutional, economic, and financial environments characteristic of international markets. It will focus on strategic and operational plans that managers must undertake in formulating international business activities.

3 Credits

MGNT 6070 - Issues in Human Resource Management

Prerequisite: MGNT 5000 or an undergraduate course in management principles
3-0-3

This course covers employment practices and employment law in unionized and non-unionized settings. The focus on decision making and administrative issues for managers.

3 Credits

MGNT 691x - Special Topics in Management

1 to 5

Special Topics in management offered by the department on a demand basis.

1 to 5 Credits

Management Information Systems Concentration

Four of the following courses:

MGNT 6032 - Information System Analysis and Design

Prerequisite: MGNT 6010
3-0-3

Provides an advanced understanding of the system development and modification process in business information systems. Introduces the factors for effective communication with and integration of users and user systems. Emphasis on analyzing, modeling and designing processes that improve business processes through the development of effective and efficient information systems. Covers system analysis, information requirements analysis and process, design and implementation.

3 Credits

MGNT 6034 - Database Development and Management

Prerequisite: MGNT 6032
3-0-3

Provides the theory and practice of database development and management, and the application of database software to implement business information systems that support managerial and operational decision making. Special emphasis will be placed on database applications software to manage resources within the functional areas of business.

3 Credits

MGNT 6038 - Advanced Database Development and Management

Prerequisite: MGNT 6032 or MGNT 6034
3-0-3

Covers advanced concepts of the theories and practices of database development and management in various business

environments. Includes advanced topics such as data and database administration, distributed databases, object-oriented data modeling and development, and data warehousing and mining.

3 Credits

MGNT 6050 - Project Management

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in management principles and an undergraduate course in statistics

3-0-3

A study of the project planning, organizing, control concepts and techniques. Coverage will include projects and specifications. Work Breakdown Structures (WBS) the Critical Path Method (CPM), the Program Evaluation and Review Technique (PERT), Gantt charting, and time/resource management.

3 Credits

MGNT 695x - Special Topics in MIS

1 to 5

Special Topics in management information systems offered on a demand basis.

1 to 5 Credits

Note: MGNT 6010 Management of Information Technology is a prerequisite for all MIS electives.

Marketing Concentration

Four of the following courses:

MGNT 6022 - Sales Management

Prerequisite: MGNT 5008 or an undergraduate course in marketing principles

3-0-3

Sales management will highlight the differences experienced by a sales manager from those of a manager geographically located with his or her subordinates. The "arms length" supervision requirements of sales management will better equip the student to manage and motivate any group in a business environment. Emphasis is also placed on hiring skills needed to maintain and expand a sales force.

3 Credits

MGNT 6024 - Business-to-Business Marketing

Prerequisite: MGNT 5008 or an undergraduate course in marketing principles

3-0-3

This course focuses on the buying patterns practiced in the industrial marketplace. The course builds a foundation for the student to better understand the underlying conditions that govern an industrial marketing transaction beyond the immediate product or service that is being sought. The role of technology and its importance in the development of industrial products is explored along with the critical role of services to the products with which they are connected.

3 Credits

MGNT 6028 - Marketing Research

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in marketing principles and an undergraduate course in statistics

3-0-3

Marketing Research enables the student to conduct an opinion research project to better understand the underpinnings of a successful marketplace query. "Hand-on" experience in questionnaire design, data gathering and analysis. Student teams prepare both a written and oral presentation of the results to experience the relationship between researcher and management in the gathering and communication of research information. The statistics prerequisite enables the students to effectively utilize SPSS for Windows to manipulate the gathered data and use it to support meaningful decisions.

3 Credits

MGNT 694x - Special Topics in Marketing

1 to 5

Special Topics in marketing offered by the department on a demand basis.

1 to 5 Credits

Note: MGNT 6008 is a prerequisite for all marketing electives.

Operations and Technology Management Concentration

Four of the following courses:

MGNT 6015 - Technology and Innovation Management

Prerequisite: MGNT 5000 or an undergraduate course in management principles
3-0-3

This course emphasizes innovation and creativity, and evaluation and analysis of new technology. The objective is to learn how to evaluate new technologies (either hard or soft) in order to be able to determine whether or not to make significant investments in them.

3 Credits

MGNT 6020 - R&D Management

Prerequisite: MGNT 6015
3-0-3

A systematic examination of product innovations ranging from planning and research to development and commercialization or implementation of new product technology. Topics include pertinent business policy and strategic management issues, the process of innovation, concepts and interconnections between product and process creativity management, technology transfer, and relevant marketing issues. Students will analyze cases and complete a project.

3 Credits

MGNT 6040 - Current Readings in Technology Management

3-0-3

This course will examine how technology affects 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.

3 Credits

MGNT 6046 - Quantitative Analysis

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in management principles and an undergraduate course in

statistics
3-0-3

A survey course of the mathematical and analytical techniques available for the managerial decision-making process. The student is introduced to operations research and system analysis techniques. These techniques include linear programming, simulation, waiting line analysis, forecasting, and CPM/PERT.

3 Credits

MGNT 6050 - Project Management

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in management principles and an undergraduate course in statistics
3-0-3

A study of the project planning, organizing, control concepts and techniques. Coverage will include projects and specifications. Work Breakdown Structures (WBS) the Critical Path Method (CPM), the Program Evaluation and Review Technique (PERT), Gantt charting, and time/resource management.

3 Credits

QA 6602 - Total Quality

3-0-3

This course is a study of the functions and responsibilities of the quality organization. TQM concepts, quality function deployment, and the tools for continuous improvement are analyzed for sequence of use and application. Emphasis is placed on design and performance aspects of a system-wide quality assurance function.

3 Credits

SYE 6070 - Logistics and Supply Chain Management

3-0-3

This course focuses on decisions vital to success in typical business environments characterized by competition and scarce resources. Students will develop skills in applying a variety of techniques to solve logistics and supply chain management problems. Topics covered will include information sharing and aligning incentives along the supply chain; demand forecasting; inventory decisions; transportation mode and route selection; and pricing and revenue management.

3 Credits

MGNT 698x - Special Topics in Operations and Technology Management

1 to 5

Special Topics in operations and technology management offered on a demand basis.

1 to 5 Credits

Quality Principles Concentration

QA 6602 - Total Quality

3-0-3

This course is a study of the functions and responsibilities of the quality organization. TQM concepts, quality function deployment, and the tools for continuous improvement are analyzed for sequence of use and application. Emphasis is placed on design and performance aspects of a system-wide quality assurance function.

3 Credits

QA 6610 - Statistics for Quality Assurance

3-0-3

Descriptive statistics for discrete and continuous variables, probability distributions, confidence intervals and hypothesis testing, elementary control charts for variables and attributes, the design of acceptance sampling plans, analysis of variance, and regression and correlation analysis.

3 Credits

QA 6611 - Statistical Process Control

Prerequisite: A course in statistics, such as MATH 2260, IET 3403 or QA 6610

3-0-3

The application of advanced statistical methodologies to the analysis and solution of quality and management problems, including probability theory, control charts, sampling, regression analysis, and design of experiments. The focus is on statistical process control and related quality technologies.

3 Credits

QA 6650 - Quality Systems Design

Prerequisite: QA 6602

3-0-3

Quality Systems Design prepares students for the development of the quality organization, systems, and procedures necessary for effective participation in world markets. Creating and documenting methods and procedures are stressed.

3 Credits

General MBA - no designation concentration

Any four MBA electives

Transition Certificate Courses

The following transition courses cover the Common Professional Core and may be required for students who have not previously taken business courses. These courses may not be used to satisfy graduate degree requirements.

MGNT 5000 - Survey of Management

1.5-0-1.5

Overview of management includes managing people and production, planning and control, strategy, global business, ethics, and management careers.

1.5 Credits

MGNT 5002 - Survey of Financial Accounting

1.5-0-1.5

This course is a study of the application of accounting principles and the accounting cycle used in business of corporations to record historical economic transactions reported in financial statements to be used by decision makers internally and externally.

1.5 Credits

MGNT 5004 - Survey of Managerial Accounting

Prerequisite: MGNT 5002 or an undergraduate financial accounting course
1.5-0-1.5

This course is a study of the application of accounting principles to specialized problems in business of corporations, special reports, and analyses of accounting information, fundamentals of management accounting, information and analysis for planning and controlling, decision analyses, cost management, and continuous improvement.

1.5 Credits

MGNT 5006 - Survey of Finance

1.5-0-1.5

This course provides an introduction to 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.

1.5 Credits

MGNT 5008 - Survey of Marketing

1.5-0-1.5

A study of the theory and principles of marketing. Emphasis will be placed upon the concept of customer satisfaction. Topics to be covered include total quality management (TQM), innovation, product distribution, cooperative associations, advertising and salesmanship, and the development of brands and trademarks.

1.5 Credits

MGNT 5010 - Survey of Business Law

1.5-0-1.5

An overview of the legal area survey of the areas of law-ethics, contract, partnership, corporation.

1.5 Credits

MGNT 5012 - Survey of Economics

1.5-0-1.5

Applies economic theories that assist in explaining and understanding macro and micro economic policies. Particular emphasis is given to the study of unemployment, national income, fiscal and monetary policies, etc., and to the study of the impact of government upon the functioning of industry.

1.5 Credits

IDC 5001 - Writing in the Professions

3-0-3

Introduction to the conventions of professional written discourse for graduate-level work. Course reviews grammar, style and writing for students who demonstrate weak writing skills or for students without writing-intensive undergrad degrees. Also introduces writing for areas of information design, content development, visual thinking and instructional design. Taken the first semester of enrollment in the MSIDC, MSIID and certificate in Technical Communication programs.

3 Credits

QA 5000 - Statistical Concepts for Quality Assurance

1.5-0-1.5

Students will learn basic statistical concepts including exploratory data analysis, probability distributions, confidence intervals and hypothesis tests. Analysis using Excel and Minitab will be introduced.

1.5 Credits

Civil Engineering

This document presents guidelines for admission to the SPSU Master of Science in Civil Engineering (MSCE) program which is offered to graduates of recognized undergraduate curricula. Admissions standards are set that admitted students have a firm foundation leading to a high probability of success in the program.

Candidates may receive regular admission or provisional admission depending on an evaluation of the candidate's documented academic and professional record in consideration of the admission criteria discussed below. Note that the admission standards are minimum standards and meeting these standards does not guarantee admission to the MSCE program

Regular Admission

- BSCE from ABET accredited engineering program
- Applicants who are considered for regular admission are required to submit GRE scores:

>143 Verbal and >155 Quantitative

Students with credentials outside of the U.S. must also submit the following:

- Course-by-course transcript evaluation with grade point average calculation from an approved credentialing agency (see graduate admissions page)
- If native language is not English either the TOEFL or IELTS must be submitted with the following minimum score:
 - TOEFL 213, computer-based; 80 Internet based; writing score of 21
 - IELTS 6.5

Regular admission may also be granted in other cases based on a review of the applicant's record, including, but not limited to the following:

- BSCE from foreign university that is comparable to an ABET accredited program
- Professional accomplishments, such as PE license, completion of noteworthy projects, record of scholarly publications.
- Successful completion of graduate level engineering coursework from a recognized institution.

Provisional Admission

Provisional admission is offered when there are special circumstances or extenuating conditions, depending on the number of applicants and their quality and if there are adequate resources available to support the needs of the students.

Students granted provisional admission will be required to satisfy additional conditions to remain in the MSCE program. These conditions will be determined on an individual basis but generally consist of successful completion of additional preparatory coursework and/or satisfaction of certain academic expectations. Candidates admitted in this category are normally required to complete their first 12 hours of graduate-level work with a minimum GPA of 3.0. Applicants who are considered for provisional admission are required to submit official GRE scores

Minimum GRE scores for provisional admission are:

- 143 Verbal
- 155 Quantitative

The minimum required cumulative GPA is 3.0. In some cases provisional admission may be granted for candidates with a slightly lower score if other parts of their application are particularly strong.

Applicants with ABET accredited degrees

Applicants with an ABET accredited BSCE, but who are missing foundational coursework relevant to their technical option, or thesis who have low grades in individual courses, may be required to complete appropriate foundational coursework with a grade of B or better.

Applicants without ABET accredited BSCE

1. Applicants who have a BSCE from a foreign institution will be evaluated individually and the offer of provisional admission will be based on the evaluated transcript by an approved credentialing agency (see graduate admissions page for approved agencies). In some cases, applicants with outstanding academic records from well-regarded institutions may be granted regular admission.
2. Applicants with a BSCE from a non-ABET accredited US institution will be considered if the degree is from a regionally accredited institution comparable in standards and content to SPSU.
3. Applicants with BS degrees in other engineering fields, or in closely related fields will be considered for provisional admission on a case-by-case basis.
4. Applicants with degrees in Engineering Technology will be considered for provisional admission and must submit GRE scores and meet the following minimum requirements.
 - Minimum cumulative undergraduate GPA of 3.0
 - Minimum GPA of 3.0 in preparatory coursework equivalent to the following SPSU courses: PHYS 2211, PHYS 2212, MATH 2254, CHEM 1211, CHEM 1212, MATH 2306, MATH 2206
 - Evidence of academic competence equivalent to passing the Fundamentals of Engineering (FE) exam administered by NSPE. In the event that a candidate cannot sit for the FE, alternate measures of equivalent competency, such as qualifying exam scores, may be considered.

Civil Engineering, Master of Science

The MSCE is a 30 credit hour degree with Thesis or Non-Thesis option.

Degree Requirements

Essential Skills

CE 6002 - Research Methods

Prerequisite: Admission to program
3-0-3

This course addresses the research questions and their relevance to Civil Engineering theory and design practices. It is intended to develop the techniques and skills necessary to complete an original academic research thesis or project report. The development of critical thinking skills relevant to research is an essential element of this course.

3 Credits

CE 6003 - Probabilistic Analysis and Reliability in Civil Engineering

Prerequisite: Approval of advisor
3-0-3

Introduction to probability modeling and statistical analysis in civil engineering. Emphasis is on the practical applications of common probability models used in civil engineering. This course focuses on the application of statistical reasoning and is project-based.

3 Credits

Concentration in Structural and Geotechnical Engineering

CE 6101 - Finite Element Analysis

Prerequisite: CE 3201 or approval of advisor
3-0-3

Introduction to the use of finite element methods in structural analysis; the finite element formulation; 1- and 2-D elements; isoparametric elements; axisymmetric analysis; plate and shell elements; dynamics, buckling, and nonlinear analysis.

- Discuss the fundamental concepts of the Finite Element Method.
- Apply the basic properties, behavior and usage of different types of finite elements.
- Prepare FE models and solve typical Civil Engineering problems using FEM.
- Interpret and evaluate the quality of the results of FE simulations.

3 Credits

CE 6102 - Structural Dynamics

Prerequisite: CE 3201 or approval of advisor
3-0-3

Analysis of the dynamic response of structures and structural components to transient loads and foundation excitation; single-degree-of-freedom and multi-degree-of-freedom systems; response spectrum concepts; structural response to earthquakes, design criteria, and seismic safety.

- Estimate the fundamental natural frequency of simple structures.
- Determine the vibration characteristics of simple systems.
- Determine the resonance response of systems.
- Determine dynamic response of simple structures under a general forcing function.
- Use response spectra for earthquake loading.
- Investigate multiple-degrees of freedom systems.
- Model simple systems for earthquake analysis.

3 Credits

CE 6103 - Prestressed Concrete Design

Prerequisite: CE 3202 or approval of advisor
3-0-3

Theory of prestressed and post-tensioned members; Analysis and design of prestressed concrete beams, slabs, box girders, and bridge girders by elastic and ultimate strength methods; Precast and cast-in-place system construction techniques

- Discuss the basic concepts of prestressing procedures and materials, and the differences with reinforced concrete.
- Determine flexural stresses in prestressed concrete beams at different stages of construction and loadings as well as cracking load and flexural strength.

- Analyze and design various shaped-sections of prestressed concrete beams for flexure and shear, and design the end zone.
- Compute/estimate short term and long term prestressing losses.
- Analyze and design composite cast-in-place slabs (decks) with precast prestressed girders.
- Compute deflections and camber in prestressed concrete beams.
- Analyze and design prestressed continuous beams.

3 Credits

CE 6105 - Soil Improvement

Prerequisite: CE 4105 or approval of advisor

3-0-3

A study of various soil improvement techniques for construction projects. Subjects include geosynthetics, admixtures, grouting methods, along with engineering properties of materials used in soil stabilizations.

- Investigate and discuss alternative soil improvement methods satisfying the project requirements
- Investigate and discuss the civil engineering design practices using the probability models

3 Credits

Other Concentration Area

CE 6203 - Advanced Bituminous and Concrete Materials

Prerequisite: CE 4177 or approval of advisor

3-0-3

An advanced study on properties of aggregates, asphalt binder, Portland cement. Focuses on analysis and designs of hot-mix asphalt, and Portland cement concrete. Subjects include aggregate grading and blending, rheology of bituminous materials, chemical reactions and micro-structure of Portland cement concrete. Mixture designs, characterization, and special types of mixes will be included as well.

- Design hot-mix asphalt mixture satisfying the project specific requirements
- Design Portland cement concrete mixtures satisfying the project specific requirements

3 Credits

Thesis

CE 6401 - Master's Thesis

Prerequisite: Approval of advisor

6-0-6

Independent study using a recognized research method.

6 Credits

Non-Thesis

CE 6203 - Advanced Bituminous and Concrete Materials

Prerequisite: CE 4177 or approval of advisor
3-0-3

An advanced study on properties of aggregates, asphalt binder, Portland cement. Focuses on analysis and designs of hot-mix asphalt, and Portland cement concrete. Subjects include aggregate grading and blending, rheology of bituminous materials, chemical reactions and micro-structure of Portland cement concrete. Mixture designs, characterization, and special types of mixes will be included as well.

- Design hot-mix asphalt mixture satisfying the project specific requirements
- Design Portland cement concrete mixtures satisfying the project specific requirements

3 Credits

CE 6202 - Advanced Highway Design and Traffic Safety

Prerequisite: CE 4177 or approval of advisor
3-0-3

Providing a safe and efficient transportation system for all users is the primary objective of federal, state, and local transportation agencies throughout the nation. Better highway design practices have been proven to be the most efficient approach to "safer roads". This advanced highway design and traffic safety class is intended to provide the fundamentals of highway design and operation, human factors and vehicle characteristic and how they interact with the roadway, and highway safety analysis and different statistical techniques employed in the analysis.

- Design different highway facilities and apply relevant highway design standards
- Analyze crash and traffic data employing the appropriate statistical techniques
- Conduct traffic safety studies, identify high-accident locations, and propose crash countermeasure and potential engineering solutions.

3 Credits

CE 6304 - Advanced Hydraulics

Prerequisite: ENGR 3343 or approval of advisor
3-0-3

This course covers applications in pipe and open channel flow and hydraulic structures. Unsteady flow in pipes. Water hammer. Hydraulics of sediment transport. Spillway and design of small dams.

- Analyze transient flow in pressure pipe
- Analyze sedimentation and sediment transport phenomena
- Apply principles of hydraulics for energy generation
- Design spillways
- Analyze and design energy dissipaters stilling basins
- Analyze water quality data and interpret the water quality conditions in any waterways

- Solve problems in groundwater hydrology using principles of hydraulics
- Understand the issues of water planning and management
- Apply basic principles of hydraulics and hydrology in urban water resources and environmental projects
- Recognize the importance of incorporating the concept of sustainability in various water resources engineering design projects
- Evaluate the economic impacts of water resource alternatives
- Enhance student's awareness of current water resources and environmental issues

3 Credits

Computer Science

Offering the Master of Science Degree

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!

Whether you have a degree in computer science, no background in computer science, some academic experience in the field to your credit, or years of work as a computer professional under your belt, a Master of Science in Computer Science from Southern Polytechnic will enhance your career options. We provide the background necessary to analyze problems from multiple angles, and the resources to conduct research and complete projects while you are learning. Classes are available in the evenings to accommodate the needs of the working professional.

Students complete 36 hours of course work in classes that cover core areas, such as programming languages, database systems, computer architecture, algorithms, and software engineering, as well as electives in several cutting edge developments, such as game development, image processing, search engines, wireless networks, enterprise applications development, etc. The Masters courses are all taught by full-time faculty holding doctorates or occasionally by carefully elected experts from the industry. A master's thesis option is available. Graduate assistantships and research assistantships funded by sponsored research are available.

In addition to welcoming full-time students with degrees in Computer Science, we also cater to two major non-traditional groups of students: those whose schedules allow only for part-time studies and those without a degree in Computer Science. For the first group, we offer almost all of our classes during the evenings (and a few on Saturdays). For the second group of students, courses are offered that allow them to "transition" into the Masters courses. The six transition courses are packaged into the credit-based Graduate Transition Certificate in Computer Science (GTCCS). This Transition Certificate will also prepare you for graduate study or an entry-level position in the industry, and is available both face-to-face and online. (Our online courses use a variety of current technologies, including live classroom, online chat, virtual labs, etc.) For those that have completed the Graduate Transition Certificate in Computer Science or have a background comparable to a degree in Computer Science, a credit-based Graduate Certificate in Computer Science (GCCS) is available, and all courses taken for this certificate apply to the Master's degree program in Computer Science. Although no specific undergraduate major is required, applicants must have a baccalaureate degree from an accredited school.

Admission Procedure

- Applicants for admission to the Master of Science program with a major in Computer Science should submit the following to the Graduate Admissions Office:
- An application for admission to the program
- A transcript from each college the applicant has attended
- A certificate of immunization
- A statement of purpose in seeking this degree,
- Three recommendation forms completed by former or current supervisors, professors, or professional colleagues, and
- Optionally: An official copy of scores from the "General Test" of the Graduate Record Examination (GRE).

Submission of the GRE score is strongly recommended to international applicants and should be considered by all applicants to strengthen the application packet. The applicant may be required to submit the GRE score after an initial review, which could delay the decision process.

International students should refer to the International Students sub-section for additional admission requirements.

In addition to having a baccalaureate degree from a recognized college/university, one of the following must be met for a student to be considered for this MS program at Southern Polytechnic State University:

Basic

- Undergraduate GPA of 3.00 or better (out of a possible 4.0) or the equivalent
- Optionally: Official GRE scores meeting the current admission profile

Note: Higher scores may compensate for a lower GPA. In some cases, the GMAT may be considered.

Advanced

The candidate for admission has already earned a recognized Masters or doctor's degree in a closely related, quantitative field of study (e.g., engineering, physics, chemistry, mathematics); the GRE is not required for consideration. The GRE is strongly recommended if the degree is not from the United States.

Alternative

A student holding a baccalaureate degree from an accredited school who does not meet the criteria for Basic or Advanced categories may be admitted upon convincing the faculty of the School of CSE of extraordinary alternative qualifications (e.g., lengthy and distinguished employment in the computer field) that would predict the likelihood of success in completing the MS program.

Provisional Acceptance

Students applying to the program who do not have a degree in Computer Science, Software Engineering, or a computing-related field may be required to take necessary prerequisite courses to prepare for graduate study in Computer Science. Upon acceptance, the admissions committee will evaluate the student's transcripts and determine any necessary prerequisite courses the student must take. These required prerequisite courses are listed on the student's acceptance letter as a condition for being fully admitted into the Masters Program. If four or more prerequisite courses are required, the student will be eligible for the Graduate Transition Certificate in Computer Science.

Computer Science Graduate Transition Certificate

The Graduate Transition Certificate in Computer Science prepares individuals for Masters level computer science programs or entry-level positions in the industry. The program is designed for those students holding an accredited bachelor's degree in an area unrelated to computer science who have an interest in computer science. **This program is available in the traditional face-to-face format as well as fully online.**

Prerequisites include:

- Some knowledge of programming (equivalent to CSE 1301 – Programming & Problem Solving I; may be taken in addition to required courses if needed)
- Calculus

Applicants with satisfactory preparation in some transition topics may be allowed to substitute up to two approved 6000-level courses for the same number of required courses.

Requirements

The focus is on providing broad-based knowledge and skills. The required courses are:

- CS 5003 - Accelerated Introduction to Programming **3 Credits**

CS 5123 - Advanced Programming and Data Structures

Prerequisite: CSE 1302 or CS 5003

3-0-3

Transition course for graduate students with a limited background in programming. Topics include pointers, recursion, data structures such as lists, stacks, queues, trees, etc., sorting and searching, data abstraction, introduction to runtime analysis and the big-oh notation. Appropriate programming projects are also included.

3 Credits

CS 5153 - Database Systems

Prerequisite: CSE 1302 or CS 5003 or IT 5113

3-0-3

Transition course. This course provides an overview of various database models including relational, object-oriented, hierarchical, and network. Also covered are various file structures including sequential, indexed sequential, and direct. It covers planning, analysis, design, and implementation of a database. Entity Relationship models and normalization are covered. It covers an SQL-based database system such as Oracle. A major project and/or paper required.

3 Credits

CS 5223 - Computer Architecture

Prerequisite: CSE 1301 or CS 5003

3-0-3

Transition Course: Topics from the principles of computer organization and architecture include number systems, digital logic, basic logic design in combinational and sequential circuits, and assembly and machine language.

3 Credits

CS 5243 - Operating Systems

Prerequisite: (CSE 1302 or CS 5003) and CS 5223/ CS 3223

3-0-3

Transition Course: Topics from the principles of operating systems include management of resources including processes, real and virtual memory, jobs, processes, peripherals, network, and files.

3 Credits

CS 5423 - Mathematical Structures for Computer Science

Prerequisite: An undergraduate course in Calculus

Corequisite: CSE 1301 or CS 5003

3-0-3

Transition course: Topics from discrete mathematics include set theory, relations and functions, principles of counting, introductory graph theory, formal logic, recursion, and finite state machines.

3 Credits

Degree Requirements

CS 6123 - Theory and Implementation of Programming Languages

Prerequisite: CS 5123/3424 and CS 5423

3-0-3

Comparative study of programming language paradigms with emphasis on design and implementation issues. Covers formal definitions of syntax and semantics, data types, static and dynamic storage allocation, definition of operations, control of program flow, subroutine and function linkages, formal tools for characterizing program execution, and abstraction techniques.

3 Credits

CS 6223 - Advanced Computer System Architecture

Prerequisite: CS 5243/3243

3-0-3

Topics include computer performance issues, instruction set architectures, RISC versus CISC, machine language, microprocessor design and implementation, performance enhancing techniques, cache memory design, and implications to operating system design.

3 Credits

CS 6413 - Theory of Computation

Prerequisite: CS 5423

3-0-3

A study of topics from theoretical computer science that includes automata and languages, computability theory, and complexity theory.

3 Credits

CS 6423 - Algorithmic Processes

Prerequisite: CS 5123/3424 and CS 5423

3-0-3

Design and analysis of algorithms. Covers the major algorithm design techniques (greedy, divide-and-conquer, brand-and-bound, etc.), mathematical techniques for analyzing asymptotic complexity of algorithms, and tractability.

3 Credits

- Electives **24 Credits**

Degree Program Total: 36

Students need to take a total of 12 courses (36 credit hours) at the 6000 level or higher to graduate. This includes 4 required courses (see above). The remaining 8 elective courses must be from 6000-level courses as follows: 5 or more must be from CS, between 0 and 3 from SWE, and 0 or 1 from IT. (With departmental approval, courses from other departments, or up to 2 IT courses, may be included, but 5 or more courses must be CS courses.) Among the elective courses, students must include at least TWO courses from at least ONE of the following tracks. Courses in each track are given below; note that there are some 6000-level CS electives that do not appear in any of these tracks:

Research Track:

CS 6023 - Research Methods and Presentations

3-0-3

Materials and methods of scholarly research in computer science. Includes study of standard research paradigms with illustrative cases of each and the use of research methods and presentations in industrial and business settings.

3 Credits

CS 7803 - Masters Thesis

Prerequisite: Consent of the Department Chair and the Thesis Advisor

3-0-3

The thesis is designed for students wanting a research focus to their degree. The student works independently under the supervision of a designated CS faculty member on a thesis of substance in computer science. The student will generate a formal written thesis and give a final defense of the thesis. May Be Repeated: This course may be repeated, but only 6 hours may be applied toward the degree.

3 Credits

Software Engineering Track:

SWE 6623 - Software Engineering

Prerequisite: CS 5003 or CSE 1302 or equivalent

3-0-3

Transition: This course provides an overview of software engineering and explores both the theoretical principles and their application in the engineering of software-intensive systems. Topics cover the entire software development life-cycle and include software engineering process models, project management and planning, requirements engineering, software architecture and design, prototyping, verification and validation, usability and human factors, quality assurance, and professionalism and ethics. The course includes a real-world team project in which students are given hands-on experience utilizing state-of-the-art tools to analyze and design a software system.

3 Credits

- All other SWE 6000-level courses which have SWE 6623 as prerequisite

Systems and Architecture Track:

CS 6243 - Advanced Concepts in Operating Systems

Prerequisite: CS 5243/3243

3-0-3

Topics from the theory of operating systems include: memory and process management of high-performance architectures that address concurrent, parallel, and distributed processing.

3 Credits

CS 6263 - Computer Networks

Prerequisite: CS 5243/3243

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 the particular emphasis on the Application, Transport, Network, and Datalink layers. Both the principles in computer networking and practical implementations (via network programming labs) are covered.

3 Credits

CS 6453 - Simulation and Modeling

Prerequisite: CS 5123/3424, Matrix Algebra, and Probability and Statistics

3-0-3

The application of various modeling techniques to the understanding of computer system performance. Includes analytic modeling, queuing theory, continuous and discrete simulation methods, and the use of some simulation software tools to implement a major project.

3 Credits

CS 6273 - Parallel and Distributed Processing

Prerequisite: CS 5123 and CS 5223

3-0-3

This course covers various aspects of parallel and distributed processing and algorithm design with an emphasis on programming. Topics include: Taxonomy of parallel architectures; Shared-memory vs. message-passing architectures; Computation models and Performance metrics; Parallel/distributed algorithm design - basic techniques; Parallel/distributed programming techniques and issues: partitioning, load balancing, synchronization, task scheduling, message overheads, etc.; Parallel/distributed algorithms for sorting, matrices, etc.; Debugging, Profiling, and Performance enhancements of parallel and distributed programs. Students will gain experience in parallel and distributed programming on state-of-the-art cluster and GPGPU/CUDA machines, including a 700+ CUDA machine.

3 Credits

SWE 6823 - Embedded Systems Analysis and Design

Prerequisite: SWE 6623

3-0-3

This project-oriented course focuses on using modern methods, techniques, and tools for specification and design of embedded systems. Topics include analytical methods, design/development methods, and notations. Performance evaluation based on modeling and simulation techniques is also covered.

3 Credits

SWE 6843 - Embedded Systems Design and Construction

Prerequisite: SWE 6623, CS 5021

3-0-3

This project-oriented course focuses on the use of current software building technology, testing, reliability analysis, and benchmarking. Topics include component-based development (CBD), implementation technologies, and real-time operating systems (RTOS), with emphasis on the use of measurement tools, and domain libraries. The course also covers issues in hardware/software co-design.

3 Credits

SWE 6653 - Software Architecture

Prerequisite: SWE 6623, CS 5011, CS 5021, CS 5031

3-0-3

This course examines the principles and methods of the architectural design of complex, large-scale software systems. Macro-level system architecture with an emphasis on approaches to interconnection and distribution of both current and emerging architectural systems (e.g., Model-View-Controller (MVC), service-oriented, agent-oriented) as well as micro-level architecture including patterns, frameworks, and component-based software engineering are covered in detail.

3 Credits

Media & Visualization Track:

CS 6563 - Digital Image Processing and Analysis

Prerequisite: CS 5123 and CS 5423

3-0-3

Theory and application of digital image processing. Topics include sensing, sampling and quantization, image enhancement and restoration, image transforms, geometrical image modifications, edge detection, image segmentation and classification, image coding, feature extraction, image representation, morphological image processing, and parallel image processing. Applications include satellite images and biomedical images.

3 Credits

CS 6353 - Computer Graphics and Multimedia

Prerequisite: CS 5123/3424 and CS 5423

3-0-3

A study of the hardware and software of computer graphics and multimedia systems from the programmer's perspective. Includes a survey of display and other media technologies, algorithms and data structures for manipulation of graphical and other media objects, and consideration of user interface design. Major project included.

3 Credits

CS 6323 - Human Factors

3-0-3

The psychological, social, and technological aspects of interaction between humans and computers. Includes usability engineering, cognitive and perceptual issues, human information processing, user-centered design approaches, and development techniques for producing appropriate systems. Major project included.

3 Credits

Knowledge Engineering Track:

CS 6163 - Information Retrieval and Search Engines

Prerequisite: CS 5123 and CS 5423

3-0-3

The course covers issues, models, and techniques associated with efficient storage and effective retrieval of large amounts of unstructured text information. It includes a study of classic information retrieval (IR) techniques and exposes students to more recent developments, such as search engines and text mining. Students will be exposed to relevant literature of the discipline and also implement and/or evaluate a simple information retrieval system or search engine.

3 Credits

CS 6533 - Artificial Intelligence

Prerequisite: CS 5123/3424 and CS 5423
3-0-3

The primary objective of this course is to provide an introduction to the basic principles and applications of Artificial Intelligence. Covers the basic areas of artificial intelligence including problem solving, knowledge representation, reasoning, decision making, planning, perception and action, and learning -- and their applications. Students will design and implement key components of intelligent agents of modern complexity and evaluate their performance. Students are expected to develop familiarity with current research problems, research methods, and the research literature in AI.

3 Credits

CS 6293 - Information Security: Implementation and Application

Prerequisite: CS 5123 and CS 5423
3-0-3

This course covers the fundamentals of computing security, access control technology, cryptographic algorithms, implementations, tools and their applications in communications and computing systems security. Topics include public key infrastructure, operating system security, database security, network security, web security, firewalls, security architecture and models, and ethical and legal issues in information security.

3 Credits

CS 6563 - Digital Image Processing and Analysis

Prerequisite: CS 5123 and CS 5423
3-0-3

Theory and application of digital image processing. Topics include sensing, sampling and quantization, image enhancement and restoration, image transforms, geometrical image modifications, edge detection, image segmentation and classification, image coding, feature extraction, image representation, morphological image processing, and parallel image processing. Applications include satellite images and biomedical images.

3 Credits

Note:

** Note that, although a thesis is NOT required, a thesis option is available, which requires a student to take six credits of CS 7803 - Masters Thesis as part of his/her electives. Since a thesis is equivalent to 2 courses, students who are interested in the thesis option are encouraged to start their thesis research at least two semesters before they intend to graduate.

*** Note that a maximum of 9 total semester hours of "approved" transfer credit may be counted toward the MSCS degree.

An overall GPA of 3.00 ("B") or better is required over all graduate coursework attempted.

In all graduate programs, a minimum of a 3.00 G.P.A. is required. No grades below 'C' may be applied to a graduate program's requirements, and a maximum of 2 'C' grades at the level of 6000 or above may be applied to a graduate program's requirements.

Transition Courses

The following transition courses may be required for provisionally accepted students. These courses may not be used to satisfy degree requirements.

- CS 5003 - Accelerated Introduction to Programming **3 Credits**

CS 5123 - Advanced Programming and Data Structures

Prerequisite: CSE 1302 or CS 5003

3-0-3

Transition course for graduate students with a limited background in programming. Topics include pointers, recursion, data structures such as lists, stacks, queues, trees, etc., sorting and searching, data abstraction, introduction to runtime analysis and the big-oh notation. Appropriate programming projects are also included.

3 Credits

CS 5153 - Database Systems

Prerequisite: CSE 1302 or CS 5003 or IT 5113

3-0-3

Transition course. This course provides an overview of various database models including relational, object-oriented, hierarchical, and network. Also covered are various file structures including sequential, indexed sequential, and direct. It covers planning, analysis, design, and implementation of a database. Entity Relationship models and normalization are covered. It covers an SQL-based database system such as Oracle. A major project and/or paper required.

3 Credits

CS 5223 - Computer Architecture

Prerequisite: CSE 1301 or CS 5003

3-0-3

Transition Course: Topics from the principles of computer organization and architecture include number systems, digital logic, basic logic design in combinational and sequential circuits, and assembly and machine language.

3 Credits

CS 5243 - Operating Systems

Prerequisite: (CSE 1302 or CS 5003) and CS 5223/ CS 3223

3-0-3

Transition Course: Topics from the principles of operating systems include management of resources including processes, real and virtual memory, jobs, processes, peripherals, network, and files.

3 Credits

CS 5423 - Mathematical Structures for Computer Science

Prerequisite: An undergraduate course in Calculus

Corequisite: CSE 1301 or CS 5003

3-0-3

Transition course: Topics from discrete mathematics include set theory, relations and functions, principles of counting, introductory graph theory, formal logic, recursion, and finite state machines.

3 Credits

Note:

Some students may be advised to start with the undergraduate CSE 1301 – Programming & Problem Solving I and Calculus course.

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

The Master of Science program in Construction Management is designed to offer education in construction and project management to:

- Practicing U.S. and international professionals educated in related disciplines such as engineering, engineering technology, business or architecture, who desire more knowledge in the construction process
- Professionals educated in construction or construction management and who wish to pursue the subject in greater depth
- Persons holding a baccalaureate or higher degree who are actively pursuing a construction industry career but lack education in construction and project management

Program objectives are:

- To offer a degree oriented toward the practice of construction
- To deliver this graduate education in an evening and weekend setting
- To provide a program which will enhance graduates' management skills and advancement opportunities

Admissions

Admission to the Master of Science program with a major in Construction Management is open to persons holding the bachelor or higher degree from a regionally accredited college or university in:

- Engineering
- Engineering Technology
- Construction Management
- Construction Technology
- Architecture
- Management

In many cases, other degrees may be acceptable.

Preference in admission will be given to applicants having professional experience in a construction work environment. The admission procedure is competitive in that students will be admitted only if their academic accomplishments and work experience demonstrate that they can successfully complete the program.

Admission Procedure

Applicants for admission to the Master of Science program in Construction Management must submit the following to the Admissions Office:

- An application for admission to the program
- An official copy of scores from the General Test of the Graduate Record Examination (GRE) or scores from the Graduate Management Admissions Test (GMAT)
- An official transcript from each college the applicant has attended
- A certificate of immunization
- At least three recommendation forms which have been completed by supervisors, professors, or professional colleagues; one of which must be from the current supervisor

Students who are accepted into the CM graduate major must attend the mandatory orientation.

Admission Criteria

Applicants for admission to the Master of Science program in Construction Management must meet the following criteria:

Regular Admission:

- A GRE score of 850 or better on the General Test (verbal and quantitative) or a score of 500 on the GMAT
- An undergraduate GPA of 2.75 or better on a 4.00 scale

Provisional Admission: Applicants not meeting the minimum requirements will be considered for provisional admission based on an evaluation of

- Undergraduate GPA
- Professional industry experience
- GRE/GMAT scores

Commitment to Graduate Studies

In the event that any aspect of an applicant's application does not meet the required minimum, probationary acceptance may be granted by the Construction Management Department's Graduate Committee.

NOTE: Students who are admitted under provisional admission will be changed to regular admission by obtaining a GPA of 3.0 or better in the first three CM graduate courses.

Construction Management, Master of Science

Degree Requirements

CM 6000 - Information Methods

4-0-4

A course in communications technique improvement and preparation for functioning in an information based society. Conceptual and methodological issues in construction research will be explored with emphasis on construction specific resources. Data development and analysis will be studied to include the concepts of validity, reliability, and applications of statistics.

4 Credits

CM 6100 - Construction Law: Contracts and Claims

4-0-4

This course focuses on the legal problems and concerns frequently encountered by constructors and others who participate in the construction process. Topics include the formation of contracts and the various contractual relationships; methods of modification and termination of the contracts; exploration of licensure and professional liability of the construction practitioner.

4 Credits

CM 6200 - Strategic Bidding and Estimating

4-0-4

A review of all normal bid-preparation activities that should take place in a prime contractor's organization from the initial decisions

on project selection and receipt of drawings and specifications, through the estimating process and sub-bid research, final bid assembly, markup and submission, to postmortems and necessary follow-up actions. Significant attention will be devoted to bidding techniques, strategies, practices, and methods recommended to handle these functions.

4 Credits

CM 6600 - Construction Risk Analysis and Control

4-0-4

This course focuses on the safety practices mandated by government regulation and required by good business practice. The costs of safety and the lack of it is examined. Workers' compensation insurance cost is integrated into the issues of safety. Exposure analysis, risk management, risk transfer and the costs associated with each are examined in this course.

4 Credits

- Construction Degree Option (select one of the options listed below) **20 Credits**

Degree Program Total: 36

Elective Option

Select five construction elective courses (four credits each), up to two of which may be **approved** courses from another graduate department.

Thesis Option

Select two 4-hour construction elective courses at the 6000 level

12 hours of Masters thesis work:

CM 7801 - Masters Thesis

Prerequisite: CM 6000, completion of 28 hours of graduate courses
4-0-4

Construction degree course work or consent of the department head, approval of thesis proposal intensive research project that results in a formal written thesis. The thesis topic will usually be in an area of interest discovered by the student in early stages of the Construction program or work experience. Students may enroll for a maximum of 4 hours per term for thesis credit. The student works independently under the supervision of the thesis advisor on an inquiry that is significant to the construction industry. The topic must be approved before registration and the student must continue the work in a manner that is satisfactory to the thesis advisor. The student is expected to submit a substantial body of research work and to defend this submittal and the course work taken in the degree program. This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation. CSE Courses

4 Credits

CM 7802 - Masters Thesis

Prerequisite: CM 6000, completion of 28 hours of graduate courses
4-0-4

Construction degree course work or consent of the department head, approval of thesis proposal intensive research project that results in a formal written thesis. The thesis topic will usually be in an area of interest discovered by the student in early stages of the Construction program or work experience. Students may enroll for a maximum of 4 hours per term for thesis credit. The student works independently under the supervision of the thesis advisor on an inquiry that is significant to the construction industry. The

topic must be approved before registration and the student must continue the work in a manner that is satisfactory to the thesis advisor. The student is expected to submit a substantial body of research work and to defend this submittal and the course work taken in the degree program. This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation. May Be Repeated: This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation.

4 Credits

CM 7803 - Masters Thesis

Prerequisite: CM 6000, completion of 28 hours of graduate courses
4-0-4

Construction degree course work or consent of the department head, approval of thesis proposal intensive research project that results in a formal written thesis. The thesis topic will usually be in an area of interest discovered by the student in early stages of the Construction program or work experience. Students may enroll for a maximum of 4 hours per term for thesis credit. The student works independently under the supervision of the thesis advisor on an inquiry that is significant to the construction industry. The topic must be approved before registration and the student must continue the work in a manner that is satisfactory to the thesis advisor. The student is expected to submit a substantial body of research work and to defend this submittal and the course work taken in the degree program. This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation. May Be Repeated: This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation.

4 Credits

Project Option

Select five 4-hour construction elective courses at the 6000 level Up to 3 of these courses may be replaced by project courses, CM 7701-CM 7703 A grade of "C" or better is required for each course applied to the degree program

In all graduate programs, a minimum of a 3.00 G.P.A. is required. No grades below 'C' may be applied to a graduate program's requirements, and a maximum of 2 'C' grades at the level of 6000 or above may be applied to a graduate program's requirements.

A cumulative 3.00 grade point average is required in all courses that apply to the degree.

Foundation Requirements:

In addition to the 36 required hours for the Masters degree, students may be required to demonstrate competency in the following:

- English Communication Skills (TCOM 2010)
- Construction Graphics (CM 2000)
- Construction Methods and Techniques (CM 3110 or CM 3160)
- Structural systems (CM 5030)
- Computer Application Skills in Construction Management (CM 3000)
- Construction Scheduling (CM 4510)
- Construction Estimating (CM 3410)
- Construction Accounting and Finance (CM 3620)

Courses (undergraduate or baccalaureate) taken to show competency in these areas **will not count toward the 36** hours required for the Graduate degree. Competency can be shown by:

- Successfully completing coursework
- Successfully completing competency testing developed by the Program

Required Core Courses (16 Credits)

CM 6000 - Information Methods

4-0-4

A course in communications technique improvement and preparation for functioning in an information based society. Conceptual and methodological issues in construction research will be explored with emphasis on construction specific resources. Data development and analysis will be studied to include the concepts of validity, reliability, and applications of statistics.

4 Credits

CM 6100 - Construction Law: Contracts and Claims

4-0-4

This course focuses on the legal problems and concerns frequently encountered by constructors and others who participate in the construction process. Topics include the formation of contracts and the various contractual relationships; methods of modification and termination of the contracts; exploration of licensure and professional liability of the construction practitioner.

4 Credits

CM 6200 - Strategic Bidding and Estimating

4-0-4

A review of all normal bid-preparation activities that should take place in a prime contractor's organization from the initial decisions on project selection and receipt of drawings and specifications, through the estimating process and sub-bid research, final bid assembly, markup and submission, to postmortems and necessary follow-up actions. Significant attention will be devoted to bidding techniques, strategies, practices, and methods recommended to handle these functions.

4 Credits

CM 6600 - Construction Risk Analysis and Control

4-0-4

This course focuses on the safety practices mandated by government regulation and required by good business practice. The costs of safety and the lack of it is examined. Workers' compensation insurance cost is integrated into the issues of safety. Exposure analysis, risk management, risk transfer and the costs associated with each are examined in this course.

4 Credits

Elective Courses (20 Credits)

CM 6110 - Commercial Construction Transactions

Prerequisite: CM 6100

4-0-4

This course is an extension of CM 6100, with course topic discussion being devoted to commercial construction transactions in relation to the construction contracting process. Discussion is devoted to UCC Article 2, 3, and 9 as applicable to construction vendor contracts. Also, discussion is devoted to the hybrid contracting process and the legal implications of bidding for goods and services that qualify under commercial contract law.

4 Credits

CM 6120 - Dispute Resolution

Prerequisite: CNST 6100

4-0-4

This course will survey the growth of the alternate dispute resolution field, giving emphasis to alternative dispute resolution theory and its application to the construction industry. A student will be exposed to different resolution processes relative to the construction industry: namely, negotiations, mediation and arbitration.

4 Credits

CM 6130 - Case Studies in Construction

Prerequisite: CM 6100

4-0-4

This course is designed to explore the multiple contractual complications that typically arise within the construction contracting process. Topics will develop and explore the technical aspects of procurement, implementation, construction operations, through to post contractual obligation and liabilities inherent in the construction industry.

4 Credits

CM 6310 - Advanced Scheduling and Integrated Controls

4-0-4

An exploration of current techniques and practices of integrated project control systems for construction. Subjects covered include various methods of project scheduling and monitoring, resource management, time-cost tradeoffs, organizing and managing schedule data, forecasting and trend analysis, and presentation of schedule information. Special emphasis is placed on the use of modern integrated scheduling practices and associated computer tools.

4 Credits

CM 6320 - Construction Information Systems

4-0-4

The interaction of information technology with the construction industry. Opportunities and risks for individuals and organizations are examined in the realms of information flow, decision-making and a changing world. Human and ethical issues are considered. Students are introduced through laboratory exercises to construction specific products, to construction applications of conventional database systems and to data transfer technologies.

4 Credits

CM 6330 - Advanced Operations: Constructability, Value Engineering, Productivity

4-0-4

An exploration of project processes and organization including procurement, startup, documentation, payment, change order administration and job closeout. Included is project analysis for constructability, value engineering, and productivity analysis/improvement techniques.

4 Credits

CM 6410 - Building Failures and Defective Work

4-0-4

A study of problems, trends and issues related to workmanship and product failures during a time of rapid change in the construction industry. It will discuss concepts, philosophy and technology behind the subject issues and seek the exchange of ideas and views. Students will be expected to gain knowledge in the subject topics and develop skill in researching for facts extended to effective written and verbal presentations of the findings.

4 Credits

CM 6420 - Tall Buildings

4-0-4

A study of tall buildings in the society of today and tomorrow. Form giving factors will be identified and problems of planning, design and construction explored. The project manager's role in the tall building process will be related to specific building examples. International differences in the role of tall buildings will become apparent, yet common threads will be found which can be useful in a shrinking world and a more universal construction industry.

4 Credits

CM 6430 - Automation and Robotics

4-0-4

A study of the level of application of automation and robots to construction. Techniques and equipment in varying stages of development as well as current applications will be presented for analysis and discussion. Students will be challenged to conceptualize new ways of applying technology to improve industry productivity through automation and robotics.

4 Credits

CM 6510 - Marketing of Construction Services

4-0-4

An examination of how construction services are marketed in the various sectors of the construction industry. The relevant characteristics of construction organizations and target clients will be explored with various scenarios structured to highlight critical parameters of search and match. The potential contributions of the media and conventional planning/analysis techniques will be considered.

4 Credits

CM 6520 - International Construction

4-0-4

An introduction to the construction industry in the international arena. Projects and processes will be studied. Issues of contract law, industry regulation, currency exchange, payment guarantees and risk management will be examined and related to respective countries of concern. Operations under different cultural norms will be projected in realistic scenarios.

4 Credits

CM 6530 - Construction Markets

4-0-4

A study of the dominant factors at work in different construction markets. Geographic, technological, economic, political, organizational, and social influences on construction markets are included. Market groupings by type of construction are identified and paradigms of construction are explored.

4 Credits

CM 6540 - The Construction Company

4-0-4

Organization of the construction firm is covered in this course. Financing of the firm, marketing the various construction services of the firm and exploring the economics which are unique to the construction industry are analyzed. Strategic planning and planning for growth of a construction firm are included in the course. Insurance, bonding, employee development, and labor relations are studied. The continuing relationships with clients, bankers, bonding companies and design professionals are explored.

4 Credits

CM 6800 - 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.

2 Credits

CM 6901 - Special Topics

Prerequisite: Consent of the department head
1 to 4

Special topics offered by the department. Offered on a demand basis.

1 to 4 Credits

CM 7701 - Masters Project

Prerequisite: CM 6000 and consent of the department head
1-0-1

This course is designed for the students who want to focus their course of study on a particular aspect of construction. The student works independently under the supervision of the course professor on a project or an inquiry that is significant in the construction industry. The topic of the project or inquiry must be approved prior to registration and the student must continue the work in a manner that is satisfactory to the course professor. The student is expected to submit a substantial report and to defend this submittal and the course work taken in the degree program. May Be Repeated: This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements for graduation.

1 Credits

CM 7801 - Masters Thesis

Prerequisite: CM 6000, completion of 28 hours of graduate courses
4-0-4

Construction degree course work or consent of the department head, approval of thesis proposal intensive research project that results in a formal written thesis. The thesis topic will usually be in an area of interest discovered by the student in early stages of the Construction program or work experience. Students may enroll for a maximum of 4 hours per term for thesis credit. The student works independently under the supervision of the thesis advisor on an inquiry that is significant to the construction industry. The topic must be approved before registration and the student must continue the work in a manner that is satisfactory to the thesis advisor. The student is expected to submit a substantial body of research work and to defend this submittal and the course work taken in the degree program. This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation. CSE Courses

4 Credits

Total: 36 Credits

Engineering Technology

Offering the Master of Science Degree

Admission to the Master of Science program with a major in Engineering Technology, Electrical Concentration, is open to persons holding the bachelor or higher degree in engineering, engineering technology, or a related degree from an accredited institution.

Preference in admission will be given to applicants having professional experience in a technical work environment. The admission procedure is competitive in that students will be admitted only if their academic accomplishments and work experience demonstrate that they can successfully complete the program.

Admission Procedure

Applicants for admission to the Master of Science program with a major in Engineering Technology, Electrical Concentration must submit the following to the Admissions Office no later than the semester deadline date before the beginning of the semester in which the applicant plans to enroll:

- An application for admission to the program,
- An official copy of scores from the "General Test" of the Graduate Record Examination,
- An official transcript from each college the applicant has attended,
- A certificate of immunization,
- A 1 – 2 page Statement of Purpose describing your career and educational goals,
- At least three recommendation forms that have been completed by former or current supervisors, professors, or professional colleagues.

International students should refer to the International Students sub-section for additional admission requirements.

Admission Criteria

Applicants should have an undergraduate degree in Electrical, Computer, or Telecommunications Engineering Technology or Electrical, Computer, or Telecommunications Engineering from an accredited college or university.

Applicants must have at least a 2.70 (on the 4.00 scale) undergraduate grade point average. Applicants must score minimums of 147 (410 old) on the Verbal, 147 (580 old) on the Quantitative, and 3.5 on the Analytical Writing components of the General Test of the Graduate Record Examination (GRE). These are minimum GRE scores and may not guarantee admission as full graduate students (see below).

Note: SPSU B.S. degree graduates in Electrical, Computer, or Telecommunications Engineering Technology, with a GPA of 3.0 or higher, may have the GRE requirements waived upon the recommendation of the ECET faculty.

Admission Status

The program coordinator in conjunction with the graduate admissions committee determines the student admission status.

Full Graduate Status students have met all the criteria stated in the Admission Procedure and Admission Criteria sections and were judged acceptable by the ECET graduate program committee. Applicants with grade point averages or GRE scores near the minimum levels may be admitted provisionally rather than at full graduate status.

Post-Baccalaureate status is available to students who do not meet the admission criteria but who are NOT seeking a degree.

Provisional students are graduate students who have not met all the criteria stated in the Admission Procedure and Admission Criteria sections or who have grade point averages or GRE scores near the minimums. They are limited to designated courses, either graduate or undergraduate. Students' performance in these courses will be evaluated to determine their likelihood of success. Provisional students are not guaranteed full graduate status.

International Students

International applicants who do not possess a bachelor's degree from a college within the United States must submit the following additional information to the Admissions Office:

- An official transcript (translated into English) of college-level education,
- Official Course-by Course Equivalency of transcripts by an approved credentialing agency (such as WES),
- Score on the Test of English as a Foreign Language (TOEFL),
- An affidavit indicating financial security.

A minimum TOEFL score of 213 on the computer version, 550 on the paper version or 79 on the Internet version is required. International students on F-1 and J-1 visas must purchase medical insurance made available through Southern Polytechnic State University or provide proof of alternate coverage through a comparable policy.

International applicants applying from outside of the United States must submit all admissions documents, including Immunization Certificate, at least 60 days prior to the deadline dates.

Transfer Credit

Students may wish to transfer credit from other graduate programs in which they have been enrolled. Transfer credit is limited to one 3 or 4 credit course subject to the discretion of the head of the academic department where the program resides.

Students may apply for transfer credit if:

- The student was enrolled as a graduate student,
- The course is completed with a grade of "B" or better,
- The course was not used toward a degree,
- The course is equivalent to one offered in a Master of Science program at Southern Polytechnic State University,
- The course is appropriate to the students program of study,
- The course credit was earned within the last five years.

Post-Baccalaureate Students

Persons holding a recognized bachelor's degree may be admitted as post-baccalaureate students if they are interested in taking additional classes for personal growth or professional development but not involving a new degree objective. Such students must meet all course prerequisites for enrollment in undergraduate or graduate courses.

To apply for post-baccalaureate status, the student must submit to the Admissions office:

- An undergraduate application form along with a \$20 non-refundable application processing fee (check made payable to Southern Polytechnic State University),
- Two official transcripts showing completion of a bachelor's degree from a recognized institution of higher education,
- The certificate of immunization.

If a student in this category chooses to later apply for degree-seeking status, the student must follow the regular Master's program admission procedure. Following regular program admission, graduate credit earned in the non-degree-seeking category may be counted only with the permission of the program where the degree is housed. Ordinarily, no more than 8 hours of graduate course-work completed in this provisional status may be applied to the degree.

Engineering Technology--Electrical Concentration

The scope of electrical engineering technology has become very broad as the knowledge base and applications associated with this discipline continue to expand at an accelerating pace.

The Master of Science degree is offered to meet the needs of individuals who wish to pursue advanced studies in modern electrical, electronic or computer technologies in order to fulfill their personal or career goals.

There are four principal objectives to the graduate program in Engineering Technology:

- To provide continuing in-depth technical education to individuals who hold an ABET-accredited baccalaureate degree in Electrical or Computer Engineering or Engineering Technology.
- To provide advanced studies in electrical, electronic or computer technologies to help individuals advance in their chosen careers. These individuals may work as engineers, engineer/technologists, technical managers, independent consultants, or in similar professions.
- To provide additional technical education to those individuals who desire to teach at the college, technical school, or high school level.

- To provide an opportunity for practicing professionals, who possess an accredited baccalaureate degree in a related discipline, to shift their career path into the electrical, electronic or computer fields.

Each graduate student will pursue an individualized course of study within the guidelines of one of the programs listed below. The student and his/her academic advisor will identify the graduate courses that will comprise that student's course of study. The courses will be chosen to:

- Meet the student's career goals
- Provide a high-quality educational experience for that student
- Satisfy the requirements of one of the programs

Electrical Engineering Technology, Master of Science

Degree Requirements

Project-Based Program

Select a minimum of 34 credit hours of courses including:

- At least 22 credit hours must be 6000 level ECET courses or higher.
- One of the ECET courses must be ECET 6704: Project Proposal (4 credit hours).
- One of the ECET courses must be ECET 7704: Project (4 credit hours).
- Up to two courses and a maximum of 8 credit hours can be free electives. These courses must be at the graduate level and may be from any department, with the exception that one 4000-level mathematics course can be used as a free elective. Transfer credit for a 4000-level mathematics free elective is not accepted. Advisor consent is required for your selection of free electives.

Research-Based Program

Select a minimum of 34 credit hours of courses including:

- At least 26 credit hours must be graduate-level ECET courses.
- One of the ECET courses must be ECET 7504: Research (4 credit hours).
- Up to two courses and a maximum of 8 credit hours can be free electives. These courses must be at the graduate level and may be from any department, with the exception that one 4000-level mathematics course can be used as a free elective. Transfer credit for a 4000-level mathematics free elective is not accepted. Advisor consent is required for your selection of free electives.

A grade of "C" or better is required for each course within the student's graduate program and it is required that each student maintain a cumulative grade point average of 3.00 or higher in order to graduate.

In all graduate programs, a minimum of a 3.0 G.P.A. is required. No grades below 'C' may be applied to a graduate program's requirements, and a maximum of 2 'C' grades at the level of 6000 or above may be applied to a graduate program's requirements.

Information Design and Communication

Graduate Programs in Information Design and Communication

The MS program in Information Design and Communication has been developed in response to a growing need for professionals in the expanding field of information design, information architecture, content development, communications management, and visual communication.

The basic objectives of the program are

- To educate those persons with diverse academic and work backgrounds who seek to begin their careers in the field of information design and communication, and
- To provide a useful credential for current information designers and technical communicators who need advanced training to move ahead in their careers, either as employees or managers of a company or as independent consultants.

The Information Design and Communication program offers students a MS Degree with the choice of three program options – an Internship Option, a Thesis Option, and an all Course Work Option. A graduate certificate in Technical Communication, and four advanced certificates in User Experience, Communication Management, Visual Communication, and User Experience.

Information Design and Communication Admissions Requirements

Students applying to the MS IDC program must have:

- Undergraduate degree from an accredited institution
- GRE minimum scores of **153** for verbal reasoning, **144** for Quantitative Reasoning, and a **4** on the writing component
- GPA at or above the university's 2.75 minimum

To complete the application process with the Graduate School, students must submit the following to Graduate Admissions:

- Application form; you apply online at <https://srm2.targetx.com/orgs/00DA0000000HCBnMAO/login>
- Application fee of \$50, this is non-refundable
- One official sealed transcript sent directly from each college attended.
- Immunization certification; please sign the waiver on the back stating enrollment in online courses only; this form can be printed online, <http://www.spsu.edu/gradstudies/admissions/Immunization.pdf>
- statement of purpose essay, as required by Graduate Admissions, http://www.spsu.edu/gradstudies/admissions/Statement_of_Purpose.pdf
- Professional resume detailing current and previous work experience

To complete the application process with the department, students must write an essay. This essay is timed; topics are provided by the department.

- Contact the Program Assistant, Donna McPherson, donna@spsu.edu, to schedule a day and time to write the essay. The essay topic will be sent via email. The applicant is responsible for timing the essay and sending an electronic copy back to the department within two hours of beginning the essay.

NOTE: students who do not have a background in writing and/or graphics may be given provisional admission status and required to take IDC 5001 and/or IDC 5002 as preparation for the degree program. A grade of B or above is required for full admission into the degree program. Students may also self-select for either or both of IDC 5001 and 5002.

Communications Management Advanced Certificate

If you have a master's degree and you want to increase your knowledge and skills in communications management, then an Advanced Certificate is the way for you to add an area of specialization to your existing qualifications.

To earn an Advanced Certificate with a specialization, you'll take 6 courses; the required courses are listed below.

Communications Management Admissions Requirements

Students applying to the advanced certificates must have a Master's degree from an accredited institution.

To complete the application process with the Graduate School, students must submit the following to Graduate Admissions:

- Application form; you apply online at <https://srm2.targetx.com/orgs/00DA0000000HCBnMAO/login>
- Application fee of \$50, this is non-refundable
- One official sealed transcript sent directly from each college attended.
- Immunization certification; please sign the waiver on the back stating enrollment in online courses only; this form can be printed online, <http://www.spsu.edu/gradstudies/admissions/Immunization.pdf>
- Statement of purpose essay, as required by Graduate Admissions, https://www.spsu.edu/gradstudies/admissions/Statement_of_Purpose.pdf
- Professional resume detailing current and previous work experience

To complete the application process with the department, students must write an essay. This essay is timed; topics are provided by the department.

- Contact the Program Assistant, Donna McPherson, donna@spsu.edu, to schedule a day and time to write the essay. The essay topic will be sent via email. The applicant is responsible for timing the essay and sending an electronic copy back to the department within two hours of beginning the essay.

NOTE: Based on the Admission Committee's evaluation of the packet, some applicants may be required to take IDC 6001 as a mandatory elective in the certificate program.

Requirements

IDC 6110 - Communications Project Management

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Reviews the roles and responsibilities of project managers through the project lifecycle. Topics include communication management, risk management, scope management, resource management, and project quality. Assignments provide experience with industry-accepted software, tools, and approaches.

3 Credits

IDC 6210 - Business Analysis

Prerequisite: IDC 6001, IDC 6030 and IDC 6002 or permission of instructor

3-0-3

This course focuses on problem definition, stakeholder analyses and communication strategies to support development. Business interface analysis fundamentals, requirements planning, analysis and documentation are covered.

3 Credits

MGNT 6001 - Management Communications

3-0-3

Effective communication skills are essential for managers in high technology environments. This course emphasizes skill building in

writing, oral presentations, interpersonal communication, and research.

3 Credits

MGNT 6025 - Managing Professionals

Prerequisite: MGNT 5000 or an equivalent undergraduate course in management and organizational behavior
3-0-3

An applied management skills course which covers principles of management using behavioral guidelines grounded in research. Students develop and apply leadership and team-building skills through experiential learning. Topics include communication, creative problem solving, motivation, power and influence, and conflict management.

3 Credits

- The remaining two courses can be selected from any of our IDC offerings.

Note:

For questions about the advanced certificate programs, contact the English, Technical Communication, and Media Arts Department. The number is 678-915-7202; or write to TCOM@spsu.edu. Visit the web site at <http://idc.spsu.edu> for more information.

Content Strategy Advanced Certificate

If you have a master's degree and you want to increase your knowledge and skills in content strategy, then an Advanced Certificate is the way for you to add an area of specialization to your existing qualifications.

To earn an Advanced Certificate with a specialization, you'll take 6 courses; the required courses are listed below.

Admissions Requirements

Students applying to the advanced certificates must have a Master's degree from an accredited institution.

To complete the application process with the Graduate School, students must submit the following to Graduate Admissions:

- Application form; **you** apply online at <https://srm2.targetx.com/orgs/00DA0000000HCBnMAO/login>
- Application fee of \$50, this is non-refundable
- One official sealed transcript sent directly from each college attended.
- Immunization certification; please sign the waiver on the back stating enrollment in online courses only; this form can be printed online, <http://www.spsu.edu/gradstudies/admissions/Immunization.pdf>
- Statement of purpose essay, as required by Graduate Admissions, http://www.spsu.edu/gradstudies/admissions/Statement_of_Purpose.pdf
- Professional resume detailing current and previous work experience

To complete the application process with the department, students must write an essay. This essay is timed; topics are provided by the department.

- Contact the Program Assistant, Donna McPherson, donna@spsu.edu, to schedule a day and time to write the essay. The essay topic will be sent via email. The applicant is responsible for timing the essay and sending an electronic copy back to the department within two hours of beginning the essay.

NOTE: Based on the Admission Committee's evaluation of the packet, some applicants may be required to take IDC 6001 as a mandatory elective in the certificate program.

Requirements

IDC 6010 - Writing Across Media

Prerequisite: IDC 6001
Prereq/Corequisite: IDC 6030
3-0-3

Course examines rhetorical, structural, and stylistic requirements of various communications media. Topics include writing for the Web, narrative design, and document engineering.

3 Credits

IDC 6060 - Strategies for Global Communication

Prerequisite: IDC 6001 and IDC 6030
Prereq/Corequisite: IDC 6002
3-0-3

Focuses on issues affecting global communication. Readings in culture and international communication give students the research and theory to make strategic decisions regarding the design of communication products in international contexts.

3 Credits

IDC 6090 - Medical Communication

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Course examines the scope of medical communication, with emphasis on opportunities for technical communication professionals. Students will analyze, edit, and revise various medical document types, such as medical research abstracts, patient education materials, professional medical training documents, medical advertisements, and pharmaceutical package inserts. Students will independently study medical terminology and develop a portfolio of medical writing samples.

3 Credits

IDC 6150 - Marketing Communication

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Strategies for planning and implementing a marketing plan for a sponsored project. Students also develop individual assignments for self-promotion and white papers.

3 Credits

IDC 6175 - Digital Rhetoric

Prereq/Corequisite: IDC 6001, IDC 6030, and IDC 6002
3-0-3

Course provides students with a foundation in rhetoric as a study of argument, persuasion, and convention. In particular, the course focuses on rhetorical practice within a digital environment. Students will develop strong digital literacy skills to help them analyze both audience and content of new media. They will explore how a medium creates assumptions for its users, and how these media interact with one another in a larger social context. Through case studies and applied projects, students will learn to integrate digital rhetoric into the practices of professional and technical communication.

3 Credits

IDC 6240 - Content Strategy

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

An introduction to the practices and processes of developing, implementing, assessing, and refining content for strategic and brand marketing purposes.

3 Credits

- Certificate can be completed by either taking all 6 courses listed or take 5 of the 6 courses listed and select a course from any of our offerings.

Note:

For questions about the advanced certificate programs, contact the English, Technical Communication, and Media Arts Department. The number is 678-915-7202; or write to TCOM@spsu.edu. Visit the web site at <http://idc.spsu.edu> for more information.

Information Design and Communication, Master of Science

Degree Requirements

MSIDC students are required to take the following courses:

IDC 6001 - Professional Practices of Communication

3-0-3

Overview of technical writing and editing. Emphasis on drafting and editing many documents that reflect the variety of writing done in the field of professional communication. Both experienced and inexperienced writers will benefit from this course, which must be taken the first semester of enrollment in the master's program.

3 Credits

IDC 6002 - Information Design

Prereq/Corequisite: IDC 6001, IDC 6030

3-0-3

Study of the main design elements in information products with an emphasis on rhetorical and theoretical underpinnings for design decisions. Students work on designing and redesigning products in various media. Requirements include a report on document design that demonstrates solid application of theoretical principles. Should be taken as soon as possible after admission.

3 Credits

IDC 6030 - Visual Design Strategy

Prerequisite: IDC 6001 or departmental approval

3-0-3

Application of fundamental elements and principles of graphic design to professional communication. Students without solid background in graphics and page layout applications are encouraged to take IDC 5002 before IDC 6030.

3 Credits

IDC 6004 - Research Methods

Prereq/Corequisite: IDC 6001, IDC 6030
3-0-3

Introduction to how to make practical use of research to inform information design and communication decisions. Students learn to create and to be critical consumers of research reports by getting hands-on exposure to quantitative and qualitative methods, including interviewing, survey design, and analysis. The course teaches how to use standard software products such as MS Word and MS Excel to perform basic qualitative and quantitative analyses. Although students learn important statistical concepts, formulas and calculations are de-emphasized.

3 Credits

IDC 6110 - Communications Project Management

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Reviews the roles and responsibilities of project managers through the project lifecycle. Topics include communication management, risk management, scope management, resource management, and project quality. Assignments provide experience with industry-accepted software, tools, and approaches.

3 Credits

- IDC Electives - Select 5 elective courses with an IDC prefix **15 Credits**
- IDC Option - (Select one of the options listed below) **6 Credits**

Degree Program Total: 36

Internship Option

Internship (IDC 7601-IDC 7603)

While taking the internship, students may enroll in a maximum of 9 hours per semester: 3 hours of internship plus two courses or 6 hours of internship plus one course.

Thesis Option

Thesis (IDC 7801-IDC 7803, six-hour minimum)

When taking the thesis, students may enroll in a maximum of 9 hours per semester--to include no more than 3 hours of thesis per semester.

All Coursework Option

Select an additional 2 elective courses (6 hours) with an IDC prefix.

Note:

IDC 6001, IDC 6002, and IDC 6030 **MUST** be taken by all students. These courses provide essential background for the program and for a career in information design. IDC 6001 must be taken the first semester in which a student is enrolled. **NOTE:** Students are restricted to one course in their first semester to ensure success in getting underway with the program.

Elective Courses for IDC Options

IDC 6005 - Visual Thinking

Prereq/Corequisite: IDC 6001, IDC 6030
3-0-3

Course examines principles of effective visual communication. Students analyze visual artifacts, select visual representations for key concepts, and identify appropriate visual forms for different information structures.

3 Credits

IDC 6010 - Writing Across Media

Prerequisite: IDC 6001
Prereq/Corequisite: IDC 6030
3-0-3

Course examines rhetorical, structural, and stylistic requirements of various communications media. Topics include writing for the Web, narrative design, and document engineering.

3 Credits

IDC 6015 - Strategic Communication

Prerequisite: IDC 6001, IDC 6002
3-0-3

This course focuses on: 1) the role of strategic communications in the process of marketing products, ideas and people, 2) components of strategic communication campaigns, 3) ethics and regulation of strategic communications, 4) professional specialties within the field of strategic communications.

3 Credits

IDC 6035 - Information Graphics

Prerequisite: IDC 6001 and IDC 6030
Corequisite: IDC 6002
3-0-3

Process and product of visual representation and display of information utilizing advanced techniques to produce infographics. Research and production of data infographics, visual instructions and comics as infographics, dashboards, and news infographics. Must have working knowledge of Photoshop and Illustrator or comparable raster-based and vector-based image applications.

3 Credits

IDC 6042 - Applied Digital Graphics

Prerequisite: IDC 6001 and IDC 6030
Prereq/Corequisite: TCOM 6002
3-0-3

Students develop competency in complex digital image editing for information design and communication. Students complete practical graphics projects using typography and digital illustrations.

3 Credits

IDC 6045 - Foundations of Multimedia

Prerequisite: IDC 6001 and IDC 6030

Prereq/Corequisite: IDC 6002

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. This course is double-listed for both undergraduate and graduate students. Graduate students will be required to complete additional work that emphasizes theory and research over application. Thus they must demonstrate a higher level of learning than undergraduates. Students who took TCOM 4045 Foundations of Multimedia as undergraduates may not count IDC 6045 for credit toward their graduate degree.

3 Credits

IID 6050 - Instructional Applications of Multimedia Design

Prerequisite: IDC 6135 and IDC 6045

3-0-3

Course introduces and applies theories, tools and techniques of professional multimedia use in instructional design settings.

3 Credits

IDC 6060 - Strategies for Global Communication

Prerequisite: IDC 6001 and IDC 6030

Prereq/Corequisite: IDC 6002

3-0-3

Focuses on issues affecting global communication. Readings in culture and international communication give students the research and theory to make strategic decisions regarding the design of communication products in international contexts.

3 Credits

IDC 6071 - User Assistance

Prerequisite: IDC 6001, IDC 6002

3-0-3

Course examines the theories and practices of developing user assistance (help systems). Minimalist documentation practices and rhetorical analysis inform how content for UA is created. Instructional graphics are emphasized throughout the semester. Students use various commercial UA products to develop and deliver help.

3 Credits

IDC 6080 - Professional Oral Presentations

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Course designed to enhance students' presentation skills in a technical and business environment. Students practice various speech types such as briefings, interviews, formal technical presentations, panels, and impromptu presentations. Whenever possible, presentations are videotaped for analysis and review.

3 Credits

IDC 6090 - Medical Communication

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Course examines the scope of medical communication, with emphasis on opportunities for technical communication professionals. Students will analyze, edit, and revise various medical document types, such as medical research abstracts, patient education materials, professional medical training documents, medical advertisements, and pharmaceutical package inserts. Students will independently study medical terminology and develop a portfolio of medical writing samples.

3 Credits

IDC 6120 - Usability Testing

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

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.

3 Credits

IDC 6135 - Website Design

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Advanced theoretical study and application of best practices for the design and delivery of information on the World Wide Web. Students learn the fundamentals of HTML, use of HTML authoring tools, web content writing and editing, page layout, design of web graphics and multimedia elements, and website architecture and content management. Students work individually and in teams to design and develop websites. Some instruction is provided in basic HTML and XHTML coding, the composition of cascading style sheets, and the use of a current web site development software package.

3 Credits

IID 6140 - Instructional Systems Design

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Course introduces and applies the literature, tools, and techniques of systematic instructional design. Includes substantial online course elements. Students will study major models of instructional design and apply them to develop and refine a unit of instruction. The course addresses the literature and theory underlying formal instructional development – particularly cognitive psychology -- and provides practice in goal analysis, team instructional development, formative evaluation, and evaluation.

3 Credits

IID 6145 - Human Performance Technology

Prerequisite: IDC 6001

Prereq/Corequisite: TCOM 6002

3-0-3

Course applies tools, and techniques of human performance technology, the parent field of instructional design. The performance technologist analyzes and solves workplace human productivity issues.

3 Credits

IID 6155 - Online Instructional Development

Prerequisite: IID 6140

3-0-3

Course explores online instructional development and deployment in higher education and corporate arenas, addressing issues of

pedagogy, current and emerging technologies, marketing, design, and evaluation. Students will create, deploy and evaluate online instructional modules in a variety of online technologies.

3 Credits

IDC 6150 - Marketing Communication

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Strategies for planning and implementing a marketing plan for a sponsored project. Students also develop individual assignments for self-promotion and white papers.

3 Credits

IDC 6160 - Rhetoric: History, Theory, and Practice

Prerequisite: IDC 6001

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.

3 Credits

IDC 6175 - Digital Rhetoric

Prereq/Corequisite: IDC 6001, IDC 6030, and IDC 6002

3-0-3

Course provides students with a foundation in rhetoric as a study of argument, persuasion, and convention. In particular, the course focuses on rhetorical practice within a digital environment. Students will develop strong digital literacy skills to help them analyze both audience and content of new media. They will explore how a medium creates assumptions for its users, and how these media interact with one another in a larger social context. Through case studies and applied projects, students will learn to integrate digital rhetoric into the practices of professional and technical communication.

3 Credits

IDC 6180 - Information Architecture

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Course examines key concepts involved in communicating information in complex Web environments. Topics include audience analysis, organizational schemas, labeling, and navigation.

3 Credits

IDC 6210 - Business Analysis

Prerequisite: IDC 6001, IDC 6030 and IDC 6002 or permission of instructor

3-0-3

This course focuses on problem definition, stakeholder analyses and communication strategies to support development. Business interface analysis fundamentals, requirements planning, analysis and documentation are covered.

3 Credits

IDC 6220 - Mobile User Experience

Prerequisite: IDC 6001, IDC 6030, IDC 6002 or permission of instructor
3-0-3

Introduction to how user experience design, evaluation and documentation influence the mobile design lifestyle. Coursework involves case studies and project work to build student portfolios.

3 Credits

IDC 6240 - Content Strategy

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

An introduction to the practices and processes of developing, implementing, assessing, and refining content for strategic and brand marketing purposes.

3 Credits

IDC 6903 - Special Topics

Prerequisite: IDC 6001 and IDC 6030;
Corequisite: IDC 6002
Prereq/Corequisite: IDC 6002
1 to 3

A course on a special topic of importance and relevance to the field of technical communication not covered in the graduate curriculum. Offered when needed.

1 to 3 Credits

IDC 7503 - Independent Study

Prerequisite: IDC 6001 and IDC 6030;
Corequisite: IDC 6002
Prereq/Corequisite: IDC 6002
3-0-3

A directed study for a graduate student who wishes to pursue a special interest in information not covered in the curriculum. The student submits to the IDC graduate program coordinator a proposal that clearly defines the course of study and the benefits to be obtained. The proposal must be submitted at least one semester prior to registration for independent study hours. Once the proposal is approved, the student is assigned a faculty advisor and registers for 3 credit hours.

3 Credits

Note:

Graduate students may take up to 9 hours outside of the program with prior approval from both the Graduate Coordinator and the Department Chair.

A grade of "B" or better is required in all courses that are applied to graduation (with the exception of the internship and thesis, which require an "S").

Technical Communication Graduate Certificate (Online)

The Graduate Certificate in Technical Communication is an online program will help you develop the writing, visual communication, and information design skills that are the foundation for effective technical communication.

Admission criteria for the basic online certificate is the same as for the master's degree program, except that certificate applicants are not required to take the GRE. Certificate students take the following three required courses:

Admissions Requirements

Students applying to the Graduate TCOM certificate must have:

- Undergraduate degree from an accredited institution
- GPA at or above the university's 2.75 minimum

To complete the application process with the Graduate School, students must submit the following to Graduate Admissions:

- Application form; **you** apply online at <https://srm2.targetx.com/orgs/00DA0000000HCBnMAO/login>
- Application fee of \$50, this is non-refundable
- One official sealed transcript sent directly from each college attended.
- Immunization certification; please sign the waiver on the back stating enrollment in online courses only; this form can be printed online, <http://www.spsu.edu/gradstudies/admissions/Immunization.pdf>
- Statement of purpose essay, as required by Graduate Admissions, http://www.spsu.edu/gradstudies/admissions/Statement_of_Purpose.pdf
- Professional resume detailing current and previous work experience

To complete the application process with the department, students must write an essay. This essay is timed; topics are provided by the department.

- Contact the Program Assistant, Donna McPherson, donna@spsu.edu, to schedule a day and time to write the essay. The essay topic will be sent via email. The applicant is responsible for timing the essay and sending an electronic copy back to the department within two hours of beginning the essay.

NOTE: students who do not have a background in writing and/or graphics may be given provisional admission status and required to take IDC 5001 and/or IDC 5002 as preparation for the certificate program. A grade of B or above is required for full admission into the certificate program. Students may also self-select for either or both IDC 5001 and IDC 5002 .

Requirements

IDC 6001 - Professional Practices of Communication

3-0-3

Overview of technical writing and editing. Emphasis on drafting and editing many documents that reflect the variety of writing done in the field of professional communication. Both experienced and inexperienced writers will benefit from this course, which must be taken the first semester of enrollment in the master's program.

3 Credits

IDC 6002 - Information Design

Prereq/Corequisite: IDC 6001, IDC 6030

3-0-3

Study of the main design elements in information products with an emphasis on rhetorical and theoretical underpinnings for design decisions. Students work on designing and redesigning products in various media. Requirements include a report on document design that demonstrates solid application of theoretical principles. Should be taken as soon as possible after admission.

3 Credits

IDC 6030 - Visual Design Strategy

Prerequisite: IDC 6001 or departmental approval
3-0-3

Application of fundamental elements and principles of graphic design to professional communication. Students without solid background in graphics and page layout applications are encouraged to take IDC 5002 before IDC 6030.

3 Credits

Additional courses with the IDC prefix (9 credits)

Students will take 3 additional courses with the IDC prefix, in order to complete the certificate.

Note:

Students completing the basic certificate program may apply for admission to the master's program.

Completing the basic certificate program does not guarantee admission to the MS IDC program. Graduates of the basic certificate program who are accepted into the master's program may count the six courses they have completed (18 credits) toward the MS degree.

For questions about the certificate program:

Contact the English, Technical Communication, and Media Arts Department. The number is 678-915-7202; or write to TCOM@spsu.edu. Visit the web site at <http://idc.spsu.edu> for more information.

User Experience Advanced Certificate

If you have a master's degree and you want to increase your knowledge and skills in user experience, then an Advanced Certificate is the way for you to add an area of specialization to your existing qualifications.

To earn an Advanced Certificate with a specialization, you'll take 6 courses; the required courses are listed below.

Admissions Requirements

Students applying to the advanced certificates must have:

- Master's degree from an accredited institution

To complete the application process with the Graduate School, students must submit the following to Graduate Admissions:

- Application form; **you** apply online at <https://srm2.targetx.com/orgs/00DA0000000HCBnMAO/login>
- Application fee of \$50, this is non-refundable
- One official sealed transcript sent directly from each college attended.
- Immunization certification; please sign the waiver on the back stating enrollment in online courses only; this form can be printed online, <http://www.spsu.edu/gradstudies/admissions/immunization.pdf>
- Statement of purpose essay, as required by Graduate Admissions, http://www.spsu.edu/gradstudies/admissions/Statement_of_Purpose.pdf
- Professional resume detailing current and previous work experience

To complete the application process with the department, students must write an essay. This essay is timed; topics are provided by the department.

- Contact the Program Assistant, Donna McPherson, donna@spsu.edu, to schedule a day and time to write the essay. The essay topic will be sent via email. The applicant is responsible for timing the essay and sending an electronic copy back to the department within two hours of beginning the essay.

NOTE: Based on the Admission Committee's evaluation of the packet, some applicants may be required to take IDC 6001 as a mandatory elective in the certificate program.

Requirements

IDC 6120 - Usability Testing

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

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.

3 Credits

IDC 6135 - Website Design

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Advanced theoretical study and application of best practices for the design and delivery of information on the World Wide Web. Students learn the fundamentals of HTML, use of HTML authoring tools, web content writing and editing, page layout, design of web graphics and multimedia elements, and website architecture and content management. Students work individually and in teams to design and develop websites. Some instruction is provided in basic HTML and XHTML coding, the composition of cascading style sheets, and the use of a current web site development software package.

3 Credits

IDC 6180 - Information Architecture

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Course examines key concepts involved in communicating information in complex Web environments. Topics include audience analysis, organizational schemas, labeling, and navigation.

3 Credits

IDC 6220 - Mobile User Experience

Prerequisite: IDC 6001, IDC 6030, IDC 6002 or permission of instructor

3-0-3

Introduction to how user experience design, evaluation and documentation influence the mobile design lifestyle. Coursework involves case studies and project work to build student portfolios.

3 Credits

IDC 6210 - Business Analysis

Prerequisite: IDC 6001, IDC 6030 and IDC 6002 or permission of instructor
3-0-3

This course focuses on problem definition, stakeholder analyses and communication strategies to support development. Business interface analysis fundamentals, requirements planning, analysis and documentation are covered.

3 Credits

- The remaining one course can be selected from any of our offerings.

Note:

For questions about the advanced certificate programs, contact the English, Technical Communication, and Media Arts Department. The number is 678-915-7202; or write to TCOM@spsu.edu. Visit the web site at <http://idc.spsu.edu> for more information.

Visual Communication Advanced Certificate

If you have a master's degree and you want to increase your knowledge and skills in visual communication, then an Advanced Certificate is the way for you to add an area of specialization to your existing qualifications.

To earn an Advanced Certificate with a specialization, you'll take 6 courses; the required courses are listed below.

Visual Communication Admissions Requirements

Students applying to the advanced certificates must have:

- Master's degree from an accredited institution

To complete the application process with the Graduate School, students must submit the following to Graduate Admissions:

- Application form; **you** apply online at <https://srm2.targetx.com/orgs/00DA0000000HCBnMAO/login>
- Application fee of \$50, this is non-refundable
- One official sealed transcript sent directly from each college attended.
- Immunization certification; please sign the waiver on the back stating enrollment in online courses only; this form can be printed online, <http://www.spsu.edu/gradstudies/admissions/immunization.pdf>
- Statement of purpose essay, as required by Graduate Admissions, http://www.spsu.edu/gradstudies/admissions/Statement_of_Purpose.pdf
- Professional resume detailing current and previous work experience

To complete the application process with the department, students must write an essay. This essay is timed; topics are provided by the department.

- Contact the Program Assistant, Donna McPherson, donna@spsu.edu, to schedule a day and time to write the essay. The essay topic will be sent via email. The applicant is responsible for timing the essay and sending an electronic copy back to the department within two hours of beginning the essay.

NOTE: Based on the Admission Committee's evaluation of the packet, some applicants may be required to take IDC 6001 as a mandatory elective in the certificate program.

Requirements

IDC 6005 - Visual Thinking

Prereq/Corequisite: IDC 6001, IDC 6030
3-0-3

Course examines principles of effective visual communication. Students analyze visual artifacts, select visual representations for key concepts, and identify appropriate visual forms for different information structures.

3 Credits

IDC 6035 - Information Graphics

Prerequisite: IDC 6001 and IDC 6030
Corequisite: IDC 6002
3-0-3

Process and product of visual representation and display of information utilizing advanced techniques to produce infographics. Research and production of data infographics, visual instructions and comics as infographics, dashboards, and news infographics. Must have working knowledge of Photoshop and Illustrator or comparable raster-based and vector-based image applications.

3 Credits

IDC 6042 - Applied Digital Graphics

Prerequisite: IDC 6001 and IDC 6030
Prereq/Corequisite: TCOM 6002
3-0-3

Students develop competency in complex digital image editing for information design and communication. Students complete practical graphics projects using typography and digital illustrations.

3 Credits

IDC 6045 - Foundations of Multimedia

Prerequisite: IDC 6001 and IDC 6030
Prereq/Corequisite: IDC 6002
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. This course is double-listed for both undergraduate and graduate students. Graduate students will be required to complete additional work that emphasizes theory and research over application. Thus they must demonstrate a higher level of learning than undergraduates. Students who took TCOM 4045 Foundations of Multimedia as undergraduates may not count IDC 6045 for credit toward their graduate degree.

3 Credits

IDC 6135 - Website Design

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Advanced theoretical study and application of best practices for the design and delivery of information on the World Wide Web. Students learn the fundamentals of HTML, use of HTML authoring tools, web content writing and editing, page layout, design of web graphics and multimedia elements, and website architecture and content management. Students work individually and in teams to design and develop websites. Some instruction is provided in basic HTML and XHTML coding, the composition of cascading style sheets, and the use of a current web site development software package.

3 Credits

- The remaining course can be selected from any of our offerings

Note:

For questions about the advanced certificate programs, contact the English, Technical Communication, and Media Arts Department. The number is 678-915-7202; or write to TCOM@spsu.edu. Visit the web site at <http://idc.spsu.edu> for more information.

Information & Instructional Design

The MS program in Information and Instructional Design was developed to meet the growing need for corporate arena professionals developing both informational resources and instructional solutions for adult learners. Program graduates will demonstrate a flexible, highly competitive knowledge and skill set preparing them to serve corporate needs as instructional developers, trainers, and content developers/managers.

Information and Instructional Design Admissions Requirements

Students applying to the MS IID program must have:

- Undergraduate degree from an accredited institution
- GRE minimum scores of **153** for verbal reasoning, **144** for Quantitative Reasoning, and a **4** on the writing component
- GPA at or above the university's 2.75 minimum

To complete the application process with the Graduate School, students must submit the following to Graduate Admissions:

- Application form; **you** apply online at <https://sm2.targetx.com/orgs/00DA000000HCBnMAO/login>
- Application fee of \$50, this is non-refundable
- One official sealed transcript sent directly from each college attended.
- Immunization certification; please sign the waiver on the back stating enrollment in online courses only; this form can be printed online, <http://www.spsu.edu/gradstudies/admissions/Immunization.pdf>
- statement of purpose essay, as required by Graduate Admissions, http://www.spsu.edu/gradstudies/admissions/Statement_of_Purpose.pdf
- Professional resume detailing current and previous work experience

To complete the application process with the department, students must write an essay. This essay is timed; topics are provided by the department.

- Contact the Program Assistant, Donna McPherson, donna@spsu.edu, to schedule a day and time to write the essay. The essay topic will be sent via email. The applicant is responsible for timing the essay and sending an electronic copy back to the department within two hours of beginning the essay.

NOTE: students who do not have a background in writing and/or graphics may be given provisional admission status and required to take IDC 5001 - Writing in the Professions and/or IDC 5002 - Graphics in the Profession as preparation for the degree program. A grade of B or above is required for full admission into the degree program. Students may also self-select for either or both of IDC 5001 and 5002.

Degree Requirements

MS IID students are required to take the following courses:

IDC 6001 - Professional Practices of Communication

3-0-3

Overview of technical writing and editing. Emphasis on drafting and editing many documents that reflect the variety of writing done in the field of professional communication. Both experienced and inexperienced writers will benefit from this course, which must be taken the first semester of enrollment in the master's program.

3 Credits

IDC 6002 - Information Design

Prereq/Corequisite: IDC 6001, IDC 6030

3-0-3

Study of the main design elements in information products with an emphasis on rhetorical and theoretical underpinnings for design decisions. Students work on designing and redesigning products in various media. Requirements include a report on document design that demonstrates solid application of theoretical principles. Should be taken as soon as possible after admission.

3 Credits

IDC 6030 - Visual Design Strategy

Prerequisite: IDC 6001 or departmental approval

3-0-3

Application of fundamental elements and principles of graphic design to professional communication. Students without solid background in graphics and page layout applications are encouraged to take IDC 5002 before IDC 6030.

3 Credits

IDC 6135 - Website Design

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Advanced theoretical study and application of best practices for the design and delivery of information on the World Wide Web. Students learn the fundamentals of HTML, use of HTML authoring tools, web content writing and editing, page layout, design of web graphics and multimedia elements, and website architecture and content management. Students work individually and in teams to design and develop websites. Some instruction is provided in basic HTML and XHTML coding, the composition of cascading style sheets, and the use of a current web site development software package.

3 Credits

IID 6001 - Foundations of Instructional Technology

Prerequisite: Successful completion of IID program core courses

3-0-3

Course provides students a detailed introduction to and overview of the field of instructional design-technology. Emphasis on historical origins and principles, seminal literature, important theorists, current and best practices, emerging technologies, and future directions. Provides students with the "big picture" of instructional technology and gives them a context for future courses.

3 Credits

IID 6140 - Instructional Systems Design

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Course introduces and applies the literature, tools, and techniques of systematic instructional design. Includes substantial online course elements. Students will study major models of instructional design and apply them to develop and refine a unit of instruction. The course addresses the literature and theory underlying formal instructional development – particularly cognitive psychology -- and provides practice in goal analysis, team instructional development, formative evaluation, and evaluation.

3 Credits

PSYC 6010 - Educational Psychology - The Adult Learner

Prerequisite: Undergraduate transcript must document introduction to Psychology, Educational Psychology, Cognitive Psychology, or course equivalent of one of these. Limited to IID majors only.

3-0-3

Learners, learning, and teaching. Course explores current theory and information on the teaching and learning process for adult learners. The behavioral and cognitive views are presented and educational theory applied to instructional development is stressed.

3 Credits

PSYC 6011 - Theories of Cognition

Prerequisite: Undergraduate transcript must document introduction to Psychology, Educational Psychology, Cognitive Psychology, or course equivalent of one of these. Limited to IID majors only.

3-0-3

Cognitive psychology as applied to education. Cognitive theories, models, and processes are applied to the teaching and learning of school skills and content areas. Processes such as attention, critical thinking, concept formation, language, memory, and problem solving are examined. Cognitive psychology principles are used to examine and refine instructional methods.

3 Credits

IDC Electives - Select 2 elective courses with an IDC prefix **6 credits.**

IID Electives - Select 2 elective courses with an IID prefix **6 credits.**

Note

Students can complete the 6 credit elective requirement in either IDC or IID by completing 6 credits of the appropriate Internship (IID 7601-7603 or IDC 7601-7603). While taking the internship, students may enroll in a maximum of 9 hours per semester: 3 hours of internship plus two courses or 6 hours of internship plus one course.

Elective IDC Courses

IDC 6005 - Visual Thinking

Prereq/Corequisite: IDC 6001, IDC 6030
3-0-3

Course examines principles of effective visual communication. Students analyze visual artifacts, select visual representations for key concepts, and identify appropriate visual forms for different information structures.

3 Credits

IDC 6010 - Writing Across Media

Prerequisite: IDC 6001
Prereq/Corequisite: IDC 6030
3-0-3

Course examines rhetorical, structural, and stylistic requirements of various communications media. Topics include writing for the Web, narrative design, and document engineering.

3 Credits

- IDC 6015 - Strategic Communication **3 credits**

IDC 6035 - Information Graphics

Prerequisite: IDC 6001 and IDC 6030
Corequisite: IDC 6002
3-0-3

Process and product of visual representation and display of information utilizing advanced techniques to produce infographics. Research and production of data infographics, visual instructions and comics as infographics, dashboards, and news infographics. Must have working knowledge of Photoshop and Illustrator or comparable raster-based and vector-based image applications.

3 Credits

IDC 6042 - Applied Digital Graphics

Prerequisite: IDC 6001 and IDC 6030
Prereq/Corequisite: TCOM 6002
3-0-3

Students develop competency in complex digital image editing for information design and communication. Students complete practical graphics projects using typography and digital illustrations.

3 Credits

IDC 6045 - Foundations of Multimedia

Prerequisite: IDC 6001 and IDC 6030
Prereq/Corequisite: IDC 6002
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. This course is double-listed for both undergraduate and graduate students. Graduate students will be required to complete additional work that emphasizes theory and research over application. Thus they must demonstrate a higher level of learning than undergraduates. Students who took TCOM 4045 Foundations of Multimedia as undergraduates may not count IDC 6045 for credit toward their graduate degree.

3 Credits

IDC 6060 - Strategies for Global Communication

Prerequisite: IDC 6001 and IDC 6030

Prereq/Corequisite: IDC 6002

3-0-3

Focuses on issues affecting global communication. Readings in culture and international communication give students the research and theory to make strategic decisions regarding the design of communication products in international contexts.

3 Credits

- IDC 6071 - User Assistance **3 credits**

IDC 6080 - Professional Oral Presentations

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Course designed to enhance students' presentation skills in a technical and business environment. Students practice various speech types such as briefings, interviews, formal technical presentations, panels, and impromptu presentations. Whenever possible, presentations are videotaped for analysis and review.

3 Credits

IDC 6090 - Medical Communication

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Course examines the scope of medical communication, with emphasis on opportunities for technical communication professionals. Students will analyze, edit, and revise various medical document types, such as medical research abstracts, patient education materials, professional medical training documents, medical advertisements, and pharmaceutical package inserts. Students will independently study medical terminology and develop a portfolio of medical writing samples.

3 Credits

IDC 6120 - Usability Testing

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

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.

3 Credits

IDC 6150 - Marketing Communication

Prerequisite: IDC 6001 and IDC 6030;

Prereq/Corequisite: IDC 6002

3-0-3

Strategies for planning and implementing a marketing plan for a sponsored project. Students also develop individual assignments for self-promotion and white papers.

3 Credits

- IDC 6160 Rhetoric: History, Theory, and Practice **3 credits**

IDC 6175 - Digital Rhetoric

Prereq/Corequisite: IDC 6001, IDC 6030, and IDC 6002
3-0-3

Course provides students with a foundation in rhetoric as a study of argument, persuasion, and convention. In particular, the course focuses on rhetorical practice within a digital environment. Students will develop strong digital literacy skills to help them analyze both audience and content of new media. They will explore how a medium creates assumptions for its users, and how these media interact with one another in a larger social context. Through case studies and applied projects, students will learn to integrate digital rhetoric into the practices of professional and technical communication.

3 Credits

IDC 6180 - Information Architecture

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Course examines key concepts involved in communicating information in complex Web environments. Topics include audience analysis, organizational schemas, labeling, and navigation.

3 Credits

IDC 6210 - Business Analysis

Prerequisite: IDC 6001, IDC 6030 and IDC 6002 or permission of instructor
3-0-3

This course focuses on problem definition, stakeholder analyses and communication strategies to support development. Business interface analysis fundamentals, requirements planning, analysis and documentation are covered.

3 Credits

IDC 6220 - Mobile User Experience

Prerequisite: IDC 6001, IDC 6030, IDC 6002 or permission of instructor
3-0-3

Introduction to how user experience design, evaluation and documentation influence the mobile design lifestyle. Coursework involves case studies and project work to build student portfolios.

3 Credits

IDC 6240 - Content Strategy

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

An introduction to the practices and processes of developing, implementing, assessing, and refining content for strategic and brand marketing purposes.

3 Credits

IDC 6903 - Special Topics

Prerequisite: IDC 6001 and IDC 6030;
Corequisite: IDC 6002
Prereq/Corequisite: IDC 6002

1 to 3

A course on a special topic of importance and relevance to the field of technical communication not covered in the graduate curriculum. Offered when needed.

1 to 3 Credits

IDC 7503 - Independent Study

Prerequisite: IDC 6001 and IDC 6030;

Corequisite: IDC 6002

Prereq/Corequisite: IDC 6002

3-0-3

A directed study for a graduate student who wishes to pursue a special interest in information not covered in the curriculum. The student submits to the IDC graduate program coordinator a proposal that clearly defines the course of study and the benefits to be obtained. The proposal must be submitted at least one semester prior to registration for independent study hours. Once the proposal is approved, the student is assigned a faculty advisor and registers for 3 credit hours.

3 Credits

Elective IID Courses

- IID 6010 - Technology Applications of Teaching and Learning **3 credits**
- IID 6020 - Corporate Applications of Instructional Technology **3 credits**

IID 6050 - Instructional Applications of Multimedia Design

Prerequisite: IDC 6135 and IDC 6045

3-0-3

Course introduces and applies theories, tools and techniques of professional multimedia use in instructional design settings.

3 Credits

IID 6145 - Human Performance Technology

Prerequisite: IDC 6001

Prereq/Corequisite: TCOM 6002

3-0-3

Course applies tools, and techniques of human performance technology, the parent field of instructional design. The performance technologist analyzes and solves workplace human productivity issues.

3 Credits

IID 6155 - Online Instructional Development

Prerequisite: IID 6140

3-0-3

Course explores online instructional development and deployment in higher education and corporate arenas, addressing issues of pedagogy, current and emerging technologies, marketing, design, and evaluation. Students will create, deploy and evaluate online instructional modules in a variety of online technologies.

3 Credits

Note

A grade of "B" or better is required in all courses that are applied to graduation (with the exception of the internship and thesis, which require an "S").

Instructional Design Advanced Certificate

If you have a master's degree and you want to increase your knowledge and skills in instructional design, then an Advanced Certificate is the way for you to add an area of specialization to your existing qualifications.

To earn an Advanced Certificate with a specialization, you'll take 6 courses; the required courses are listed below.

Admissions Requirements

Students applying to the advanced certificates must have:

- Master's degree from an accredited institution

To complete the application process with the Graduate School, students must submit the following to Graduate Admissions:

- Application form; **you** apply online at <https://srm2.targetx.com/orgs/00DA0000000HCBnMAO/login>
- Application fee of \$50, this is non-refundable
- One official sealed transcript sent directly from each college attended.
- Immunization certification; please sign the waiver on the back stating enrollment in online courses only; this form can be printed online, <http://www.spsu.edu/gradstudies/admissions/Immunization.pdf>
- Statement of purpose essay, as required by Graduate Admissions, http://www.spsu.edu/gradstudies/admissions/Statement_of_Purpose.pdf
- Professional resume detailing current and previous work experience

To complete the application process with the department, students must write an essay. This essay is timed; topics are provided by the department.

- Contact the Program Assistant, Donna McPherson, donna@spsu.edu, to schedule a day and time to write the essay. The essay topic will be sent via email. The applicant is responsible for timing the essay and sending an electronic copy back to the department within two hours of beginning the essay.

NOTE: Based on the Admission Committee's evaluation of the packet, some applicants may be required to take IDC 6001 as a mandatory elective in the certificate program.

Requirements

IDC 6035 - Information Graphics

Prerequisite: IDC 6001 and IDC 6030

Corequisite: IDC 6002

3-0-3

Process and product of visual representation and display of information utilizing advanced techniques to produce infographics. Research and production of data infographics, visual instructions and comics as infographics, dashboards, and news infographics. Must have working knowledge of Photoshop and Illustrator or comparable raster-based and vector-based image applications.

3 Credits

IDC 6135 - Website Design

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Advanced theoretical study and application of best practices for the design and delivery of information on the World Wide Web. Students learn the fundamentals of HTML, use of HTML authoring tools, web content writing and editing, page layout, design of web graphics and multimedia elements, and website architecture and content management. Students work individually and in teams to design and develop websites. Some instruction is provided in basic HTML and XHTML coding, the composition of cascading style sheets, and the use of a current web site development software package.

3 Credits

IID 6140 - Instructional Systems Design

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Course introduces and applies the literature, tools, and techniques of systematic instructional design. Includes substantial online course elements. Students will study major models of instructional design and apply them to develop and refine a unit of instruction. The course addresses the literature and theory underlying formal instructional development – particularly cognitive psychology -- and provides practice in goal analysis, team instructional development, formative evaluation, and evaluation.

3 Credits

IID 6145 - Human Performance Technology

Prerequisite: IDC 6001
Prereq/Corequisite: TCOM 6002
3-0-3

Course applies tools, and techniques of human performance technology, the parent field of instructional design. The performance technologist analyzes and solves workplace human productivity issues.

3 Credits

IID 6155 - Online Instructional Development

Prerequisite: IID 6140
3-0-3

Course explores online instructional development and deployment in higher education and corporate arenas, addressing issues of pedagogy, current and emerging technologies, marketing, design, and evaluation. Students will create, deploy and evaluate online instructional modules in a variety of online technologies.

3 Credits

- The remaining course can be selected from any of our offerings

Note:

For questions about the advanced certificate programs, contact the English, Technical Communication, and Media Arts Department. The number is 678-915-7202; or write to TCOM@spsu.edu. Visit the web site at <http://idc.spsu.edu> for more information.

Information Technology

Offering the Master of Science Degree

The Master of Science in Information Technology (MSIT) program is designed for those students interested in pursuing a career as a senior information technology (IT) professional who can apply accepted standards and best practices to effectively plan, design, implement and manage the various aspects of an IT organization.

Although no specific undergraduate major is required, applicants must have a baccalaureate degree from an accredited school. Students will be evaluated on an individual basis and will be admitted only if their academic accomplishments, recommendations, and motivation predict the ability to complete the program successfully.

Admission Procedure

Applicants for admission to the Master of Science program in Information Technology should submit the following to the Admissions Office:

- An application for admission to the program
- An official transcript from each college the applicant has attended
- A certificate of immunization
- A statement of purpose in seeking this degree
- Three recommendation letters completed by former or current supervisors, professors, or professional colleagues.

International students should refer to the International Students section for additional admission requirements.

To be fully admitted to the MSIT requires a) a baccalaureate degree from an accredited college or university, b) an overall GPA of at least 2.75 on a 4.0 scale.

Lower GPA is considered on a case-by-case basis.

If the Undergraduate degree is outside of IT or a closely related discipline to IT, the student is required to complete six transition courses: IT 5101, IT 5102, IT 5200, IT 5201, IT 5303 and IT 5302. Students may obtain exemption from the transition courses by a qualifying exam before registration. A provisional admission might be offered while these are being completed.

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 IT 6683 Management of IT and then takes MGNT 6010 Management of IT, only one may be counted as hours towards the degree.

Health Information Technology Graduate Certificate

The Graduate Certificate in Health Information Technology prepares individuals who hold an accredited bachelor's degree and have taken the Graduate Transition Certificate in Information Technology (or the equivalent through other course work) to advance their knowledge in the field of health information technology.

Required Courses (15 Credits):

IT 6423 - IT System Acquisition

Prerequisite: IT 5303 or IT 5301

3-0-3

This core course covers methods and best practices of assessing business needs, functional requirements and value for IT system acquisition (including decisions about appropriate sourcing).

3 Credits

IT 6503 - Foundations of Health Information Technology

3-0-3

This course provides an overview of the importance of information technology and information systems in the health care industry. It provides an overview of the healthcare IT industry in the U.S. and clinical terminologies, a review of fundamental characteristics of clinical information, health information exchange standards (HL7); healthcare payment and reimbursement systems, the challenges of IT implementation, and a detailed discussion of the primary clinical and managerial applications of information (including electronic health records - EHR). Group and individual research will be required.

3 Credits

IT 6513 - Electronic Health Record Systems

Prerequisite: IT 6503
3-0-3

This course provides an overview of key technical aspects of electronic health records, the overall architecture, features and functions of major EHR systems.

3 Credits

IT 6523 - Clinical Processes & Workflows: Analysis and Redesign

Corequisite: IT 6503
3-0-3

The course reviews aspects of clinical care as a formal activity and addresses the impact of processes and workflows on organizational efficiency and productivity.

3 Credits

IT 6533 - Health Information Security and Privacy

Prerequisite: IT 6503
3-0-3

This course covers key technical aspects of electronic health records, the overall architecture, features and functions of major EHR systems.

3 Credits

Information Security and Assurance Graduate Certificate

The Graduate Certificate in Information Security and Assurance (ISA) Program is designed for IT professionals who have a bachelor's degree and have taken the Graduate Transition Certificate in Information Technology (or the equivalent through other course work) to advance their knowledge in the field of information security and assurance.

Students graduating with this program will have a strong background in fundamental principles and applications of computer security and information assurance, as well as hands-on experience with security tools commonly used in industry.

Candidates must complete the two core courses in Information Security and Assurance and two elective courses for a total of 12 credits.

Required Courses (6 Hours):

IT 6823 - Information Security Concepts and Administration

Prerequisite: IT 5102
3-0-3

This course covers the fundamentals of computing security, access control technology, cryptographic algorithms, implementations, tools and their applications in communications and computing systems security. Topics include public key infrastructure, operating

system security, database security, network security, web security, firewalls, security architecture and models, and ethical and legal issues in information security.

3 Credits

IT 6873 - Information Security Seminar

Prerequisite: IT 6823

3-0-3

This course covers advanced topics in information security and assurance. This course is intended to provide students a solid foundation for further research and development in the area of information security and assurance with the opportunity to develop the skill of critically reading and evaluating research papers. Topics include: Latest development in network security, threat modeling, trustworthy computing, operating system security, program security, database security, and legal and ethical issues in information security and assurance. The course will consist of a lectures, guided research project, as well as presentations and discussions.

3 Credits

Elective Courses (6 Hours)

Choose 2 from the following list:

IT 6833 - Wireless Security

Prerequisite: IT 6823

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 802.11i security standards to protect Wi-Fi networks, wireless network intrusion detection and prevention, and security trouble-shooting WLANs.

3 Credits

IT 6853 - Computer Forensics

Prerequisite: IT 6823

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.

3 Credits

IT 6843 - Ethical Hacking: Network Security and Penetration Testing

Prerequisite: IT 6823

3-0-3

This course covers the major issues surrounding the use of penetration testing to secure network security and important skills of a professional hacker and common security challenges that an information security officer will face in his/her work. Topics include the ethics of ethical hacking, laws and regulations, vulnerability discovery and risk analysis, internal and external attacks, how malicious hackers attack and exploit system vulnerabilities, penetration testing methods and tools, latest security countermeasures, and various types of penetration testing and programming skills required to complete successful penetration tests and to secure real systems against real attacks.

3 Credits

IT 6863 - Database Security and Auditing

Prerequisite: IT 5101 and IT 5102

3-0-3

This course provides students with an understanding of security concepts and practices in general and those specific to database security in a highly detailed implementation. Students will learn fundamental principles of database security and how to develop database applications embedding from simple to sophisticated security and auditing models using advanced database systems and software tools.

3 Credits

IT 6903 - Special Topics in Information Technology

3-0-3

Special topics selected by the Department Chair. Offered on a demand basis.

3 Credits

Information Technology Fundamentals Graduate Certificate

The Graduate Transition Certificate in Information Technology prepares individuals who have an accredited bachelor's degree unrelated to information technology and who have an interest in either:

- Transitioning to a Master's program in Information Technology
- Or in obtaining an entry-level position in industry

Students with no background in IT or computing might benefit from self-study prior to starting this certificate using a reading list available from the IT Department. These courses may not be used to satisfy MSIT degree requirements.

Required Courses (10.5 Credits):

IT 5101 - Introduction to Database Systems

1.5-0-1.5

This course examines aspects of database management systems. Topics include database analysis, design, development, and management.

1.5 Credits

IT 5102 - Introduction to Security

1.5-0-1.5

This course examines aspects of computer security and assurance. Topics include basic principles, architecture models, disaster recovery models, physical security, and privacy and ethics.

1.5 Credits

IT 5200 - Introduction to Platforms

1.5-0-1.5

This course examines aspects of computer platforms, operating systems and hardware.

1.5 Credits

IT 5201 - Introduction to Networks

Prerequisite: IT 5200
1.5-0-1.5

This course examines aspects of computer networks and data communications.

1.5 Credits

IT 5303 - Introduction to Programming and Software Development

3-0-3

This course examines concepts and practices of modern computer programming and software development. Students will learn how to design software to solve business problems by integrating existing solutions and developing new components using an object oriented programming language.

3 Credits

IT 5302 - Introduction to Web Development

Prerequisite: IT 5303
1.5-0-1.5

This course examines the fundamental aspects of web development in support of business needs. Web development projects are required.

1.5 Credits

Information Technology Graduate Certificate

The Graduate Certificate in Information Technology prepares individuals who hold an accredited bachelor's degree and have taken the Graduate Transition Certificate in Information Technology (or the equivalent through other course work) to advance their knowledge in the field of information technology.

Requirements

IT 6203 - IT Design Studio

Prerequisite: IT 5101 and IT 5302
3-0-3

This core course covers technologies and methods of designing and prototyping an IT application from multiple sub-system components. Major projects included, where students will design and prototype two significant IT applications involving n-tiers of sub-system components, where n is greater than 2. The course will require foundational proficiency in all major technical areas of IT including: data management; information assurance and security; networks and communication; servers and platforms; and software and web development.

3 Credits

IT 6423 - IT System Acquisition

Prerequisite: IT 5303 or IT 5301
3-0-3

This core course covers methods and best practices of assessing business needs, functional requirements and value for IT system

acquisition (including decisions about appropriate sourcing).

3 Credits

IT 6413 - IT Service Delivery

Prerequisite: IT 5201
3-0-3

This core course covers existing and emerging standards for IT service delivery, including ITIL and EAMM necessary for graduates who will have responsibility for IT service delivery to the organization including attaining and maintaining service level agreements. Major project included.

3 Credits

IT 7833 - IT Strategy, Policy and Governance

Corequisite: IT 6203
3-0-3

This is a core course in which students complete a major project which integrates elements and best practices of the field. It should be completed after the other core courses have been completed or begun.

3 Credits

IT Electives

Select 2 from the following list:

IT 6733 - Database Administration

Prerequisite: IT 5101
3-0-3

This course covers data administration and management, backup/recovery, security, access control, performance monitoring and tuning, data warehousing, data mining, online analytical processing, centralized versus distributed environments, client server and world-wide-web database integration.

3 Credits

IT 6753 - Advanced Web Development

Prerequisite: IT 5101 and IT 5302
3-0-3

This course covers web services and content management for advanced web applications. Students will gain familiarity with: advanced business concepts for the web; best practices and development processes for web applications; and a variety of appropriate web tools both in the proprietary and open source domains.

3 Credits

IT 6823 - Information Security Concepts and Administration

Prerequisite: IT 5102
3-0-3

This course covers the fundamentals of computing security, access control technology, cryptographic algorithms, implementations, tools and their applications in communications and computing systems security. Topics include public key infrastructure, operating system security, database security, network security, web security, firewalls, security architecture and models, and ethical and legal issues in information security.

3 Credits

IT 6723 - Managing Operating and Network Systems

Prerequisite: IT 5201
3-0-3

This course covers the installation and management of operating systems and telecommunications networks, including cost-benefit analysis, and evaluation of connectivity options. Students learn to evaluate, select and implement different operating and communications options to support an organization.

3 Credits

Total For Certificate: 18 Credits

Information Technology, Master of Science

The MSIT program is designed either for students who have completed an undergraduate degree in a computing discipline - such as Information Technology, Computer Science or Software Engineering, or students who have an undergraduate degree in a non-computing discipline. Students with an undergraduate degree from a non-computing discipline will be required to take up to six "transition" IT courses in order to be prepared for the regular MSIT courses. Upon admission to the MSIT program, the graduate coordinator will inform students of any transition courses they may be required to take.

Degree Requirements

Required Core (15 Credits)

All five courses are required

IT 6203 - IT Design Studio

Prerequisite: IT 5101 and IT 5302
3-0-3

This core course covers technologies and methods of designing and prototyping an IT application from multiple sub-system components. Major projects included, where students will design and prototype two significant IT applications involving n-tiers of sub-system components, where n is greater than 2. The course will require foundational proficiency in all major technical areas of IT including: data management; information assurance and security; networks and communication; servers and platforms; and software and web development.

3 Credits

IT 6413 - IT Service Delivery

Prerequisite: IT 5201
3-0-3

This core course covers existing and emerging standards for IT service delivery, including ITIL and EAMM necessary for graduates who will have responsibility for IT service delivery to the organization including attaining and maintaining service level agreements. Major project included.

3 Credits

IT 6423 - IT System Acquisition

Prerequisite: IT 5303 or IT 5301

3-0-3

This core course covers methods and best practices of assessing business needs, functional requirements and value for IT system acquisition (including decisions about appropriate sourcing).

3 Credits

IT 6823 - Information Security Concepts and Administration

Prerequisite: IT 5102

3-0-3

This course covers the fundamentals of computing security, access control technology, cryptographic algorithms, implementations, tools and their applications in communications and computing systems security. Topics include public key infrastructure, operating system security, database security, network security, web security, firewalls, security architecture and models, and ethical and legal issues in information security.

3 Credits

IT 7833 - IT Strategy, Policy and Governance

Corequisite: IT 6203

3-0-3

This is a core course in which students complete a major project which integrates elements and best practices of the field. It should be completed after the other core courses have been completed or begun.

3 Credits

Elective Courses (21 Credits)

ONE of the courses marked with ** is REQUIRED. Elective outside of IT department: maximum of 3 electives may be from SWE, CS, IDC or MGNT, no more than two courses from the same department, subject to Credit for Duplicate Courses policy and course prerequisites.

Repeat Course Policy: 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 IT 6683 Management of IT and then takes MGNT 6010 Management of IT, only one of the courses may be counted as hours towards the degree.

IT 6103 - IT and the Law

Corequisite: IT 6413 or IT 6423

3-0-3

This elective course will examine aspects of how the law affects an IT operation. Topics such as contract law, internet law, privacy and security will be discussed. Graduates of the MSIT need to know how the law affects IT and understand the basic laws particularly geared toward an IT operation.

3 Credits

IT 6473 - Multimedia Applications

Prerequisite: IT 5302

3-0-3

This course introduces students to current practices, technologies, methodologies, and authoring systems in the design and implementation of systems that incorporate text, audio, images, animation and full-motion video. Students will complete multimedia projects using state-of-the-art tools.

3 Credits

IT 6503 - Foundations of Health Information Technology

3-0-3

This course provides an overview of the importance of information technology and information systems in the health care industry. It provides an overview of the healthcare IT industry in the U.S. and clinical terminologies, a review of fundamental characteristics of clinical information, health information exchange standards (HL7); healthcare payment and reimbursement systems, the challenges of IT implementation, and a detailed discussion of the primary clinical and managerial applications of information (including electronic health records - EHR). Group and individual research will be required.

3 Credits

IT 6513 - Electronic Health Record Systems

Prerequisite: IT 6503

3-0-3

This course provides an overview of key technical aspects of electronic health records, the overall architecture, features and functions of major EHR systems.

3 Credits

IT 6523 - Clinical Processes & Workflows: Analysis and Redesign

Corequisite: IT 6503

3-0-3

The course reviews aspects of clinical care as a formal activity and addresses the impact of processes and workflows on organizational efficiency and productivity.

3 Credits

IT 6533 - Health Information Security and Privacy

Prerequisite: IT 6503

3-0-3

This course covers key technical aspects of electronic health records, the overall architecture, features and functions of major EHR systems.

3 Credits

IT 6583 - Business Continuity Planning & Implementation

3-0-3

This course covers the current practices, technologies, methodologies and tools in the design, exercising and implementation of business continuity plans for the IT environment. Project and individual research required.

3 Credits

IT 6643 - Issues in Information Technology

3-0-3

This course addresses current issues relating to computers, ethics, and social values. Topics include computer ethics, computer crime, abuse, social responsibility, risk analysis, computer law and cultural impact. Library and internet research components are included, and a major research paper is required.

3 Credits

IT 6663 - Data Center Management

Prerequisite: IT 5201

3-0-3

Issues in setting up and running a multi-user computer or data system. Includes RFP generation, vendor selection, project planning and control methods, backup and disaster recovery plans, site preparation, managing help desks, end user training, IT professional development, contract negotiation, outsourcing relationships and job scheduling.

3 Credits

IT 6683 - Management of Information Technology

3-0-3

A study of the use of computer and information management systems in the management of organizations. Includes formal characterization of management structures, identification of information needs, and integrated tools for providing MIS support. Major project included.

3 Credits

IT 6713 - Business Intelligence

Prerequisite: IT 6733 or CS 6153

3-0-3

This class introduces the concepts, practices, systems and technologies of business intelligence, which supports enterprise level data management, analysis, reporting, and decision making.

3 Credits

IT 6723 - Managing Operating and Network Systems

Prerequisite: IT 5201

3-0-3

This course covers the installation and management of operating systems and telecommunications networks, including cost-benefit analysis, and evaluation of connectivity options. Students learn to evaluate, select and implement different operating and communications options to support an organization.

3 Credits

IT 6733 - Database Administration

Prerequisite: IT 5101

3-0-3

This course covers data administration and management, backup/recovery, security, access control, performance monitoring and tuning, data warehousing, data mining, online analytical processing, centralized versus distributed environments, client server and world-wide-web database integration.

3 Credits

IT 6753 - Advanced Web Development

Prerequisite: IT 5101 and IT 5302

3-0-3

This course covers web services and content management for advanced web applications. Students will gain familiarity with: advanced business concepts for the web; best practices and development processes for web applications; and a variety of appropriate web tools both in the proprietary and open source domains.

3 Credits

IT 6763 - Electronic Commerce

Prerequisite: IT 5101 and IT 5302

3-0-3

This course covers tools, skills, business concepts, and social issues that surround the emergence of electronic commerce. The student will develop an understanding of the current practices and opportunities in EDI, electronic publishing, electronic shopping, electronic distribution, electronic collaboration and database issues. Other issues include standards, security, authentication, privacy, intellectual property, acceptable use, legal liability, and economic analysis.

3 Credits

IT 6833 - Wireless Security

Prerequisite: IT 6823

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 802.11i security standards to protect Wi-Fi networks, wireless network intrusion detection and prevention, and security trouble-shooting WLANs.

3 Credits

IT 6843 - Ethical Hacking: Network Security and Penetration Testing

Prerequisite: IT 6823

3-0-3

This course covers the major issues surrounding the use of penetration testing to secure network security and important skills of a professional hacker and common security challenges that an information security officer will face in his/her work. Topics include the ethics of ethical hacking, laws and regulations, vulnerability discovery and risk analysis, internal and external attacks, how malicious hackers attack and exploit system vulnerabilities, penetration testing methods and tools, latest security countermeasures, and various types of penetration testing and programming skills required to complete successful penetration tests and to secure real systems against real attacks.

3 Credits

IT 6853 - Computer Forensics

Prerequisite: IT 6823

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.

3 Credits

IT 6863 - Database Security and Auditing

Prerequisite: IT 5101 and IT 5102

3-0-3

This course provides students with an understanding of security concepts and practices in general and those specific to database security in a highly detailed implementation. Students will learn fundamental principles of database security and how to develop database applications embedding from simple to sophisticated security and auditing models using advanced database systems and software tools.

3 Credits

IT 6873 - Information Security Seminar

Prerequisite: IT 6823
3-0-3

This course covers advanced topics in information security and assurance. This course is intended to provide students a solid foundation for further research and development in the area of information security and assurance with the opportunity to develop the skill of critically reading and evaluating research papers. Topics include: Latest development in network security, threat modeling, trustworthy computing, operating system security, program security, database security, and legal and ethical issues in information security and assurance. The course will consist of a lectures, guided research project, as well as presentations and discussions.

3 Credits

CSE 6983 - Graduate Internship

Prerequisite: 9 CSE graduate hours and be in good academic standing.
3-0-3

Gives students the opportunity to apply knowledge of computing in a realistic practical project. They are expected to write a research paper based on their experiences.

3 Credits

IT 6903 - Special Topics in Information Technology

3-0-3

Special topics selected by the Department Chair. Offered on a demand basis.

3 Credits

IT 7803 - Masters Thesis

Prerequisite: Consent of the graduate coordinator
3-0-3

The thesis is designed for students wanting a research focus to their degree. The student works independently under the supervision of a designated faculty member on a thesis of substance in information technology. The student will generate a formal written thesis and give a final defense of the thesis. The course may be repeated, but only 6 hours may be applied toward the degree.

3 Credits

- IT 7803 - Master's Thesis (Term 2) **3 Credits**

Degree Program Total: 36

A maximum of 3 APPROVED electives might be outside of IT.

Transition Courses

The following transition courses might be required if the Undergraduate degree is outside of IT or a closely related discipline to IT, or for provisionally admitted students. Specific assignment of the transition courses is completed during orientation and advisement. Students with no background in IT or computing might benefit from self-study prior to starting this certificate using a reading list available from the IT Department. These courses may not be used to satisfy degree requirements.

IT 5101 - Introduction to Database Systems

1.5-0-1.5

This course examines aspects of database management systems. Topics include database analysis, design, development, and management.

1.5 Credits

IT 5102 - Introduction to Security

1.5-0-1.5

This course examines aspects of computer security and assurance. Topics include basic principles, architecture models, disaster recovery models, physical security, and privacy and ethics.

1.5 Credits

IT 5200 - Introduction to Platforms

1.5-0-1.5

This course examines aspects of computer platforms, operating systems and hardware.

1.5 Credits

IT 5201 - Introduction to Networks

Prerequisite: IT 5200

1.5-0-1.5

This course examines aspects of computer networks and data communications.

1.5 Credits

IT 5302 - Introduction to Web Development

Prerequisite: IT 5303

1.5-0-1.5

This course examines the fundamental aspects of web development in support of business needs. Web development projects are required.

1.5 Credits

IT 5303 - Introduction to Programming and Software Development

3-0-3

This course examines concepts and practices of modern computer programming and software development. Students will learn how to design software to solve business problems by integrating existing solutions and developing new components using an object oriented programming language.

3 Credits

Quality Assurance

Offering a Master of Science in Quality Assurance

Southern Polytechnic State University has been offering its Master of Science in Quality Assurance Degree since 1992. In 1997, the program added the additional flexibility of online courses using distance learning technology. In 2005, the program converted to 100% online delivery. Many students from around the world have earned a graduate degree from our nationally recognized program using the computer in their home or office.

The Masters Program in Quality Assurance is offered through the Industrial Engineering Technology Department in order to meet an established need in both manufacturing and service industries. The program focuses on total quality management and on analytical methods such as statistics, process, analysis, and problem solving techniques. A primary objective of the degree is to provide a graduate level study opportunity to individuals who are currently practicing in the quality and related fields so that they may be aware of recent advances and modern practice.

Our courses deal with Quality topics in depth, stressing theory and the assumptions behind the techniques. That is what separates our education approach from certification training seminars. Our graduates know the details behind techniques, allowing them to know what to do when assumptions are violated (which happens a lot in the real world), and helping them to evaluate the relative merits of "new" quality tools. A lot of what is touted as new is just a repackaging of tried and true methods, with maybe a novel twist.

The program also provides MSQA students a pathway to earn a **Six Sigma Black Belt**.

Requirements for the Black Belt are:

1. Successfully complete the seven required courses for the MSQA degree
2. Successfully complete the following three electives as part of the five required electives:
 - QA 6660 QA 6660 - Six Sigma Black Belt Concepts
 - QA 6612 QA 6612 - Design of Experiments
 - QA 6600 QA 6600 - Methods of Analysis
3. Complete an industry-focused project

The project begins in QA 6660 QA 6660 - Six Sigma Black Belt Concepts as part of the course and concludes under the supervision of an industry official and MSQA faculty.

Admission Requirements for MSQA:

At least a 2.75 (on the 4.00 scale) undergraduate grade point average.

An undergraduate degree from an accredited college or university in: Engineering, Engineering Technology, Business, Social Science, Physical Sciences or Education. Other technical and non-technical majors may be acceptable

Admissions Procedure for MSQA:

Applicants for admission to the MSQA program must submit the following to the Graduate Admissions Office in accordance with the deadlines outlined on the Graduate Admissions Web site.

- An application for admission to the program
- One official transcript from each college the applicant has attended
- A certificate of immunization (distance learning waiver section signed)
- A statement of purpose in seeking this degree
- At least three recommendation forms which have been completed by former or current supervisors, professors, or professional colleagues

International students should refer to the International Students sub-section for additional admission requirements.

Graduate Faculty Listing

Green Belt Graduate Certificate

The Department also offers a Graduate Green Belt Certificate for those individuals with an undergraduate degree from an accredited institution. Course work completed in the certificate program will be credited to the student's official transcript as regular academic course work counting for graduate credit. Admission in the Certificate program does not in any way qualify a student for admission to a graduate program. Should a certificate seeking student decide to apply to the MSQA program, that student would need to apply as outlined above. It should be noted that no more than nine semester hours can be transferred into any SPSU graduate program including those taken as a certificate student.

Admission Requirements

Undergraduate degree from an accredited college or university in: Engineering, Engineering Technology, Business, Social Science, Physical Sciences or Education. Other technical and non-technical majors may be acceptable.

At least a 2.75 (on the 4.00 scale) undergraduate grade point average

Admissions Procedure

Applicants for the Certificate Program must submit the following to the Graduate Admissions Office in accordance with the deadlines outlined on the Graduate Admissions Web site.

- An application for admission to the program
- One official transcript from each college the applicant has attended
- A certificate of immunization (distance learning waiver section signed)
- A statement of purpose in seeking this degree

No letters of recommendation are required for the Certificate Program.

Course work completed in the certificate program will be entered on the student's official transcript as regular academic course work counting for graduate credit.

Students with an insufficient undergraduate statistics background may be asked to complete QA 5000, Statistical Concepts in Quality Assurance before beginning the statistical requirements of the certificate.

Requirements

QA 6602 - Total Quality

3-0-3

This course is a study of the functions and responsibilities of the quality organization. TQM concepts, quality function deployment, and the tools for continuous improvement are analyzed for sequence of use and application. Emphasis is placed on design and performance aspects of a system-wide quality assurance function.

3 Credits

QA 6610 - Statistics for Quality Assurance

3-0-3

Descriptive statistics for discrete and continuous variables, probability distributions, confidence intervals and hypothesis testing, elementary control charts for variables and attributes, the design of acceptance sampling plans, analysis of variance, and regression and correlation analysis.

3 Credits

QA 6611 - Statistical Process Control

Prerequisite: A course in statistics, such as MATH 2260, IET 3403 or QA 6610
3-0-3

The application of advanced statistical methodologies to the analysis and solution of quality and management problems, including probability theory, control charts, sampling, regression analysis, and design of experiments. The focus is on statistical process control and related quality technologies.

3 Credits

QA 6650 - Quality Systems Design

Prerequisite: QA 6602
3-0-3

Quality Systems Design prepares students for the development of the quality organization, systems, and procedures necessary for effective participation in world markets. Creating and documenting methods and procedures are stressed.

3 Credits

Total Required Credits: 12

Note:

A grade of "C" or better is required for each course.

Quality Assurance, Master of Science

Degree Requirements

Required Core Courses

QA 6602 - Total Quality

3-0-3

This course is a study of the functions and responsibilities of the quality organization. TQM concepts, quality function deployment, and the tools for continuous improvement are analyzed for sequence of use and application. Emphasis is placed on design and performance aspects of a system-wide quality assurance function.

3 Credits

QA 6610 - Statistics for Quality Assurance

3-0-3

Descriptive statistics for discrete and continuous variables, probability distributions, confidence intervals and hypothesis testing, elementary control charts for variables and attributes, the design of acceptance sampling plans, analysis of variance, and regression and correlation analysis.

3 Credits

QA 6611 - Statistical Process Control

Prerequisite: A course in statistics, such as MATH 2260, IET 3403 or QA 6610
3-0-3

The application of advanced statistical methodologies to the analysis and solution of quality and management problems, including probability theory, control charts, sampling, regression analysis, and design of experiments. The focus is on statistical process control and related quality technologies.

3 Credits

QA 6613 - Linear Regression Analysis

Prerequisite: QA 6611
3-0-3

In this course, students will learn linear regression analysis techniques to include first order and polynomial modeling, use of indicator variables, variance stabilizing transformations, multi-collinearity diagnostics and residual analysis. The connections among ANOVA, design of experiments and regression will be emphasized. Statistical software will be used to analyze problems.

3 Credits

QA 6650 - Quality Systems Design

Prerequisite: QA 6602
3-0-3

Quality Systems Design prepares students for the development of the quality organization, systems, and procedures necessary for effective participation in world markets. Creating and documenting methods and procedures are stressed.

3 Credits

QA 7403 - Graduate Seminar

Prerequisite: QA 6602 and QA 6611
3-0-3

The course is designed to cover various topics within the field of quality assurance which are not taught in other courses. These topics might include acceptance sampling, risk analysis, regression analysis, SPC training methods, and others.

3 Credits

SYE 6010 - Project Management Processes

3-0-3

Integrated framework for project organization, planning and control focusing on project management processes for large, complex programs to ensure cost-effective and quality outcomes for investments.

3 Credits

Total Credits: 21

Elective Courses (Students choose 5 courses)

QA 6600 - Methods of Analysis

3-0-3

A study of the analytic processes required to identify, document, define, and measure requirements and limitations for any operating system. Class work will focus on identifying, describing, and measuring existing manufacturing and service systems. Methods available for system improvement will be investigated.

3 Credits

QA 6612 - Design of Experiments

Prerequisite: QA 6610

3-0-3

This is an analysis of statistical experimental design strategies, and planning of experiments for the best strategy and objectives. The use of existing computer application packages will be stressed.

3 Credits

QA 6615 - Applied Systems Reliability

Prerequisite: QA 6612

3-0-3

Analysis of appropriate probabilistic models for system reliability, including the exponential, Weibull, normal, and lognormal distributions, life prediction techniques, reliability test program plans, failure mode and effect analysis, Markov models, and maintainability concepts.

3 Credits

QA 6620 - Inspection Systems Design

Prerequisite: QA 6613

3-0-3

This course deals with understanding inspection systems, measurement principles, and limitations. Included are acceptance sampling plans such as ANSI Z1.4, ANSI Z1.9, Dodge Romig, and stipulated risk, chain, sequential, and continuous plans.

3 Credits

QA 6640 - Quality Cost and Supplier Evaluation

Prerequisite: QA 6602

3-0-3

A detailed analysis of cost reductions involved in continuous improvement. Supplier evaluation, including quality audits, is reviewed to establish capability. The concept of partnerships is explored.

3 Credits

QA 6660 - Six Sigma Black Belt Concepts

Prerequisite: QA 6611 and QA 6612

Corequisite: QA 6650

3-0-3

A study and review of the Six Sigma Black Belt body of knowledge, including the DMAIC Methodology, Enterprise – wide deployment, project management, the lean enterprise and design for Six Sigma.

3 Credits

QA 6712 - Quality Systems Simulation

Prerequisite: QA 6610

3-0-3

This course addresses the application of simulation to quality systems. Topics covered include fundamental simulation modeling techniques, random sampling procedures and methods of estimating performance measures from simulation outputs. Emphasis will be upon hands-on simulation of various quality systems using PC-based simulation languages.

3 Credits

QA 6722 - Human Factors in Quality Assurance

3-0-3

Human Factors in QA is a comprehensive survey of human factors theory, research, and applications which are of particular relevance to quality assurance. Emphasis will be placed on operator constraints in the design of work processes, workplaces, and instrumentation.

3 Credits

QA 6725 - Quality Assessment of the Organization

Prerequisite: QA 6602

3-0-3

Course covers the history and rationale behind various Quality Assessment systems, with particular emphasis on the National Malcolm Baldrige Quality Award. Students will interpret and apply the criteria and assess organizations through case studies.

3 Credits

Total Credits: 15

Degree Program Total: 36

Grades

A grade of "C" or better is required for each course.

Graduate students must maintain a 3.00 grade point average to be in good standing. Should a student drop below the minimum level of 3.00 for any semester, the student is placed on academic probation. A student whose cumulative grade point average remains below 3.00 for two or more consecutive terms of enrollment, but whose term average is 3.00 or higher, may continue enrollment on probation. However, if a student on probation fails to achieve a term grade point average of at least 3.00 the student will be placed on dismissal.

In all graduate programs, a minimum of a 3.00 G.P.A. is required. No grades below 'C' may be applied to a graduate program's requirements, and a maximum of 2 'C' grades at the level of 6000 or above may be applied to a graduate program's requirements.

Students with an insufficient undergraduate statistics background may be asked to complete QA 5000, Statistical Concepts in Quality Assurance before beginning the statistical requirements.

Software Engineering

Offering the Master of Science Degree

Software engineering is a strategy for designing and developing high-quality software systems that meet the needs of the user in an efficient and predictable manner. Software engineers apply the principles of computer science and mathematical analysis to solve the problems and complex issues associated with developing and maintaining software systems to meet the needs of business and industry. It uses the life-cycle concept from traditional engineering with an emphasis on requirements, design, testing, development and evaluation but calls on the focused application of computer science concepts rather than those of traditional engineering.

The Master of Science in Software Engineering Program is designed both for full-time students and for working professionals who want to earn a professional degree part-time in the evening. We are also offering an increasing number of courses online, and it will be possible to complete the degree fully online. Students must have at least a bachelor's degree to apply.

The program is primarily designed to prepare students for leadership positions in the software and computing related industry in two to five years horizon after graduation. These leadership positions may be in one or more of the following areas:

1. Project and Process Management
2. Business and Requirements Analysis
3. Applications and Systems Design
4. Applications Implementation and Development
5. Testing and Quality Management
6. Systems Maintenance and Support Services

At least some of the graduates of the Software Engineering Graduate program are also prepared to further their graduate education. Examples of further degrees that the graduates are prepared for are a doctoral education in a computing related field, an MBA with IT or IS track, or a Law degree with Intellectual Property concentration in software and computing.

In order to prepare students for these careers, students will, at the time that they graduate from the program, be able to:

1. Apply basic knowledge of discrete mathematics and formal methods in the modeling and analysis of software systems
2. Apply quality principles and quantitative analysis to the definition and evaluation of software systems and processes.
3. Independently explore new topics in software engineering or related application domains and effectively present the research in written and oral reports.
4. Work effectively as a part of a team, including teams that may be geographically distributed, to develop a software system and to lead in one area of project development, such as project management, requirements analysis, architecture, construction, or quality assurance.
5. Perform the major project and process management activities.

If you are interested in finding out more about our MS in Software Engineering, please contact the Program Coordinator for the MSSWE, Jonathan Lartigue, jlartiqu@spsu.edu.

The Master of Science in Software Engineering program at Southern Polytechnic State University has the primary objective of meeting the high demand for a professional degree in Software Engineering, and our classes are conveniently offered in the evenings and online to accommodate the needs of the working professional. Although no specific undergraduate major is required, applicants must have a baccalaureate degree from an accredited school. A transition path is available for students with backgrounds in areas outside software engineering or computer science.

Thirty-six hours of course work are required for successful completion of the MS in Software Engineering program. Students who do not have a degree in Computer Science, Software Engineering, or a closely related field are accepted provisionally into the program, and must complete a series of prerequisite courses in addition to the 36-hour requirement.

A graduate certificate is also available to students with a bachelor's degree in software engineering, computer science or a closely related field who wish to advance into leadership positions in software engineering. Participants typically enroll in two classes per semester for three semesters. Eighteen hours of course work are required for successful completion of the graduate certificate in software engineering.

In all graduate programs, a minimum of a 3.0 G.P.A. is required. Only grades of 'C' or better may be applied to meet the degree requirements (including transition course work). An overall GPA of 3.0 ("B") or better is required over all graduate course work attempted. A maximum of 2 'C's at the level of 6000 or above may be applied if offset by the same number or more of 'A's at the level of 6000 or above.

Admission Procedure

Applicants for admission to the Master of Science program in Software Engineering should submit the following to the Graduate Admissions Office:

- An application for admission to the program
- A transcript from each college the applicant has attended
- A certificate of immunization
- A statement of purpose in seeking this degree,
- Three recommendation forms completed by former or current supervisors, professors, or professional colleagues, and
- Optionally: An official copy of scores from the "General Test" of the Graduate Record Examination (GRE).

Submission of the GRE score is strongly recommended to international applicants and should be considered by all applicants to strengthen the application packet. The applicant may be required to submit the GRE score after an initial review, which could delay the decision process.

International students should refer to the International Students sub-section for additional admission requirements.

Software Engineering Graduate Certificate

The Graduate Certificate in Software Engineering prepares practitioners for leadership positions in software engineering. The focus is on sharpening capabilities to function effectively in software engineering teams producing higher quality software. **This program is available in the traditional face-to-face format as well as fully online.**

Applicants should have:

A bachelor's degree in Software Engineering, Computer Science, or a closely related field (or a bachelor's degree with professional competence and knowledge equivalent to a Computer Science degree)

Admission Requirements

Applicants must have earned a baccalaureate degree from an accredited college. Students applying for any of the graduate certificate programs must submit the following to the Admissions Office prior to the registration term:

- An application for graduate certificate program admission, along with a \$50 nonrefundable application processing fee (check made payable to Southern Polytechnic State University),
- An official college transcript showing degree earned date, and
- The certificate of immunization

The coursework includes 6 courses: 3 required and 3 electives.

Required Courses

SWE 6623 - Software Engineering

Prerequisite: CS 5003 or CSE 1302 or equivalent
3-0-3

Transition: This course provides an overview of software engineering and explores both the theoretical principles and their application in the engineering of software-intensive systems. Topics cover the entire software development life-cycle and include software engineering process models, project management and planning, requirements engineering, software architecture and design, prototyping, verification and validation, usability and human factors, quality assurance, and professionalism and ethics. The course includes a real-world team project in which students are given hands-on experience utilizing state-of-the-art tools to analyze

and design a software system.

3 Credits

SWE 6633 - Software Project Planning and Management

Prerequisite: SWE 6623

3-0-3

The main phases of project management life cycle (initiation, planning, execution, monitoring/control and closeout) are covered. The emphasis is on project planning phase and on project monitoring/control phase. Various software size, cost/effort, and schedule estimation and planning techniques, including COCOMO, Function Point, and critical path analysis, are introduced as part of work breakdown structure. Project risk management is included as an integral part of project planning and project monitoring/control. Project status monitoring/control activities are discussed and practiced with a prototype team project, using the Earned Value metric.

3 Credits

SWE 6743 - Object-Oriented Analysis and Design

Prerequisite: SWE 6623, CS 5123

3-0-3

This course focuses on object-oriented modeling techniques necessary to solve complex, real-world software engineering problems. Topics include the use of information hiding, object design methods, basic design patterns, abstraction and abstract data type formalisms. Object-oriented iterative development methodologies such as the Unified Process will be utilized. Techniques for transforming software requirements into high-quality language independent object-oriented design are presented. The course includes a major iterative project in which the students will gain hands-on experience modeling a real-time system using use case analysis, responsibility-driven design, UML and RealTime UML.

3 Credits

Electives

- Select Three 6000-level graduate classes in SWE or CS; at least ONE of them must be in SWE **9 Credits**

Software Engineering, Master of Science

The required prerequisite courses are listed on the student's provisional acceptance letter and are required to make up deficiencies in the student's academic background. Upon completion of the prerequisite courses **with a grade of "B" or better**, the student will be fully admitted into the MSSWE program and be eligible to register for regular Masters (6000 level) coursework. None of the prerequisite courses (5000 level) will count towards the Masters Program. **This program is available in the traditional face-to-face format, and most courses are currently available online. The entire program is being developed for fully online delivery.**

Degree Requirements

A maximum of 9 total semester hours of "approved" transfer credit may be counted toward the MSSWE degree.

SWE 6613 - Requirements Engineering

Prerequisite: SWE 6623

3-0-3

Requirements engineering (RE) plays a critical role in the software development process. This course is a thorough treatment of the engineering and definition of software requirements processes. Methods, tools, notations, and techniques for eliciting, analyzing, modeling, negotiating, validating, specifying, testing, and maintaining requirements will be examined with a focus on software-intensive systems. The course will include a major group project on the analysis and specification of software requirements.

3 Credits

SWE 6633 - Software Project Planning and Management

Prerequisite: SWE 6623

3-0-3

The main phases of project management life cycle (initiation, planning, execution, monitoring/control and closeout) are covered. The emphasis is on project planning phase and on project monitoring/control phase. Various software size, cost/effort, and schedule estimation and planning techniques, including COCOMO, Function Point, and critical path analysis, are introduced as part of work breakdown structure. Project risk management is included as an integral part of project planning and project monitoring/control. Project status monitoring/control activities are discussed and practiced with a prototype team project, using the Earned Value metric.

3 Credits

SWE 6653 - Software Architecture

Prerequisite: SWE 6623, CS 5011, CS 5021, CS 5031

3-0-3

This course examines the principles and methods of the architectural design of complex, large-scale software systems. Macro-level system architecture with an emphasis on approaches to interconnection and distribution of both current and emerging architectural systems (e.g., Model-View-Controller (MVC), service-oriented, agent-oriented) as well as micro-level architecture including patterns, frameworks, and component-based software engineering are covered in detail.

3 Credits

SWE 6673 - Software Quality Engineering and Assurance

Prerequisite: SWE 6623, CS 5011, CS 5021, CS 5031

3-0-3

Various definitions and metrics related to quality are introduced, along with the concept of total quality management (TQM). Development of quality/test plan and the cost/value trade-off throughout the software development cycle is demonstrated. As a crucial component of quality engineering, the notion of validation and verification is explained in the context of different testing techniques, which include black box testing, white box testing, and formal verification. The emphasis of the course is on testing techniques for both non-executable and executable software artifacts as applied to different levels of testing, ranging from inspection, formal verification, unit testing to regression testing.

3 Credits

SWE 6733 - Software Engineering Processes

Prerequisite: SWE 6623, SWE 6633

3-0-3

This course gives students an in-depth introduction to the essentials of software engineering processes, methods, and tools for the engineering and evolution of complex real-world software. Emphasis is on the role of process in the various software life-cycles from requirements engineering through operation and maintenance. Topics such as personal and team software processes, organizational maturity, theory and applications of CMMI and ISO 9001, process management, process assessment, and process improvement are included.

3 Credits

SWE 6743 - Object-Oriented Analysis and Design

Prerequisite: SWE 6623, CS 5123

3-0-3

This course focuses on object-oriented modeling techniques necessary to solve complex, real-world software engineering problems. Topics include the use of information hiding, object design methods, basic design patterns, abstraction and abstract data type formalisms. Object-oriented iterative development methodologies such as the Unified Process will be utilized. Techniques for transforming software requirements into high-quality language independent object-oriented design are presented. The course includes a major iterative project in which the students will gain hands-on experience modeling a real-time system using use case analysis, responsibility-driven design, UML and RealTime UML.

3 Credits

SWE 6883 - Formal Methods in Software Engineering

Prerequisite: CS 5123, CS 5423, SWE 6623, SWE 6613
3-0-3

The course is concerned with formal representation of the specification of software. Formal mechanisms for specifying, validating, and verifying software systems will be introduced to check for completeness and correctness as well as to discover ambiguities in the specifications. Both Propositional and Predicate Calculus will be reviewed and utilized to represent and reason about software specifications. Proof techniques and formal specification languages Z and the Object Constraint Language (OCL) will be explored.

3 Credits

- Select one of the options listed below:

Options:

Project Option

12 hours of electives: Choose 6000-level Software Engineering, Computer Science, Information Technology, or System Engineering courses (at least 2 SWE and at most 2 CS, IT, or SE) **and**

SWE 7903 - Software Engineering Capstone

- Electives - 12 hours of 6000-level SWE, CS, IT or SE courses **12 Credits**
- SWE 7903 - Software Engineering Capstone (Project) **3 Credits**

Thesis Option

9 hours of electives (Choose 600-Level SWE, CS, IT, or SE courses (at least 2 SWE) and

SWE 7803 - Masters Thesis

- Electives 9 hours of 6000-level SWE, CS, IT or SE courses **9 Credits**
- SWE 7803 - Masters Thesis **6 Credits**

Transition Courses

Some of the following transition courses may be required for provisional acceptance students. These courses may not be used to satisfy degree requirements.

CS 5003 - Accelerated Introduction to Programming

1.5-0-1.5

The object-oriented programming language Java is presented with emphasis on core programming topics and OOP features including inheritance and polymorphism. The course presents an introduction to data structures including 1D, 2D arrays and the ArrayList, and also discusses file I/O and exception handling.

1.5 Credits

CS 5011 - Fundamentals of Computer Architecture

Prerequisite: CSE 1301 or CS 5003

1.5-0-1.5

Transition course for SWE students only. This course is designed to examine the principles and concepts of computer architecture. Topics from the principles of computer organization and architecture include fundamentals of computer design, instruction set principles, pipelines, performance, caches and virtual memory.

1.5 Credits

CS 5021 - Fundamentals of Operating Systems

Prerequisite: CSE 1301 or CS 5003

1.5-0-1.5

Transition course for SWE students only: This course is designed to examine the principles and concepts of operating systems. Topics from the principles of operating systems include OS structures and design issues, process model and management, memory management, peripheral device management, and file systems.

1.5 Credits

CS 5031 - Fundamentals of Database Systems

Prerequisite: CSE 1301 or CS 5003

1.5-0-1.5

Transition Course for SWE students only: This course is designed to examine the principles and concepts of database systems and their application to real-world software systems. Topics include database structures and design issues, entity relationship models, relational databases, normalization, SQL and practice with an SQL-based database system such as Oracle.

1.5 Credits

CS 5123 - Advanced Programming and Data Structures

Prerequisite: CSE 1302 or CS 5003

3-0-3

Transition course for graduate students with a limited background in programming. Topics include pointers, recursion, data structures such as lists, stacks, queues, trees, etc., sorting and searching, data abstraction, introduction to runtime analysis and the big-oh notation. Appropriate programming projects are also included.

3 Credits

CS 5423 - Mathematical Structures for Computer Science

Prerequisite: An undergraduate course in Calculus

Corequisite: CSE 1301 or CS 5003

3-0-3

Transition course: Topics from discrete mathematics include set theory, relations and functions, principles of counting, introductory graph theory, formal logic, recursion, and finite state machines.

3 Credits

SWE 6623 - Software Engineering

Prerequisite: CS 5003 or CSE 1302 or equivalent

3-0-3

Transition: This course provides an overview of software engineering and explores both the theoretical principles and their application in the engineering of software-intensive systems. Topics cover the entire software development life-cycle and include software engineering process models, project management and planning, requirements engineering, software architecture and design, prototyping, verification and validation, usability and human factors, quality assurance, and professionalism and ethics. The course includes a real-world team project in which students are given hands-on experience utilizing state-of-the-art tools to analyze and design a software system.

3 Credits

Degree Program Total: 36

Systems Engineering

Offering the Master of Science Degree

The Systems Engineering program is a multidisciplinary program that blends engineering, systems thinking, and management topics. The increasing complexity of systems, the growth of global competitiveness, the enhanced focus on cost and profitability, and ever more challenging customer expectations have led a number of premiere organizations in the defense and commercial sectors to assume the role of system integrators. These organizations are increasingly adopting an evolving business model that emphasizes the selling of functionality, solutions, or capabilities, instead of focusing on providing systems, system elements, and products.

The System Engineering Program is housed in the Division of Engineering. The program offers a Master of Science degree with a major in Systems Engineering and a Graduate Certificate in Systems Engineering. The curriculum emphasizes the development of large-scale, complex, and multifunctional systems in a number of domains. Core courses in the SyE Program have a strong case study and project orientation to facilitate understanding of the concepts discussed.

All graduate Systems Engineering courses are offered online via several technologies that allow a high degree of interaction with the faculty and fit into today's professional's busy schedule.

Admission Requirements

Applicants to the Master of Science Program with a major in Systems Engineering must submit the following to the Admissions Office no later than the published deadline date for the semester in which the applicant plans to enroll:

- An application for graduate admission to SPSU. You can download a printable application and mail it in along with the \$20 non-refundable application fee. Or, you can set up an online account and apply over the internet,
- Official transcript to be sent from each college or university attended,
- Certificate of Immunization. Download this form and sign the waiver at the bottom for distance only students.
- An official copy of scores from the "General Test" of the Graduate Record Examination (GRE), or a request for a GRE waiver (see Admissions Criteria below),
- At least three (3) recommendation forms completed by former or current supervisors, professors, or professional colleagues,
- A 1 – 2 page Statement of Purpose describing your career and educational goals, and
- A current resume.

International students who do not possess a baccalaureate degree from a college in the United States must submit (1) an official English-translated transcript of college-level education, (2) the TOEFL scores, and (3) an affidavit indicating financial security.

Applicants to a Graduate Certificate Program must submit the following:

- An application for graduate admission to SPSU. You can download a printable application and mail it in along with the \$20 non-refundable application fee. Or, you can set up an online account and apply over the internet,
- Official transcript to be sent from each college or university attended,
- Certificate of Immunization. Download this form and sign the waiver at the bottom,
- At least three (3) recommendation forms completed by former or current supervisors, professors, or professional colleagues, and
- A current resume.

Admission Criteria

Graduate applicants shall have the following qualifications.

- An undergraduate degree in engineering, engineering technology, computer science, physical science, or other technically oriented major from an accredited college or university. Interested students from other disciplines may be admitted to the program, but may be required to complete additional courses.
- A minimum undergraduate grade point average of 3.0 (on the 4.0 scale). Applicants with a GPA of 2.75 or better may be considered with strong work experience and letters of reference.
- Official GRE scores meeting the current admission profile (450 Verbal and 600 Quantitative). Applicants with lower scores may be accepted provisionally requiring additional preparatory course work. Test scores may be waived, if (1) an applicant has 4 or more years of relevant work experience earned after receiving their first baccalaureate degree or (2) a 3.5 undergraduate GPA or better. To request a GRE waiver, send a letter outlining your work experience or a current resume.
- For international students, a 550 on the TOEFL Written Exam or a 78 on the Internet version is required.

Admission Status

The Systems Engineering Program Director in conjunction with the graduate admissions committee determines the student admission status.

- Full Graduate students have met all the criteria shown above.
- Provisional Graduate students are graduate students who have not fully met the above criteria. They are limited to designated courses, either graduate or undergraduate, during which they will be evaluated to determine their likelihood of success. Provisional students are not guaranteed full graduate status.
- Graduate Certificate students are accepted for any of the certificates offered. Certificate students are limited to certificate courses or preparatory courses approved by the Program Coordinator. Certificate students may apply for Full Graduate status. After being accepted into the Masters Degree Program, all hours earned as a Certificate student can apply toward the Masters Degree.

Transfer Credit

Students may receive up to nine hours of credit for graduate work that is (1) equivalent to Southern Polytechnic courses, (2) taken in the last five years, and (3) completed with an "A" or "B" grade. Contact the department for more information.

For more information

For further information, contact the SyE Program Director, Dr. Renee Butler at 678-915-5414.

Systems Engineering Graduate Certificate

Requirements

SYE 6005 - Introduction to Systems Engineering

3-0-3

The goal is to introduce the student to the essential principles, processes, and practices associated with the application of Systems Engineering. The applicability and use of Process Standards will be examined. Emphasis will focus on defining the problem to be solved, establishing the initial system architecture, understanding the role of system life-cycles, requirements development, and verification and validation of the realized system.

3 Credits

SYE 6010 - Project Management Processes

3-0-3

Integrated framework for project organization, planning and control focusing on project management processes for large, complex programs to ensure cost-effective and quality outcomes for investments.

3 Credits

SYE 6020 - System Architecture

Prerequisite: SYE 6005 and SYE 6010 or MGNT 6050

3-0-3

Examination of concepts and techniques for architecting systems, the establishment of a bounded and integrated structure that provides a framework for system creation, work breakdown structures, cost analysis, and subcontractor control and interface will be reviewed. A structured approach to system architecture that proceeds from a topmost "system" to an aggregation and integration of systems created in lower level development layers, both internal and external to the developer as described in the standard ANSI/EIA-632 (Processes for Engineering a System) will be explored.

3 Credits

SYE 6025 - Economic Decision Analysis

Prerequisite: SYE 5000 or equivalent

3-0-3

This course covers the basic tools used in engineering economic decision making, including discounted cash flow, replacement and timing decisions, depreciation, risk analysis, and pricing mechanisms. Topics may also include an introduction to preferences and utilities, equilibrium concepts, probabilistic decisions, game theory, and incentive compatibility.

3 Credits

One of the following courses:

MGNT 6050 - Project Management

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in management principles and an undergraduate course in statistics

3-0-3

A study of the project planning, organizing, control concepts and techniques. Coverage will include projects and specifications. Work Breakdown Structures (WBS) the Critical Path Method (CPM), the Program Evaluation and Review Technique (PERT), Gantt charting, and time/resource management.

3 Credits

Total For Certificate: 12 Credits

Systems Engineering, Master of Science

Degree Requirements

The program consists of five core courses and a four course concentration. Additionally, students will either complete a thesis (6 thesis hours) and one Systems Engineering Elective or a project (SYE 6055) and two Systems Engineering Electives.

SYE 6005 - Introduction to Systems Engineering

3-0-3

The goal is to introduce the student to the essential principles, processes, and practices associated with the application of Systems Engineering. The applicability and use of Process Standards will be examined. Emphasis will focus on defining the problem to be solved, establishing the initial system architecture, understanding the role of system life-cycles, requirements development, and verification and validation of the realized system.

3 Credits

SYE 6020 - System Architecture

Prerequisite: SYE 6005 and SYE 6010 or MGNT 6050

3-0-3

Examination of concepts and techniques for architecting systems, the establishment of a bounded and integrated structure that provides a framework for system creation, work breakdown structures, cost analysis, and subcontractor control and interface will be reviewed. A structured approach to system architecture that proceeds from a topmost "system" to an aggregation and integration of systems created in lower level development layers, both internal and external to the developer as described in the standard ANSI/EIA-632 (Processes for Engineering a System) will be explored.

3 Credits

SYE 6025 - Economic Decision Analysis

Prerequisite: SYE 5000 or equivalent

3-0-3

This course covers the basic tools used in engineering economic decision making, including discounted cash flow, replacement and timing decisions, depreciation, risk analysis, and pricing mechanisms. Topics may also include an introduction to preferences and utilities, equilibrium concepts, probabilistic decisions, game theory, and incentive compatibility.

3 Credits

QA 6610 - Statistics for Quality Assurance

3-0-3

Descriptive statistics for discrete and continuous variables, probability distributions, confidence intervals and hypothesis testing, elementary control charts for variables and attributes, the design of acceptance sampling plans, analysis of variance, and regression and correlation analysis.

3 Credits

SYE 6010 - Project Management Processes

3-0-3

Integrated framework for project organization, planning and control focusing on project management processes for large, complex programs to ensure cost-effective and quality outcomes for investments.

3 Credits

MGNT 6050 - Project Management

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in management principles and an undergraduate course in statistics

3-0-3

A study of the project planning, organizing, control concepts and techniques. Coverage will include projects and specifications. Work Breakdown Structures (WBS) the Critical Path Method (CPM), the Program Evaluation and Review Technique (PERT), Gantt charting, and time/resource management.

3 Credits

Thesis Option

SYE 7803 - Masters Thesis Hours

Prerequisite: Consent of the Program Director and the Thesis Advisor
3-0-3

The thesis is designed for students wanting a research focus to their degree. The student works independently under the supervision of a designated SyE faculty member on a thesis, generates a formal written thesis, and gives a final defense of the thesis.

This course may be repeated, but only 6 hours may be applied toward the degree.

3 Credits

- Elective (1 course) **3 Credits**
- Concentration (4 courses) **12 Credits**

Total Credits: 36

Project Option

SYE 6055 - System Engineering Project

Prerequisite: Consent of instructor
3-0-3

In this capstone class, students will be presented with an engineering problem statement constituting acquirer needs and expectations. Multi-disciplinary teamwork will be required to achieve a solution to the presented problem statement.

3 Credits

- Electives (2 courses) **6 Credits**
- Concentration (4 courses) **12 Credits**

Total Credits: 36

Electives

Typically the electives will be Systems Engineering courses, but 6000 level courses from other programs, i.e. Management, Quality Assurance, and Software Engineering, etc., may be taken with approval of the Program Director or Department Chair.

Concentrations

A candidate must select four courses in a concentration. The candidate may propose a customized selection of four elective courses with approval of the Program Director. Some potential concentrations include: Software Engineering, Engineering Management, Information Systems, or Transportation Systems. The program offers three suggested concentrations: Manufacturing and Logistics Systems, Integrated Process and Product Development, and Decision Modeling.

For the concentration requirement, students are encouraged to take an integrated four-course sequence leading to a Graduate Certificate. Students should review other departments' sections of the graduate catalog for additional certificate options.

Manufacturing and Logistics Systems Concentration (12 Credits)

SYE 6065 - System Optimization

Prerequisite: SYE 5000 or equivalent
3-0-3

This course focuses on methods of operations research and their applications. Operations Research methods include linear programs, network models, queuing models, markov chains, and heuristics. Applications in inventory & production planning, transportation & logistics, and finance will be covered.

3 Credits

SYE 6070 - Logistics and Supply Chain Management

3-0-3

This course focuses on decisions vital to success in typical business environments characterized by competition and scarce resources. Students will develop skills in applying a variety of techniques to solve logistics and supply chain management problems. Topics covered will include information sharing and aligning incentives along the supply chain; demand forecasting; inventory decisions; transportation mode and route selection; and pricing and revenue management.

3 Credits

SYE 6075 - Manufacturing Systems Planning and Design

3-0-3

This course focuses on decisions important in production and warehousing environments. Production topics include analysis of flows, bottlenecks and queuing, types of manufacturing operations, aggregate production planning, lot sizes and lead times, and pull production systems. Warehouse topics include design and analysis of warehouse layout, order picking strategies, warehousing inventories, and integration of production and distribution systems.

3 Credits

QA 6602 - Total Quality

3-0-3

This course is a study of the functions and responsibilities of the quality organization. TQM concepts, quality function deployment, and the tools for continuous improvement are analyzed for sequence of use and application. Emphasis is placed on design and performance aspects of a system-wide quality assurance function.

3 Credits

***This concentration requires SyE 5000 as a pre-requisite.

Integrated Process and Product Development Concentration (12 Credits)

SYE 6015 - Systems Analysis and Design

Prerequisite: SYE 6005

3-0-3

Methods used to analyze and design complex systems that meet the needs of multiple stakeholders over the system life cycle. Apply systems engineering design and analysis principles to the virtual design of a contemporary complex system.

3 Credits

SYE 6035 - Modeling and Simulation

Prerequisite: QA 6610

3-0-3

The use of models and simulations to validate or predict expected performance, behavior, and interaction of selected design elements in a controlled environment will be examined. This course will also present guidelines for selecting and using models and simulations on projects. Various modeling and simulation methods and tools will be examined and their value and applications probed for differing engineering development needs.

3 Credits

SYE 6045 - Process Assessment and Improvement

3-0-3

This course provides an operational understanding of the differences between process standards and assessment standards where the latter provide a formal and structured means of examining a specific process or focus area to determine process capability or process maturity in an enterprise. Both EIA/IS-731-1, "Systems Engineering Capability Model", and Capability Maturity Model® Integration (CMMISM) will be examined and the strengths and weaknesses reviewed with respect to consideration of use on projects.

3 Credits

QA 6722 - Human Factors in Quality Assurance

3-0-3

Human Factors in QA is a comprehensive survey of human factors theory, research, and applications which are of particular relevance to quality assurance. Emphasis will be placed on operator constraints in the design of work processes, workplaces, and instrumentation.

3 Credits

SYE 6050 - Reliability and Sustainability

Prerequisite: QA 6610

3-0-3

Concepts for reliability and sustainability (maintainability) engineering and their integration into system development will be examined. In addition, techniques for ensuring the integration of these factors into core design decisions through specified requirements will be explored.

3 Credits

QA 6615 - Applied Systems Reliability

Prerequisite: QA 6612

3-0-3

Analysis of appropriate probabilistic models for system reliability, including the exponential, Weibull, normal, and lognormal distributions, life prediction techniques, reliability test program plans, failure mode and effect analysis, Markov models, and maintainability concepts.

3 Credits

** This concentration requires QA 6610 as a pre-requisite.

Decision Modeling Concentration (12 Credits)

SYE 6035 - Modeling and Simulation

Prerequisite: QA 6610

3-0-3

The use of models and simulations to validate or predict expected performance, behavior, and interaction of selected design elements in a controlled environment will be examined. This course will also present guidelines for selecting and using models and simulations on projects. Various modeling and simulation methods and tools will be examined and their value and applications probed for differing engineering development needs.

3 Credits

SYE 6065 - System Optimization

Prerequisite: SYE 5000 or equivalent

3-0-3

This course focuses on methods of operations research and their applications. Operations Research methods include linear programs, network models, queuing models, markov chains, and heuristics. Applications in inventory & production planning, transportation & logistics, and finance will be covered.

3 Credits

QA 6613 - Linear Regression Analysis

Prerequisite: QA 6611

3-0-3

In this course, students will learn linear regression analysis techniques to include first order and polynomial modeling, use of indicator variables, variance stabilizing transformations, multi-collinearity diagnostics and residual analysis. The connections among ANOVA, design of experiments and regression will be emphasized. Statistical software will be used to analyze problems.

3 Credits

SYE 6050 - Reliability and Sustainability

Prerequisite: QA 6610

3-0-3

Concepts for reliability and sustainability (maintainability) engineering and their integration into system development will be examined. In addition, techniques for ensuring the integration of these factors into core design decisions through specified requirements will be explored.

3 Credits

QA 6615 - Applied Systems Reliability

Prerequisite: QA 6612
3-0-3

Analysis of appropriate probabilistic models for system reliability, including the exponential, Weibull, normal, and lognormal distributions, life prediction techniques, reliability test program plans, failure mode and effect analysis, Markov models, and maintainability concepts.

3 Credits

**This concentration requires QA 6610 as a pre-requisite.

Grades

In all graduate programs, a minimum of a 3.0 G.P.A. is required. No grades below 'C' may be applied to a graduate program's requirements, and a maximum of 2 'C' grades at the level of 6000 or above may be applied to a graduate program's requirements.

Students with an insufficient undergraduate mathematics background may be asked to complete SYE 5000, Quantitative Foundations for Systems Engineering before taking certain quantitative courses. SYE 5000 does not apply toward the M.S. Systems Engineering Degree.

Graduate Course Descriptions

Accounting

ACCT 690x - Special Topics in Accounting

ACCT 690x - Special Topics in Accounting

1 to 5

Special topics in accounting offered by the department on a demand basis.

1 to 5 Credits

ACCT 5007 - Intermediate Accounting I

ACCT 5007 - Intermediate Accounting I

Prerequisite: MGNT 5002 and MGNT 5004, or undergraduate financial accounting and managerial accounting courses
3-0-3

This course covers a review of the accounting process, detailed analysis of financial statements, time value of money concepts, and current and operational assets.

3 Credits

ACCT 5009 - Intermediate Accounting II

ACCT 5009 - Intermediate Accounting II

Prerequisite: ACCT 5007

3-0-3

This course covers a review of the financial statements with respect to investments, current liabilities and contingencies, bonds and other long term debt, leases and tax.

3 Credits

ACCT 5011 - Advanced Accounting

ACCT 5011 - Advanced Accounting

Prerequisite: Undergraduate degree in accounting or ACCT 6059

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.

3 Credits

ACCT 5013 - Cost Accounting

ACCT 5013 - Cost Accounting

Prerequisite: MGNT 5004 or MGNT 5004 (Please see Sandra)

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, and cost-volume-profit analysis.

3 Credits

ACCT 6000 - Managerial Accounting

ACCT 6000 - Managerial Accounting

Prerequisite: MGNT 5002 and MGNT 5004, or undergraduate financial accounting and managerial accounting courses

3-0-3

This course deals with the procedures and concepts of computing and allocating costs for reporting, pricing, planning and control, and internal decisions making. It will focus mainly on the principles and techniques dealing with merchandise and manufacturing costing, job order and process costing, standard and conventional costing, and make or buy decision-making.

3 Credits

ACCT 6003 - Accounting Theory

ACCT 6003 - Accounting Theory

Prerequisite: Undergraduate degree in Accounting or ACCT 5011
3-0-3

This course is a study of the theoretical structures of accounting, income recognition, and the influence of changing professional standards.

3 Credits

ACCT 6006 - Advanced Management Accounting

ACCT 6006 - Advanced Management Accounting

Prerequisite: Undergraduate degree in accounting or ACCT 5013 or ACCT 6000
3-0-3

An advanced-level discussion of variance analysis, cost allocation, transfer pricing, and the use of modeling to solve business problems.

3 Credits

ACCT 6007 - Advanced Accounting Information and Control Systems

ACCT 6007 - Advanced Accounting Information and Control Systems

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

This course focuses on the design, implementation, and evolution of accounting information with emphasis on ERP systems.

3 Credits

ACCT 6012 - Auditing

ACCT 6012 - Auditing

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

Auditing processes and concepts involved in performing an examination of the financial statements and internal controls of public and privately held business entities.

3 Credits

ACCT 6021 - Professional Judgment

ACCT 6021 - Professional Judgment

Prerequisite: Undergraduate degree in accounting or ACCT 6012
3-0-3

This course reviews the research on moral development and ethical choices, the dilemmas and accepted solutions for accounting professionals.

3 Credits

ACCT 6030 - Taxation of Entities

ACCT 6030 - Taxation of Entities

Prerequisite: Undergraduate degree in Accounting or ACCT 5009
3-0-3

This course addresses the fundamental principles and exceptions related to the taxation of various forms for entities.

3 Credits

ACCT 6045 - Forensic Accounting

ACCT 6045 - Forensic Accounting

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

This course covers the practice of forensic accounting in which the knowledge of advanced accounting is combined with investigative expertise and applied to legal problems.

3 Credits

ACCT 6053 - Business Valuation and Performance

ACCT 6053 - Business Valuation and Performance

Prerequisite: Transitional Courses, if required
3-0-3

This course provides students with the skills necessary to understand, analyze, evaluate, and use the information available in corporate financial reports. It also investigates corporate mergers, acquisitions, and corporate restructuring framework. Consideration is given to issues faced by corporate managers as they design reporting strategy.

3 Credits

ACCT 6058 - Financial Statement Analysis

ACCT 6058 - Financial Statement Analysis

Prerequisite: Transitional Courses, if required
3-0-3

A review of financial statements for fairness and completeness in reporting, with focus on analysis of financial statements and related footnotes from the standpoint of different users of financial reports.

3 Credits

ACCT 6068 - International Accounting

ACCT 6068 - International Accounting

Prerequisite: Transitional Courses, if required
3-0-3

This course focuses on the evolution of the international dimensions of accounting and the national differences in accounting thought, practice, problems, and issues from other accounting systems. There is also a survey of international standards.

3 Credits

ACCT 6075 - Tax Research and Planning

ACCT 6075 - Tax Research and Planning

Prerequisite: Transitional Courses, if required
3-0-3

This course uses student's tax research skills to discover new knowledge on advanced tax topics such as passive activity losses, alternative minimum taxes, international taxation, and multi-state taxation. The course also includes gift and estate tax compliance and tax planning as well as deferred compensation.

3 Credits

ACCT 6078 - Fund Auditing

ACCT 6078 - Fund Auditing

Prerequisite: Undergraduate degree in accounting or ACCT 5009
3-0-3

This is an in-depth exposition of the current standards and specialized accounting practices of state and local government, school systems, universities and hospitals, by use of case studies.

3 Credits

MGNT 5002 - Survey of Financial Accounting

MGNT 5002 - Survey of Financial Accounting

1.5-0-1.5

This course is a study of the application of accounting principles and the accounting cycle used in business of corporations to record historical economic transactions reported in financial statements to be used by decision makers internally and externally.

1.5 Credits

MGNT 5004 - Survey of Managerial Accounting

MGNT 5004 - Survey of Managerial Accounting

Prerequisite: MGNT 5002 or an undergraduate financial accounting course
1.5-0-1.5

This course is a study of the application of accounting principles to specialized problems in business of corporations, special reports, and analyses of accounting information, fundamentals of management accounting, information and analysis for planning and controlling, decision analyses, cost management, and continuous improvement.

1.5 Credits

Architecture

ARCH 6000 - Critical Inquiries and Discourses

ARCH 6000 - Critical Inquiries and Discourses

Prerequisite: Admission to program
3-0-3

This course addresses the relevance of research questions in architecture and the assumptions that underlie them. The course emphasizes the essential role of description for formulating theoretical and methodological questions about the built environment and design. Such descriptions assist in the discovery of regularities that can be translated into theoretical questions and research hypotheses. The course is taught in a combined lecture and seminar format.

Learning Outcomes:

- Students will develop analytic and synthesis skills appropriate for generation of original research questions in architectural theory and design practice.
- Students will demonstrate proficiency in formulating a well structured research hypothesis.

3 Credits

ARCH 6020 - Collaborative Studio

ARCH 6020 - Collaborative Studio

Prerequisite: Admission to program
3-0-3

This course provides an opportunity to all graduate students admitted in the Program to collaborate in groups of two on real-time and real-life design projects assigned to them.

3 Credits

ARCH 6030 - Research Methods

ARCH 6030 - Research Methods

Prerequisite: Admission to program
3-0-3

This course is aimed at research methods for graduate students in architecture. The course combines a survey of current qualitative and quantitative approaches to research with the development of visual methods for constructing arguments. The purpose is to prepare students in various techniques of describing and understanding the built environment. It addresses the nature of scholarly research, the types of evidence, critical reading, and presenting and illustrating scholarship in the various disciplines of architecture.

Learning Outcomes:

- Discuss and implement relevant techniques and skills in formulating research approaches in architecture.
- Understand the mechanics of formulating and conducting a thesis exploration.

3 Credits

ARCH 6100 - Advanced Architectural Practices

ARCH 6100 - Advanced Architectural Practices

Prerequisite: ARCH 6000
3-0-3

This course investigates creative transitions and transactions in the architecture profession that are giving rise to new critical learning models, knowledge and applications. It will underpin temporal, perceptual and analytical trajectories for anticipating the creative disruptions and innovations at human, architectural, urban and global scales. Students will collaborate and share their cross and inter-disciplinary thoughts using heuristic approaches to facilitate their explorations. The course is about self-learning and letting others know what you have learned through your independent investigations.

Learning Outcomes:

- Students will investigate different relations between architecture and the sciences
- Students will learn concepts of human perception and innovative technology, integrated practices and 21st century habitats.
- Students will learn how earlier and existing studies of theoretical and empirical models as programmatic and architectural constructs relate to current practice.

3 Credits

ARCH 6150 - Applied Skills and Approaches

ARCH 6150 - Applied Skills and Approaches

Prerequisite: Admission to program & ARCH 6000
3-0-3

Students upon approval of their advisor will choose a course aiding to their skill-base to support their research relevant to their concentration.

3 Credits

ARCH 6250 - Housing

ARCH 6250 - Housing

3-0-3

This course is a broad investigation of how humankind developed shelter as a function of cultural and physical environmental forces from the recorded dawn of history to our present day. We shall trace the worldwide emergence of diverse forms through pre-urban times and sequentially engage the eastern and western traditions of housing trends in urban settings. The course will marry a study of socio/economic history with a study of complementary design.

Learning Outcomes:

- Able to identify and characterize markets for housing systems.
- Be familiar with the successes and failures of housing systems in the past.
- Understand constraints and opportunities for housing systems.
- Appreciate the dimensions of advanced technology application in systems.
- Be able to effectively critique systems designs of their peers for given scenarios.

3 Credits

ARCH 6300 - Urban Design Theory and Planning

ARCH 6300 - Urban Design Theory and Planning

3-0-3

This course investigates the likely urban generators/determinants/transformers that evolved not only from critical formal work but also from social, political, economic, and technological sources. This course critically reviews the contribution of urban forms of these time periods to set the foundations for this course. A factual framework of the events, persons, projects, and critical analysis of theoretical work is one of the essential parts of the course content developed through lectures, seminar discussions and presentations.

Learning Outcomes:

- Learn the variety of research underpinning for diverse urban contexts.
- Able to critically analyze and explore contextual readings of diverse urban settings.
- Understand the cultural manifestations of diverse urban settings.

- Understand national and regional traditions shaping urban contexts.
- Understand human behavior, diversity and intervention in a city.

3 Credits

ARCH 6350 - Urban Development and Policy

ARCH 6350 - Urban Development and Policy

Prerequisite: ARCH 6300

3-0-3

The valued legacy of the past and overlapping design and policy efforts of renewal, redevelopment, revitalization, preservation and conservation of neighborhoods and main urban corridors have always been points of contention, controversy and at the same time indicate a continued resolve to seek solutions to urban problems.

This course examines theory and praxis of the redevelopment process using urban redevelopment case studies of recent history. Knowledge of redevelopment precedents provides foundation to understand the fundamental principles of regenerative urban interventions crucial to the redevelopment of a neighborhood, urban park, housing and mixed used developments -- their failures and successes, why and how.

Learning Outcomes:

- Employ and gain expertise in research, critical thinking, and collaborative skills.
- Gain expertise and understanding in use of precedents and develop skill in analyzing conditions within broader understanding of national and regional traditions.
- Resolve conflicts between environmental conservation and the formal urban order.
- Gain knowledge of human behavior, diversity, and traditions in the context of architecture and urban settings.

3 Credits

ARCH 6400 - 3D Digital Animation and Multimedia

ARCH 6400 - 3D Digital Animation and Multimedia

Prerequisite: ARCH 6000

3-0-3

This course provides students the opportunity to learn and practice effective design presentation techniques through computer generated 3D modeling, rendering, animation and compilation of audiovisual elements through digital editing. This course highlights animation and presentation techniques through a series of projects. The course also focuses on creation of an architectural documentary with information through various audiovisual graphics. From given exercises and projects, students will be expected to learn 3D modeling, lighting, texturing, and animation. By the end of the semester students will be expected to utilize the skills for animation projects highlighting features of a structure and creating documentary on a topic related to architecture.

Learning Outcomes:

- Gain knowledge of geometrical and generative concepts related to digital design.
- Explore the role of information in design, project representation and information processing and its impact on working modes in design and construction

- Explore concepts of digital collaboration among the various design professions
- Experiment with new digital fabrication technologies

3 Credits

ARCH 6470 - Analytical Models of Form

ARCH 6470 - Analytical Models of Form

3-0-3

This course examines the interaction of generative rules and descriptions of form relative to representation, exemplification, metaphor and expression. Shape grammars, transformations in design, rule definition and rule application. The geometry of environment, modular spaces, locations and associations, spatial allocation procedures, network distances and routes, space and symbolic form, & symmetry groups in plane are studied.

Learning Outcomes:

- Apply techniques of network theory and spatial computational analysis.
- Develop analytical, investigative and synthesis complex urban and architectural forms.
- Apply spatial analysis to explore solutions to urban problems.

3 Credits

ARCH 7200 - Design Studio I

ARCH 7200 - Design Studio I

Prerequisite: Approval of advisor

6-0-6

Design studio investigates the architectural, urban, communal, technological, historical and sustainable dimensions infused with socio-cultural, contextual and political manifestations that shape urban, communal and physical processes in the synchronic and diachronic development of a city and its architectural edifices. These critical processes are subject to analysis to comprehend planning and design interventions of our time. Urban design and its development must be understood as the unfolding of social, cultural, economic and political processes, and communities are the physical embodiments of these processes within the city. The forms and layout patterns of a block, a neighborhood, a development district, a transportation corridor, a system of open spaces are examined as the physical phenomena and as manifestations of contemporary values, social needs and traditions in communities existing in urban and suburban settings.

Learning Outcomes:

- Prepare a thesis proposal with a "hands on" approach to extensive analysis and synthesis.
- Investigate synchronic and diachronic modus operandi shaping various physical settings within an urban environment.
- Learn to develop various strategies to examine potential spatial and morphological shifts within an urban or suburban environment and their socio-cultural implications on future developments.
- Hone skills and craft to present solutions following their critical research agenda, critical design approach and strategies.

6 Credits

ARCH 7300 - Design Studio II

ARCH 7300 - Design Studio II

Prerequisite: ARCH 7200
6-0-6

This studio is a continuation of Arch 7200 with a strong emphasis on completing a comprehensive urban design supported by appropriate research and presented in a quality professional manner.

Learning Outcomes:

- Carry forward the development of Arch 7200 to thesis level completion or address a new scenario in an individual or collaborative mode.
- Refine the essential skills developed in Arch 7200 through repetitive application on defensible analysis and design vectors.

6 Credits

ARCH 7400 - Applied Research I (Thesis)

ARCH 7400 - Applied Research I (Thesis)

Prerequisite: Approval of advisor
6-0-6

The applied research thesis provides student an opportunity to develop Research Designs that integrate inter, cross and multi-disciplinary tenets within design and planning and with other non-design disciplines. Students investigate their research question in light of paradigm shifts and changes using epistemological, theoretical and applied body of work. Their research must contribute to the existing body of knowledge and/or provide new insights to the existing body of knowledge to extend further research in a field of study or development of new exploratory frameworks and/or policies.

Learning Outcomes:

- Prepare an applied Research Design followed by a research methodology and a hypothesis contributing to extensive analysis and synthesis to test the research question.
- Investigate a research question or body of work at a point in time and its significance and its modus operandi to master and contribute to new knowledge.
- Investigate a research question or body of work that developed over time and its modus operandi to master and contribute to new knowledge.
- Hone critical thinking and applied research skills to present solutions to defend their critical research agenda and investigative strategies leading to mastery and contribution to new knowledge.

6 Credits

ARCH 7500 - Applied Research II (Thesis)

ARCH 7500 - Applied Research II (Thesis)

Prerequisite: ARCH 7400 & approval of advisor
6-0-6

This second thesis semester is a continuation of Arch 7400 either as an independent effort or in collaboration to complete a defensible Masters level thesis to include findings.

Learning Outcomes:

- Carry forward development of Arch 7400 to thesis level completion or address a new scenario in an individual or collaborative mode.
- Refine the essential skills developed in Arch 7400 through repetitive application on defensible analysis and design vectors.

6 Credits

Business Administration

MGNT 690x - Special Topics in Business Administration

MGNT 690x - Special Topics in Business Administration

1 to 5

Special topics in business administration offered by the department on a demand basis.

1 to 5 Credits

MGNT 691x - Special Topics in Management

MGNT 691x - Special Topics in Management

1 to 5

Special Topics in management offered by the department on a demand basis.

1 to 5 Credits

MGNT 692x - Special Topics in Healthcare

MGNT 692x - Special Topics in Healthcare

1 to 5

Special Topics in healthcare management offered by the department on a demand basis.

1 to 5 Credits

MGNT 694x - Special Topics in Marketing

MGNT 694x - Special Topics in Marketing

1 to 5

Special Topics in marketing offered by the department on a demand basis.

1 to 5 Credits

MGNT 695x - Special Topics in MIS

MGNT 695x - Special Topics in MIS

1 to 5

Special Topics in management information systems offered on a demand basis.

1 to 5 Credits

MGNT 697x - Special Topics in Finance

MGNT 697x - Special Topics in Finance

1 to 5

Special Topics in finance offered by the department on a demand basis.

1 to 5 Credits

MGNT 698x - Special Topics in Operations and Technology Management

MGNT 698x - Special Topics in Operations and Technology Management

1 to 5

Special Topics in operations and technology management offered on a demand basis.

1 to 5 Credits

MGNT 5000 - Survey of Management

MGNT 5000 - Survey of Management

1.5-0-1.5

Overview of management includes managing people and production, planning and control, strategy, global business, ethics, and management careers.

1.5 Credits

MGNT 5006 - Survey of Finance

MGNT 5006 - Survey of Finance

1.5-0-1.5

This course provides an introduction to 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.

1.5 Credits

MGNT 5008 - Survey of Marketing

MGNT 5008 - Survey of Marketing

1.5-0-1.5

A study of the theory and principles of marketing. Emphasis will be placed upon the concept of customer satisfaction. Topics to be covered include total quality management (TQM), innovation, product distribution, cooperative associations, advertising and salesmanship, and the development of brands and trademarks.

1.5 Credits

MGNT 5010 - Survey of Business Law

MGNT 5010 - Survey of Business Law

1.5-0-1.5

An overview of the legal area survey of the areas of law-ethics, contract, partnership, corporation.

1.5 Credits

MGNT 5012 - Survey of Economics

MGNT 5012 - Survey of Economics

1.5-0-1.5

Applies economic theories that assist in explaining and understanding macro and micro economic policies. Particular emphasis is given to the study of unemployment, national income, fiscal and monetary policies, etc., and to the study of the impact of government upon the functioning of industry.

1.5 Credits

MGNT 5014 - Survey of Statistics

MGNT 5014 - Survey of Statistics

1.5-0-1.5

An introduction to the application of statistics to business. Provides statistical techniques needed for managerial decision making. Course content includes descriptive statistics, statistical distribution, probability theory, and hypothesis testing.

1.5 Credits

MGNT 5100 - MBA Orientation

MGNT 5100 - MBA Orientation

1-0-0

An orientation to the MBA program at SPSU.

0 Credits

MGNT 6001 - Management Communications

MGNT 6001 - Management Communications

3-0-3

Effective communication skills are essential for managers in high technology environments. This course emphasizes skill building in writing, oral presentations, interpersonal communication, and research.

3 Credits

MGNT 6002 - Corporate Finance

MGNT 6002 - Corporate Finance

Prerequisite: MGNT 5006 or undergraduate accounting and finance courses

3-0-3

This course includes a review of capital budgeting and ratio analysis, making further extensions in the areas of probability-dependent project analysis, co-varying risks and optimal capital structure. Other topics include working capital management, insurance, and hedging strategies.

3 Credits

MGNT 6004 - Service and Production Operations Management

MGNT 6004 - Service and Production Operations Management

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in management principles and an undergraduate course in statistics
3-0-3

A survey of service and production operations management. Topics include productivity, forecasting, competitiveness, operations strategy, product and service design, process design selection, capacity planning, facility layout, design of work systems, and location planning.

3 Credits

MGNT 6005 - Managerial Economics

MGNT 6005 - Managerial Economics

Prerequisite: MGNT 5012 and MGNT 5014 or an undergraduate course in principles of economics and an undergraduate course in statistics
3-0-3

An analysis of economics that applies microeconomic techniques to business decisions. In particular, it connects economic theory and economics in business practice. Course contents include risk analysis, production analysis, capital budgeting, decision theory, and financial economics.

3 Credits

MGNT 6008 - Marketing Management

MGNT 6008 - Marketing Management

Prerequisite: MGNT 5008 or an undergraduate course in marketing principles
3-0-3

This course will present the logic and common sense associated with sound marketing management principles under changing global conditions. The student will be able to apply these principles, not only to specific managerial environments, but also to understanding events occurring on a daily basis in today's dynamic global marketplace. Through cases and projects students examine strategic and tactical planning and decision making for marketing situations.

3 Credits

MGNT 6010 - Management of Information Technology

MGNT 6010 - Management of Information Technology

3-0-3

A comprehensive study of the concepts and issues involved in managing information technology within organizations. Includes focus on information technologies, acquiring and applying information technologies and systems, and their utilization in managing and decision-making activities.

3 Credits

MGNT 6015 - Technology and Innovation Management

MGNT 6015 - Technology and Innovation Management

Prerequisite: MGNT 5000 or an undergraduate course in management principles

3-0-3

This course emphasizes innovation and creativity, and evaluation and analysis of new technology. The objective is to learn how to evaluate new technologies (either hard or soft) in order to be able to determine whether or not to make significant investments in them.

3 Credits

MGNT 6020 - R&D Management

MGNT 6020 - R&D Management

Prerequisite: MGNT 6015

3-0-3

A systematic examination of product innovations ranging from planning and research to development and commercialization or implementation of new product technology. Topics include pertinent business policy and strategic management issues, the process of innovation, concepts and interconnections between product and process creativity management, technology transfer, and relevant marketing issues. Students will analyze cases and complete a project.

3 Credits

MGNT 6022 - Sales Management

MGNT 6022 - Sales Management

Prerequisite: MGNT 5008 or an undergraduate course in marketing principles

3-0-3

Sales management will highlight the differences experienced by a sales manager from those of a manager geographically located with his or her subordinates. The "arms length" supervision requirements of sales management will better equip the student to manage and motivate any group in a business environment. Emphasis is also placed on hiring skills needed to maintain and expand a sales force.

3 Credits

MGNT 6024 - Business-to-Business Marketing

MGNT 6024 - Business-to-Business Marketing

Prerequisite: MGNT 5008 or an undergraduate course in marketing principles
3-0-3

This course focuses on the buying patterns practiced in the industrial marketplace. The course builds a foundation for the student to better understand the underlying conditions that govern an industrial marketing transaction beyond the immediate product or service that is being sought. The role of technology and its importance in the development of industrial products is explored along with the critical role of services to the products with which they are connected.

3 Credits

MGNT 6025 - Managing Professionals

MGNT 6025 - Managing Professionals

Prerequisite: MGNT 5000 or an equivalent undergraduate course in management and organizational behavior
3-0-3

An applied management skills course which covers principles of management using behavioral guidelines grounded in research. Students develop and apply leadership and team-building skills through experiential learning. Topics include communication, creative problem solving, motivation, power and influence, and conflict management.

3 Credits

MGNT 6028 - Marketing Research

MGNT 6028 - Marketing Research

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in marketing principles and an undergraduate course in statistics
3-0-3

Marketing Research enables the student to conduct an opinion research project to better understand the underpinnings of a successful marketplace query. "Hand-on" experience in questionnaire design, data gathering and analysis. Student teams prepare both a written and oral presentation of the results to experience the relationship between researcher and management in the gathering and communication of research information. The statistics prerequisite enables the students to effectively utilize SPSS for Windows to manipulate the gathered data and use it to support meaningful decisions.

3 Credits

MGNT 6032 - Information System Analysis and Design

MGNT 6032 - Information System Analysis and Design

Prerequisite: MGNT 6010
3-0-3

Provides an advanced understanding of the system development and modification process in business information systems. Introduces the factors for effective communication with and integration of users and user systems. Emphasis on analyzing, modeling and designing processes that improve business processes through the development of effective and efficient information systems. Covers system analysis, information requirements analysis and process, design and implementation.

3 Credits

MGNT 6034 - Database Development and Management

MGNT 6034 - Database Development and Management

Prerequisite: MGNT 6032

3-0-3

Provides the theory and practice of database development and management, and the application of database software to implement business information systems that support managerial and operational decision making. Special emphasis will be placed on database applications software to manage resources within the functional areas of business.

3 Credits

MGNT 6038 - Advanced Database Development and Management

MGNT 6038 - Advanced Database Development and Management

Prerequisite: MGNT 6032 or MGNT 6034

3-0-3

Covers advanced concepts of the theories and practices of database development and management in various business environments. Includes advanced topics such as data and database administration, distributed databases, object-oriented data modeling and development, and data warehousing and mining.

3 Credits

MGNT 6040 - Current Readings in Technology Management

MGNT 6040 - Current Readings in Technology Management

3-0-3

This course will examine how technology affects 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.

3 Credits

MGNT 6046 - Quantitative Analysis

MGNT 6046 - Quantitative Analysis

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in management principles and an undergraduate course in statistics
3-0-3

A survey course of the mathematical and analytical techniques available for the managerial decision-making process. The student is introduced to operations research and system analysis techniques. These techniques include linear programming, simulation, waiting line analysis, forecasting, and CPM/PERT.

3 Credits

MGNT 6050 - Project Management

MGNT 6050 - Project Management

Prerequisite: MGNT 5000 and MGNT 5014 or an undergraduate course in management principles and an undergraduate course in statistics
3-0-3

A study of the project planning, organizing, control concepts and techniques. Coverage will include projects and specifications. Work Breakdown Structures (WBS) the Critical Path Method (CPM), the Program Evaluation and Review Technique (PERT), Gantt charting, and time/resource management.

3 Credits

MGNT 6055 - Total Quality Management

MGNT 6055 - Total Quality Management

Prerequisite: MGNT 5000 and MGNT 5014 or undergraduate courses in management principles and an undergraduate course in statistics
3-0-3

The concepts of TQM will develop leadership and interpersonal skills along with an understanding of planning and customer, satisfaction, in addition to process analysis. The discussion will focus on quality and how to use project teams, such as selecting a project and choosing team members. Topics will be covered concerning setting up meetings and guidelines for productive meetings. Team aspects and team building and activities will also be discussed.

3 Credits

MGNT 6059 - Legal Environment

MGNT 6059 - Legal Environment

Prerequisite: Undergraduate degree in accounting or business or MGNT 5010 /equivalent law course (applies to MBA students required prerequisites)
3-0-3

3 Credits

MGNT 6060 - Entrepreneurship

MGNT 6060 - Entrepreneurship

Prerequisite: MGNT 5000 or an undergraduate course in management principles, MGNT 5006 or an undergraduate course in finance, MGNT 5008 or an undergraduate course in marketing principles, and MGNT 6005 or equivalent
3-0-3

This course addresses the management challenges associated with starting and successfully running a new venture. It provides students with an opportunity to apply the theories and tools that they have learned elsewhere in the curriculum to the venture creation process.

3 Credits

MGNT 6065 - Issues in International Management

MGNT 6065 - Issues in International Management

Prerequisite: MGNT 5000 or undergraduate management principles, MGNT 5006 or undergraduate finance, MGNT 5008 or undergraduate marketing) and MGNT 6005
3-0-3

This course deals with cultural, institutional, economic, and financial environments characteristic of international markets. It will focus on strategic and operational plans that managers must undertake in formulating international business activities.

3 Credits

MGNT 6070 - Issues in Human Resource Management

MGNT 6070 - Issues in Human Resource Management

Prerequisite: MGNT 5000 or an undergraduate course in management principles
3-0-3

This course covers employment practices and employment law in unionized and non-unionized settings. The focus on decision making and administrative issues for managers.

3 Credits

MGNT 6090 - Strategic Management CAPSTONE COURSE

MGNT 6090 - Strategic Management CAPSTONE COURSE

Prerequisite: Students should take this course within the last two semesters of the degree program, requires instructor approval.
3-0-3

Exposes the student to the process of strategic decision-making. Emphasis is placed on the use of SWOT analyses in development of the strategic plan and the determination of the long-term character of the enterprise. Cases will be analyzed, and classroom presentations will be made by distinguished industrial executives and leaders.

3 Credits

MGNT 6091 - Special Topics

MGNT 6091 - Special Topics

3-0-3

3 Credits

MGNT 6092 - Special Topics

MGNT 6092 - Special Topics

3-0-3

3 Credits

MGNT 6093 - Special Topics

MGNT 6093 - Special Topics

3-0-3

3 Credits

MGNT 6231 - Financial Institutions Management

MGNT 6231 - Financial Institutions Management

Prerequisite: MGNT 6002
3-0-3

The purpose of this course is to provide a broad overview of the organization and management of financial institutions. It introduces a set of theories and empirical evidence that form the foundations of the finance discipline.

3 Credits

MGNT 6232 - Financial Planning and Capital Budgeting

MGNT 6232 - Financial Planning and Capital Budgeting

Prerequisite: MGNT 6002 or equivalent
3-0-3

This course is designed to provide students with an in depth background in financial planning and corporate capital budgeting decisions.

3 Credits

MGNT 6233 - Investment Theory and Portfolio Management

MGNT 6233 - Investment Theory and Portfolio Management

Prerequisite: MGNT 6002
3-0-3

This course introduces the major concerns of investors. It covers the skills to conduct an assessment of investment decisions, security analysis, portfolio risk measurement and asset allocation.

3 Credits

MGNT 6234 - International Finance

MGNT 6234 - International Finance

Prerequisite: MGNT 6002
3-0-3

This course examines the risks and constraints facing a multinational corporation. There is a special emphasis on managerial decisions regarding exchange rate exposure, international capital budgeting, and management economic exposure and translation exposure. It also provides an in-depth coverage of foreign exchange rates determination, factors and forecasting.

3 Credits

MGNT 7501 - Independent Research

MGNT 7501 - Independent Research

Prerequisite: At least half of the MBA degree completed, requires professor approval
3-0-3

Course covers special topics of interest to the students. Course credit and topic are arranged between instructor and student. Note: MBA students may take selected electives in other graduate programs subject to prerequisite requirements and faculty approval.

3 Credits

MGNT 7502 - Independent Research

MGNT 7502 - Independent Research

Prerequisite: At least half of the MBA degree completed, requires professor approval
3-0-3

Course covers special topics of interest to the students. Course credit and topic are arranged between instructor and student. Note: MBA students may take selected electives in other graduate programs subject to prerequisite requirements and faculty approval.

3 Credits

MGNT 7503 - Independent Research

MGNT 7503 - Independent Research

Prerequisite: At least half of the MBA degree completed, requires professor approval
3-0-3

Course covers special topics of interest to the students. Course credit and topic are arranged between instructor and student. Note: MBA students may take selected electives in other graduate programs subject to prerequisite requirements and faculty approval.

3 Credits

Civil Engineering

CE 6002 - Research Methods

CE 6002 - Research Methods

Prerequisite: Admission to program
3-0-3

This course addresses the research questions and their relevance to Civil Engineering theory and design practices. It is intended to develop the techniques and skills necessary to complete an original academic research thesis or project report. The development of critical thinking skills relevant to research is an essential element of this course.

3 Credits

CE 6003 - Probabilistic Analysis and Reliability in Civil Engineering

CE 6003 - Probabilistic Analysis and Reliability in Civil Engineering

Prerequisite: Approval of advisor
3-0-3

Introduction to probability modeling and statistical analysis in civil engineering. Emphasis is on the practical applications of common probability models used in civil engineering. This course focuses on the application of statistical reasoning and is project-based.

3 Credits

CE 6101 - Finite Element Analysis

CE 6101 - Finite Element Analysis

Prerequisite: CE 3201 or approval of advisor
3-0-3

Introduction to the use of finite element methods in structural analysis; the finite element formulation; 1- and 2-D elements; isoparametric elements; axisymmetric analysis; plate and shell elements; dynamics, buckling, and nonlinear analysis.

- Discuss the fundamental concepts of the Finite Element Method.
- Apply the basic properties, behavior and usage of different types of finite elements.
- Prepare FE models and solve typical Civil Engineering problems using FEM.
- Interpret and evaluate the quality of the results of FE simulations.

3 Credits

CE 6102 - Structural Dynamics

CE 6102 - Structural Dynamics

Prerequisite: CE 3201 or approval of advisor
3-0-3

Analysis of the dynamic response of structures and structural components to transient loads and foundation excitation; single-degree-of-freedom and multi-degree-of-freedom systems; response spectrum concepts; structural response to earthquakes, design criteria, and seismic safety.

- Estimate the fundamental natural frequency of simple structures.
- Determine the vibration characteristics of simple systems.
- Determine the resonance response of systems.
- Determine dynamic response of simple structures under a general forcing function.
- Use response spectra for earthquake loading.
- Investigate multiple-degrees of freedom systems.
- Model simple systems for earthquake analysis.

3 Credits

CE 6103 - Prestressed Concrete Design

CE 6103 - Prestressed Concrete Design

Prerequisite: CE 3202 or approval of advisor
3-0-3

Theory of prestressed and post-tensioned members; Analysis and design of prestressed concrete beams, slabs, box girders, and bridge girders by elastic and ultimate strength methods; Precast and cast-in-place system construction techniques

- Discuss the basic concepts of prestressing procedures and materials, and the differences with reinforced concrete.
- Determine flexural stresses in prestressed concrete beams at different stages of construction and loadings as well as cracking load and flexural strength.
- Analyze and design various shaped-sections of prestressed concrete beams for flexure and shear, and design the end zone.
- Compute/estimate short term and long term prestressing losses.
- Analyze and design composite cast-in-place slabs (decks) with precast prestressed girders.
- Compute deflections and camber in prestressed concrete beams.
- Analyze and design prestressed continuous beams.

3 Credits

CE 6104 - Advanced Geotechnical Engineering–Foundation Design

CE 6104 - Advanced Geotechnical Engineering– Foundation Design

Prerequisite: CE 3501 and CE 4105 or approval of advisor
3-0-3

An advanced study of analysis and design of various foundation systems. Subjects include footings, piles, piers, caissons, retaining walls, and anchors. Topics include slope stability of embankments and dams, the applications of geotechnical reports and in-situ tests.

- Design shallow and deep foundation systems
- Design retaining walls
- Design anchor systems
- Investigate slope stabilities

3 Credits

CE 6105 - Soil Improvement

CE 6105 - Soil Improvement

Prerequisite: CE 4105 or approval of advisor

3-0-3

A study of various soil improvement techniques for construction projects. Subjects include geosynthetics, admixtures, grouting methods, along with engineering properties of materials used in soil stabilizations.

- Investigate and discuss alternative soil improvement methods satisfying the project requirements
- Investigate and discuss the civil engineering design practices using the probability models

3 Credits

CE 6201 - Transportation Planning

CE 6201 - Transportation Planning

Prerequisite: CE 4177 or approval of advisor

3-0-3

Introduction to urban transportation planning, travel characteristics, demand forecasting techniques, corridor studies, traffic impact studies, and public transit planning and operations.

- Explain the classic four-step process to forecast travel demand understand their strengths and weaknesses
- Understand the main concepts that describe traffic flow and methods of measurement, and calculate the performance measures needed to carry out the appropriate analysis.
- Understand the key principles of geometric and pavement design and be familiar with important components of the road system.

3 Credits

CE 6202 - Advanced Highway Design and Traffic Safety

CE 6202 - Advanced Highway Design and Traffic Safety

Prerequisite: CE 4177 or approval of advisor

3-0-3

Providing a safe and efficient transportation system for all users is the primary objective of federal, state, and local transportation agencies throughout the nation. Better highway design practices have been proven to be the most efficient approach to "safer roads". This advanced highway design and traffic safety class is intended to provide the fundamentals of highway design and operation, human factors and vehicle characteristic and how they interact with the roadway, and highway safety analysis and different statistical techniques employed in the analysis.

- Design different highway facilities and apply relevant highway design standards
- Analyze crash and traffic data employing the appropriate statistical techniques
- Conduct traffic safety studies, identify high-accident locations, and propose crash countermeasure and potential engineering solutions.

3 Credits

CE 6203 - Advanced Bituminous and Concrete Materials

CE 6203 - Advanced Bituminous and Concrete Materials

Prerequisite: CE 4177 or approval of advisor
3-0-3

An advanced study on properties of aggregates, asphalt binder, Portland cement. Focuses on analysis and designs of hot-mix asphalt, and Portland cement concrete. Subjects include aggregate grading and blending, rheology of bituminous materials, chemical reactions and micro-structure of Portland cement concrete. Mixture designs, characterization, and special types of mixes will be included as well.

- Design hot-mix asphalt mixture satisfying the project specific requirements
- Design Portland cement concrete mixtures satisfying the project specific requirements

3 Credits

CE 6204 - Advanced Design and Construction of Flexible and Rigid Pavements

CE 6204 - Advanced Design and Construction of Flexible and Rigid Pavements

Prerequisite: CE 3501 and CE 4105 or approval of advisor
3-0-3

Advanced analysis, behavior, performance, and structural design of highway and airport pavements. This course focuses on mechanistic characterization of pavement structures and on the approaches used to characterize existing structures for the purpose of rehabilitation. Subjects include advanced materials characterization, mechanistic modeling, nondestructive testing, and pavement rehabilitation, Airport pavement design and rehabilitation are also included.

- Design flexible pavement
- Design rigid pavement
- Design overlays on deteriorated pavements

3 Credits

CE 6301 - Hazardous Wastes Engineering

CE 6301 - Hazardous Wastes Engineering

Prerequisite: Approval of advisor

3-0-3

Classification of hazardous wastes; resource conservation, Recovery Act regulations; characteristics and behavior of toxic organics; superfund; groundwater contamination, solutions. Hazardous waste site remedial action; case histories; sampling; landfill design. Stabilization and processing technologies, including incineration, carbon adsorption, emerging techniques.

- To analyze the environmental, social, economical, and political information available for solid waste management site selection.
- To evaluate decomposition processes of refuse in landfills.
- To analyze the impact of reuse/recycle/reduction on landfill design and operation.
- To design landfills based on fundamental principles of mass balance, hydrogeology, soil mechanics, and environmental engineering.
- To provide experiences in realistic civil and environmental engineering design and construction practice.
- To develop teamwork and communication skills required for multi-disciplinary civil and environmental engineering objectives.

3 Credits

CE 6302 - Air-Pollution Control

CE 6302 - Air-Pollution Control

Prerequisite: Admission to program

3-0-3

Fundamental concepts of air pollution. Emission sources, atmospheric dispersion, ambient concentrations, adverse effects, governmental regulations, emission standards, air-quality standards, processes and equipment for controlling emissions

- To explain the structure and composition of atmosphere and determine the properties of gases and aerosols.
- To explain the atmospheric, health and welfare effects of air pollution.
- To calculate the kinetics and equilibrium of gas phase reactions in combustion systems and in the atmosphere.
- To explain the scales of air motion, to determine the atmospheric stability and to calculate air dispersion.
- To describe the principles of gaseous and particulate monitoring systems
- To describe air regulations
- To explain air resources topics to the professional society and general public
- To design remediation processes for treatment of air

3 Credits

CE 6303 - Water Resources Management

CE 6303 - Water Resources Management

3-0-3

This course provides an introduction to water resources engineering and management, with an emphasis on water resources protection and water supply. Course content addresses technical aspects as well as the legal, regulatory and policy aspects of water resources management. Topics include surface water hydrology and watershed protection, development of water supplies, conjunctive use of groundwater and surface water, management of reservoirs and rivers, the role of probability and statistics, systems analysis techniques, and planning of water resources projects.

3 Credits

CE 6304 - Advanced Hydraulics

CE 6304 - Advanced Hydraulics

Prerequisite: ENGR 3343 or approval of advisor
3-0-3

This course covers applications in pipe and open channel flow and hydraulic structures. Unsteady flow in pipes. Water hammer. Hydraulics of sediment transport. Spillway and design of small dams.

- Analyze transient flow in pressure pipe
- Analyze sedimentation and sediment transport phenomena
- Apply principles of hydraulics for energy generation
- Design spillways
- Analyze and design energy dissipaters stilling basins
- Analyze water quality data and interpret the water quality conditions in any waterways
- Solve problems in groundwater hydrology using principles of hydraulics
- Understand the issues of water planning and management
- Apply basic principles of hydraulics and hydrology in urban water resources and environmental projects
- Recognize the importance of incorporating the concept of sustainability in various water resources engineering design projects
- Evaluate the economic impacts of water resource alternatives
- Enhance student's awareness of current water resources and environmental issues

3 Credits

CE 6401 - Master's Thesis

CE 6401 - Master's Thesis

Prerequisite: Approval of advisor
6-0-6

Independent study using a recognized research method.

6 Credits

Computer Science

CS 5003 - Accelerated Introduction to Programming

CS 5003 - Accelerated Introduction to Programming

1.5-0-1.5

The object-oriented programming language Java is presented with emphasis on core programming topics and OOP features including inheritance and polymorphism. The course presents an introduction to data structures including 1D, 2D arrays and the ArrayList, and also discusses file I/O and exception handling.

1.5 Credits

CS 5011 - Fundamentals of Computer Architecture

CS 5011 - Fundamentals of Computer Architecture

Prerequisite: CSE 1301 or CS 5003
1.5-0-1.5

Transition course for SWE students only. This course is designed to examine the principles and concepts of computer architecture. Topics from the principles of computer organization and architecture include fundamentals of computer design, instruction set principles, pipelines, performance, caches and virtual memory.

1.5 Credits

CS 5013 - Computing Fundamentals

CS 5013 - Computing Fundamentals

Prerequisite: CSE 1301 or equivalent
3-0-3

Transition Course: This course is designed to examine the principles and concepts of computer architecture, operating systems, and database systems. Topics from the principles of computer organization and architecture include fundamentals of computer design, instruction set principles, pipelines, performance, caches and virtual memory. Topics from the principles of operating systems include OS structures and design issues, process model and management, memory management, peripheral device management, and file systems. Topics from the principles of database systems include DB structures and design issues, entity relationship models, relational databases, normalization, and an SQL-based database system such as Oracle.

3 Credits

CS 5021 - Fundamentals of Operating Systems

CS 5021 - Fundamentals of Operating Systems

Prerequisite: CSE 1301 or CS 5003
1.5-0-1.5

Transition course for SWE students only: This course is designed to examine the principles and concepts of operating systems. Topics from the principles of operating systems include OS structures and design issues, process model and management, memory management, peripheral device management, and file systems.

1.5 Credits

CS 5031 - Fundamentals of Database Systems

CS 5031 - Fundamentals of Database Systems

Prerequisite: CSE 1301 or CS 5003
1.5-0-1.5

Transition Course for SWE students only: This course is designed to examine the principles and concepts of database systems and their application to real-world software systems. Topics include database structures and design issues, entity relationship models, relational databases, normalization, SQL and practice with an SQL-based database system such as Oracle.

1.5 Credits

[CS 5123 - Advanced Programming and Data Structures](#)

CS 5123 - Advanced Programming and Data Structures

Prerequisite: CSE 1302 or CS 5003
3-0-3

Transition course for graduate students with a limited background in programming. Topics include pointers, recursion, data structures such as lists, stacks, queues, trees, etc., sorting and searching, data abstraction, introduction to runtime analysis and the big-oh notation. Appropriate programming projects are also included.

3 Credits

[CS 5153 - Database Systems](#)

CS 5153 - Database Systems

Prerequisite: CSE 1302 or CS 5003 or IT 5113
3-0-3

Transition course. This course provides an overview of various database models including relational, object-oriented, hierarchical, and network. Also covered are various file structures including sequential, indexed sequential, and direct. It covers planning, analysis, design, and implementation of a database. Entity Relationship models and normalization are covered. It covers an SQL-based database system such as Oracle. A major project and/or paper required.

3 Credits

[CS 5183 - Object-Oriented Programming](#)

CS 5183 - Object-Oriented Programming

Prerequisite: CS 5123 (co-requisite) or CS 3424
3-0-3

Transition course: Topics to be covered include encapsulation and abstraction, objects and classes, inheritance, polymorphism, class libraries, and messaging. The course includes major project(s) and/or paper(s).

3 Credits

CS 5223 - Computer Architecture

CS 5223 - Computer Architecture

Prerequisite: CSE 1301 or CS 5003
3-0-3

Transition Course: Topics from the principles of computer organization and architecture include number systems, digital logic, basic logic design in combinational and sequential circuits, and assembly and machine language.

3 Credits

CS 5243 - Operating Systems

CS 5243 - Operating Systems

Prerequisite: (CSE 1302 or CS 5003) and CS 5223/ CS 3223
3-0-3

Transition Course: Topics from the principles of operating systems include management of resources including processes, real and virtual memory, jobs, processes, peripherals, network, and files.

3 Credits

CS 5423 - Mathematical Structures for Computer Science

CS 5423 - Mathematical Structures for Computer Science

Prerequisite: An undergraduate course in Calculus
Corequisite: CSE 1301 or CS 5003
3-0-3

Transition course: Topics from discrete mathematics include set theory, relations and functions, principles of counting, introductory graph theory, formal logic, recursion, and finite state machines.

3 Credits

CS 6023 - Research Methods and Presentations

CS 6023 - Research Methods and Presentations

3-0-3

Materials and methods of scholarly research in computer science. Includes study of standard research paradigms with illustrative cases of each and the use of research methods and presentations in industrial and business settings.

3 Credits

CS 6103 - Discrete -Time Signals and Systems

CS 6103 - Discrete -Time Signals and Systems

Prerequisite: CS 5423

3-0-3

Underlying principles of discrete-time signals and digital signal processing. Topics include mathematical representation of discrete-time signals and systems, sampling theorem and aliasing, introduction to difference equations, IIR and FIR filters, DTF, FFT, and Z-Transforms.

3 Credits

CS 6123 - Theory and Implementation of Programming Languages

CS 6123 - Theory and Implementation of Programming Languages

Prerequisite: CS 5123/3424 and CS 5423

3-0-3

Comparative study of programming language paradigms with emphasis on design and implementation issues. Covers formal definitions of syntax and semantics, data types, static and dynamic storage allocation, definition of operations, control of program flow, subroutine and function linkages, formal tools for characterizing program execution, and abstraction techniques.

3 Credits

CS 6143 - Enterprise Application Development

CS 6143 - Enterprise Application Development

Prerequisite: CS 5153 and CS 5003

3-0-3

This course covers the basics of enterprise software development. It covers enterprise software architectures, distributed systems, and reliability. It covers technologies commonly used for developing enterprise software, focusing on one enterprise software stack, such as J2EE.

3 Credits

CS 6153 - Advanced Database Systems

CS 6153 - Advanced Database Systems

Prerequisite: CS 5153/3153 and CS 5423

3-0-3

An advanced course in database systems emphasizing design issues and implementation tradeoffs. It covers the theory, algorithms, and methods that underlie distributed databases. Relational algebra is discussed. The client-server architecture and application development are also covered.

3 Credits

CS 6163 - Information Retrieval and Search Engines

CS 6163 - Information Retrieval and Search Engines

Prerequisite: CS 5123 and CS 5423
3-0-3

The course covers issues, models, and techniques associated with efficient storage and effective retrieval of large amounts of unstructured text information. It includes a study of classic information retrieval (IR) techniques and exposes students to more recent developments, such as search engines and text mining. Students will be exposed to relevant literature of the discipline and also implement and/or evaluate a simple information retrieval system or search engine.

3 Credits

CS 6223 - Advanced Computer System Architecture

CS 6223 - Advanced Computer System Architecture

Prerequisite: CS 5243/3243
3-0-3

Topics include computer performance issues, instruction set architectures, RISC versus CISC, machine language, microprocessor design and implementation, performance enhancing techniques, cache memory design, and implications to operating system design.

3 Credits

CS 6243 - Advanced Concepts in Operating Systems

CS 6243 - Advanced Concepts in Operating Systems

Prerequisite: CS 5243/3243
3-0-3

Topics from the theory of operating systems include: memory and process management of high-performance architectures that address concurrent, parallel, and distributed processing.

3 Credits

CS 6263 - Computer Networks

CS 6263 - Computer Networks

Prerequisite: CS 5243/3243
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 the particular emphasis on the Application, Transport, Network, and Datalink layers. Both the principles in computer networking and practical implementations (via network programming labs) are covered.

3 Credits

CS 6273 - Parallel and Distributed Processing

CS 6273 - Parallel and Distributed Processing

Prerequisite: CS 5123 and CS 5223
3-0-3

This course covers various aspects of parallel and distributed processing and algorithm design with an emphasis on programming. Topics include: Taxonomy of parallel architectures; Shared-memory vs. message-passing architectures; Computation models and Performance metrics; Parallel/distributed algorithm design - basic techniques; Parallel/distributed programming techniques and issues: partitioning, load balancing, synchronization, task scheduling, message overheads, etc.; Parallel/distributed algorithms for sorting, matrices, etc.; Debugging, Profiling, and Performance enhancements of parallel and distributed programs. Students will gain experience in parallel and distributed programming on state-of-the-art cluster and GPGPU/CUDA machines, including a 700+ CUDA machine.

3 Credits

CS 6283 - Real-Time Systems

CS 6283 - Real-Time Systems

Prerequisite: CS 5243/3243
3-0-3

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. Related topics such as concurrent task synchronization and communication, sharing of resources, schedulability, reliability, fault tolerance, and system performance are discussed. Project included.

3 Credits

CS 6293 - Information Security: Implementation and Application

CS 6293 - Information Security: Implementation and Application

Prerequisite: CS 5123 and CS 5423
3-0-3

This course covers the fundamentals of computing security, access control technology, cryptographic algorithms, implementations, tools and their applications in communications and computing systems security. Topics include public key infrastructure, operating system security, database security, network security, web security, firewalls, security architecture and models, and ethical and legal issues in information security.

3 Credits

CS 6323 - Human Factors

CS 6323 - Human Factors

3-0-3

The psychological, social, and technological aspects of interaction between humans and computers. Includes usability engineering, cognitive and perceptual issues, human information processing, user-centered design approaches, and development techniques for producing appropriate systems. Major project included.

3 Credits

CS 6353 - Computer Graphics and Multimedia

CS 6353 - Computer Graphics and Multimedia

Prerequisite: CS 5123/3424 and CS 5423

3-0-3

A study of the hardware and software of computer graphics and multimedia systems from the programmer's perspective. Includes a survey of display and other media technologies, algorithms and data structures for manipulation of graphical and other media objects, and consideration of user interface design. Major project included.

3 Credits

CS 6363 - Computer Game Design and Development

CS 6363 - Computer Game Design and Development

Prerequisite: CS 5123/3424

3-0-3

Topics include graphics, multimedia, visualization, animation, virtual reality simulation concepts, methods, and tools of game design and development. A team project on a game prototype is required.

3 Credits

CS 6413 - Theory of Computation

CS 6413 - Theory of Computation

Prerequisite: CS 5423

3-0-3

A study of topics from theoretical computer science that includes automata and languages, computability theory, and complexity theory.

3 Credits

CS 6423 - Algorithmic Processes

CS 6423 - Algorithmic Processes

Prerequisite: CS 5123/3424 and CS 5423
3-0-3

Design and analysis of algorithms. Covers the major algorithm design techniques (greedy, divide-and-conquer, branch-and-bound, etc.), mathematical techniques for analyzing asymptotic complexity of algorithms, and tractability.

3 Credits

CS 6453 - Simulation and Modeling

CS 6453 - Simulation and Modeling

Prerequisite: CS 5123/3424, Matrix Algebra, and Probability and Statistics
3-0-3

The application of various modeling techniques to the understanding of computer system performance. Includes analytic modeling, queuing theory, continuous and discrete simulation methods, and the use of some simulation software tools to implement a major project.

3 Credits

CS 6533 - Artificial Intelligence

CS 6533 - Artificial Intelligence

Prerequisite: CS 5123/3424 and CS 5423
3-0-3

The primary objective of this course is to provide an introduction to the basic principles and applications of Artificial Intelligence. Covers the basic areas of artificial intelligence including problem solving, knowledge representation, reasoning, decision making, planning, perception and action, and learning -- and their applications. Students will design and implement key components of intelligent agents of modern complexity and evaluate their performance. Students are expected to develop familiarity with current research problems, research methods, and the research literature in AI.

3 Credits

CS 6563 - Digital Image Processing and Analysis

CS 6563 - Digital Image Processing and Analysis

Prerequisite: CS 5123 and CS 5423
3-0-3

Theory and application of digital image processing. Topics include sensing, sampling and quantization, image enhancement and

restoration, image transforms, geometrical image modifications, edge detection, image segmentation and classification, image coding, feature extraction, image representation, morphological image processing, and parallel image processing. Applications include satellite images and biomedical images.

3 Credits

CS 6593 - Selected Topics in Artificial Intelligence

CS 6593 - Selected Topics in Artificial Intelligence

Prerequisite: As determined by the Instructor and Department Chair
3-0-3

In-depth study of specific AI topics. Possible topics include, but are not limited to, Expert Systems, Neural Networks, Genetic Algorithms, Machine Learning, Fuzzy Logic, etc.

3 Credits

CS 6703 - Independent Study

CS 6703 - Independent Study

Prerequisite: Approval of course director
3-0-3

Independent study/project under the direction of a graduate CS faculty member.

3 Credits

CS 6901 - Special Topics

CS 6901 - Special Topics

Prerequisite: As determined by the Instructor and Department Chair
1 to 3

Special topics selected by the Department Chair. Offered on a demand basis. May Be Repeated: A student may repeat this course with special permission.

1 to 3 Credits

CS 6902 - Special Topics

CS 6902 - Special Topics

Prerequisite: As determined by the Instructor and Department Chair
1 to 3

Special topics selected by the Department Chair. Offered on a demand basis. May Be Repeated: A student may repeat this course

with special permission.

1 to 3 Credits

CS 6903 - Special Topics

CS 6903 - Special Topics

Prerequisite: As determined by the Instructor and Department Chair
1 to 3

Special topics selected by the Department Chair. Offered on a demand basis. May Be Repeated: A student may repeat this course with special permission.

1 to 3 Credits

CS 7803 - Masters Thesis

CS 7803 - Masters Thesis

Prerequisite: Consent of the Department Chair and the Thesis Advisor
3-0-3

The thesis is designed for students wanting a research focus to their degree. The student works independently under the supervision of a designated CS faculty member on a thesis of substance in computer science. The student will generate a formal written thesis and give a final defense of the thesis. May Be Repeated: This course may be repeated, but only 6 hours may be applied toward the degree.

3 Credits

Construction Management

CM 5030 - Descriptive Structural Systems

CM 5030 - Descriptive Structural Systems

4-0-4

A descriptive study of structural behavior with an overview of statics, strength of materials, design of beams and columns for concrete, steel and timber structural systems.

4 Credits

CM 6000 - Information Methods

CM 6000 - Information Methods

4-0-4

A course in communications technique improvement and preparation for functioning in an information based society. Conceptual and methodological issues in construction research will be explored with emphasis on construction specific resources. Data

development and analysis will be studied to include the concepts of validity, reliability, and applications of statistics.

4 Credits

CM 6020 - Ergonomics Analysis and Productivity

CM 6020 - Ergonomics Analysis and Productivity

4-0-4

A study of the applications of ergonomic principles to construction related tasks. Work study, task analysis, and Human Factors and Ergonomics (HFE) principles are applied to labor and equipment intensive construction operations to prepare students with analytical skills that enhance safety performance and productivity.

4 Credits

CM 6100 - Construction Law: Contracts and Claims

CM 6100 - Construction Law: Contracts and Claims

4-0-4

This course focuses on the legal problems and concerns frequently encountered by constructors and others who participate in the construction process. Topics include the formation of contracts and the various contractual relationships; methods of modification and termination of the contracts; exploration of licensure and professional liability of the construction practitioner.

4 Credits

CM 6110 - Commercial Construction Transactions

CM 6110 - Commercial Construction Transactions

Prerequisite: CM 6100

4-0-4

This course is an extension of CM 6100, with course topic discussion being devoted to commercial construction transactions in relation to the construction contracting process. Discussion is devoted to UCC Article 2, 3, and 9 as applicable to construction vendor contracts. Also, discussion is devoted to the hybrid contracting process and the legal implications of bidding for goods and services that qualify under commercial contract law.

4 Credits

CM 6120 - Dispute Resolution

CM 6120 - Dispute Resolution

Prerequisite: CNST 6100
4-0-4

This course will survey the growth of the alternate dispute resolution field, giving emphasis to alternative dispute resolution theory and its application to the construction industry. A student will be exposed to different resolution processes relative to the construction industry: namely, negotiations, mediation and arbitration.

4 Credits

CM 6130 - Case Studies in Construction

CM 6130 - Case Studies in Construction

Prerequisite: CM 6100
4-0-4

This course is designed to explore the multiple contractual complications that typically arise within the construction contracting process. Topics will develop and explore the technical aspects of procurement, implementation, construction operations, through to post contractual obligation and liabilities inherent in the construction industry.

4 Credits

CM 6200 - Strategic Bidding and Estimating

CM 6200 - Strategic Bidding and Estimating

4-0-4

A review of all normal bid-preparation activities that should take place in a prime contractor's organization from the initial decisions on project selection and receipt of drawings and specifications, through the estimating process and sub-bid research, final bid assembly, markup and submission, to postmortems and necessary follow-up actions. Significant attention will be devoted to bidding techniques, strategies, practices, and methods recommended to handle these functions.

4 Credits

CM 6310 - Advanced Scheduling and Integrated Controls

CM 6310 - Advanced Scheduling and Integrated Controls

4-0-4

An exploration of current techniques and practices of integrated project control systems for construction. Subjects covered include various methods of project scheduling and monitoring, resource management, time-cost tradeoffs, organizing and managing schedule data, forecasting and trend analysis, and presentation of schedule information. Special emphasis is placed on the use of modern integrated scheduling practices and associated computer tools.

4 Credits

CM 6320 - Construction Information Systems

CM 6320 - Construction Information Systems

4-0-4

The interaction of information technology with the construction industry. Opportunities and risks for individuals and organizations are examined in the realms of information flow, decision-making and a changing world. Human and ethical issues are considered. Students are introduced through laboratory exercises to construction specific products, to construction applications of conventional database systems and to data transfer technologies.

4 Credits

CM 6330 - Advanced Operations: Constructability, Value Engineering, Productivity

CM 6330 - Advanced Operations: Constructability, Value Engineering, Productivity

4-0-4

An exploration of project processes and organization including procurement, startup, documentation, payment, change order administration and job closeout. Included is project analysis for constructability, value engineering, and productivity analysis/improvement techniques.

4 Credits

CM 6340 - Analytical Tools for Construction Management

CM 6340 - Analytical Tools for Construction Management

4-0-4

Application of computer software for advanced analysis of data encountered in construction practice. Simulation software will be introduced for the creation of data used for analysis of construction operations. This course will provide masters students with tools that can help them to perform top-level management duties in the construction industry. The complex nature of the construction industry requires construction managers to analyze large amounts of data to manage cost, schedule, and safety issues..

4 Credits

CM 6410 - Building Failures and Defective Work

CM 6410 - Building Failures and Defective Work

4-0-4

A study of problems, trends and issues related to workmanship and product failures during a time of rapid change in the construction industry. It will discuss concepts, philosophy and technology behind the subject issues and seek the exchange of ideas

and views. Students will be expected to gain knowledge in the subject topics and develop skill in researching for facts extended to effective written and verbal presentations of the findings.

4 Credits

CM 6420 - Tall Buildings

CM 6420 - Tall Buildings

4-0-4

A study of tall buildings in the society of today and tomorrow. Form giving factors will be identified and problems of planning, design and construction explored. The project manager's role in the tall building process will be related to specific building examples. International differences in the role of tall buildings will become apparent, yet common threads will be found which can be useful in a shrinking world and a more universal construction industry.

4 Credits

CM 6430 - Automation and Robotics

CM 6430 - Automation and Robotics

4-0-4

A study of the level of application of automation and robots to construction. Techniques and equipment in varying stages of development as well as current applications will be presented for analysis and discussion. Students will be challenged to conceptualize new ways of applying technology to improve industry productivity through automation and robotics.

4 Credits

CM 6510 - Marketing of Construction Services

CM 6510 - Marketing of Construction Services

4-0-4

An examination of how construction services are marketed in the various sectors of the construction industry. The relevant characteristics of construction organizations and target clients will be explored with various scenarios structured to highlight critical parameters of search and match. The potential contributions of the media and conventional planning/analysis techniques will be considered.

4 Credits

CM 6520 - International Construction

CM 6520 - International Construction

4-0-4

An introduction to the construction industry in the international arena. Projects and processes will be studied. Issues of contract law, industry regulation, currency exchange, payment guarantees and risk management will be examined and related to respective

countries of concern. Operations under different cultural norms will be projected in realistic scenarios.

4 Credits

CM 6530 - Construction Markets

CM 6530 - Construction Markets

4-0-4

A study of the dominant factors at work in different construction markets. Geographic, technological, economic, political, organizational, and social influences on construction markets are included. Market groupings by type of construction are identified and paradigms of construction are explored.

4 Credits

CM 6540 - The Construction Company

CM 6540 - The Construction Company

4-0-4

Organization of the construction firm is covered in this course. Financing of the firm, marketing the various construction services of the firm and exploring the economics which are unique to the construction industry are analyzed. Strategic planning and planning for growth of a construction firm are included in the course. Insurance, bonding, employee development, and labor relations are studied. The continuing relationships with clients, bankers, bonding companies and design professionals are explored.

4 Credits

CM 6600 - Construction Risk Analysis and Control

CM 6600 - Construction Risk Analysis and Control

4-0-4

This course focuses on the safety practices mandated by government regulation and required by good business practice. The costs of safety and the lack of it is examined. Workers' compensation insurance cost is integrated into the issues of safety. Exposure analysis, risk management, risk transfer and the costs associated with each are examined in this course.

4 Credits

CM 6800 - Construction Seminar

CM 6800 - 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.

2 Credits

CM 6901 - Special Topics

CM 6901 - Special Topics

Prerequisite: Consent of the department head
1 to 4

Special topics offered by the department. Offered on a demand basis.

1 to 4 Credits

CM 6902 - Special Topics

CM 6902 - Special Topics

Prerequisite: Consent of the department head
1 to 4

Special topics offered by the department. Offered on a demand basis.

1 to 4 Credits

CM 6903 - Special Topics

CM 6903 - Special Topics

Prerequisite: Consent of the department head
1 to 4

Special topics offered by the department. Offered on a demand basis.

1 to 4 Credits

CM 6904 - Special Topics

CM 6904 - Special Topics

Prerequisite: Consent of the department head
1 to 4

Special topics offered by the department. Offered on a demand basis.

1 to 4 Credits

CM 7701 - Masters Project

CM 7701 - Masters Project

Prerequisite: CM 6000 and consent of the department head
1-0-1

This course is designed for the students who want to focus their course of study on a particular aspect of construction. The student works independently under the supervision of the course professor on a project or an inquiry that is significant in the construction industry. The topic of the project or inquiry must be approved prior to registration and the student must continue the work in a manner that is satisfactory to the course professor. The student is expected to submit a substantial report and to defend this submittal and the course work taken in the degree program. **May Be Repeated:** This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements for graduation.

1 Credits

CM 7702 - Masters Project

CM 7702 - Masters Project

Prerequisite: CM 6000 and consent of the department head
2-0-2

This course is designed for the students who want to focus their course of study on a particular aspect of construction. The student works independently under the supervision of the course professor on a project or an inquiry that is significant in the construction industry. The topic of the project or inquiry must be approved prior to registration and the student must continue the work in a manner that is satisfactory to the course professor. The student is expected to submit a substantial report and to defend this submittal and the course work taken in the degree program. **May Be Repeated:** This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements for graduation.

2 Credits

CM 7703 - Masters Project

CM 7703 - Masters Project

Prerequisite: CM 6000 and consent of the department head
3-0-3

This course is designed for the students who want to focus their course of study on a particular aspect of construction. The student works independently under the supervision of the course professor on a project or an inquiry that is significant in the construction industry. The topic of the project or inquiry must be approved prior to registration and the student must continue the work in a manner that is satisfactory to the course professor. The student is expected to submit a substantial report and to defend this submittal and the course work taken in the degree program. **May Be Repeated:** This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements for graduation.

3 Credits

CM 7704 - Masters Project

CM 7704 - Masters Project

Prerequisite: CM 6000 and consent of the department head
4-0-4

This course is designed for the students who want to focus their course of study on a particular aspect of construction. The student works independently under the supervision of the course professor on a project or an inquiry that is significant in the construction industry. The topic of the project or inquiry must be approved prior to registration and the student must continue the work in a manner that is satisfactory to the course professor. The student is expected to submit a substantial report and to defend this submittal and the course work taken in the degree program. **May Be Repeated:** This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements for graduation.

4 Credits

[CM 7801 - Masters Thesis](#)

CM 7801 - Masters Thesis

Prerequisite: CM 6000, completion of 28 hours of graduate courses
4-0-4

Construction degree course work or consent of the department head, approval of thesis proposal intensive research project that results in a formal written thesis. The thesis topic will usually be in an area of interest discovered by the student in early stages of the Construction program or work experience. Students may enroll for a maximum of 4 hours per term for thesis credit. The student works independently under the supervision of the thesis advisor on an inquiry that is significant to the construction industry. The topic must be approved before registration and the student must continue the work in a manner that is satisfactory to the thesis advisor. The student is expected to submit a substantial body of research work and to defend this submittal and the course work taken in the degree program. This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation. CSE Courses

4 Credits

[CM 7802 - Masters Thesis](#)

CM 7802 - Masters Thesis

Prerequisite: CM 6000, completion of 28 hours of graduate courses
4-0-4

Construction degree course work or consent of the department head, approval of thesis proposal intensive research project that results in a formal written thesis. The thesis topic will usually be in an area of interest discovered by the student in early stages of the Construction program or work experience. Students may enroll for a maximum of 4 hours per term for thesis credit. The student works independently under the supervision of the thesis advisor on an inquiry that is significant to the construction industry. The topic must be approved before registration and the student must continue the work in a manner that is satisfactory to the thesis advisor. The student is expected to submit a substantial body of research work and to defend this submittal and the course work taken in the degree program. This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation. **May Be Repeated:** This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation.

4 Credits

[CM 7803 - Masters Thesis](#)

CM 7803 - Masters Thesis

Prerequisite: CM 6000, completion of 28 hours of graduate courses

4-0-4

Construction degree course work or consent of the department head, approval of thesis proposal intensive research project that results in a formal written thesis. The thesis topic will usually be in an area of interest discovered by the student in early stages of the Construction program or work experience. Students may enroll for a maximum of 4 hours per term for thesis credit. The student works independently under the supervision of the thesis advisor on an inquiry that is significant to the construction industry. The topic must be approved before registration and the student must continue the work in a manner that is satisfactory to the thesis advisor. The student is expected to submit a substantial body of research work and to defend this submittal and the course work taken in the degree program. This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation. May Be Repeated: This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation.

4 Credits

CM 7804 - Masters Thesis

CM 7804 - Masters Thesis

Prerequisite: CM 6000, completion of 28 hours of graduate courses
4-0-4

Construction degree course work or consent of the department head, approval of thesis proposal intensive research project that results in a formal written thesis. The thesis topic will usually be in an area of interest discovered by the student in early stages of the Construction program or work experience. Students may enroll for a maximum of 4 hours per term for thesis credit. The student works independently under the supervision of the thesis advisor on an inquiry that is significant to the construction industry. The topic must be approved before registration and the student must continue the work in a manner that is satisfactory to the thesis advisor. The student is expected to submit a substantial body of research work and to defend this submittal and the course work taken in the degree program. This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation. May Be Repeated: This course may be repeated with departmental approval but no more than 8 hours may be applied toward the requirements of graduation.

4 Credits

CSE 6983 - Graduate Internship

CSE 6983 - Graduate Internship

Prerequisite: 9 CSE graduate hours and be in good academic standing.
3-0-3

Gives students the opportunity to apply knowledge of computing in a realistic practical project. They are expected to write a research paper based on their experiences.

3 Credits

Engineering Technology - Electrical

ECET 6001 - Circuit and System Modeling with SPICE

ECET 6001 - Circuit and System Modeling with SPICE

Prerequisite: Semiconductor Device Theory and Applications; equivalent to ECET 2210, ECET 2310

3-3-4

A detailed study of circuit modeling using SPICE. The student will learn to model circuits and systems at the device level up to the behavioral level. This includes BJT and MOS transistors, op-amps, communications systems, control systems, etc. The student will also learn how SPICE numerical algorithms function and how to maximize the speed and accuracy of simulations.

4 Credits

ECET 6002 - Programmable Devices

ECET 6002 - Programmable Devices

Prerequisite: Digital Theory and Applications, C and any AMS language equivalent to ECET 2210, ECET 4710

3-3-4

A study of the programming and applications of programmable devices for rapid time-to-market product development. Devices range from PLDs through MicroControllers through Programmable Analog devices. Practical experience will result from completing projects that develop systems using several of the devices.

4 Credits

ECET 6003 - Advanced Test Engineering

ECET 6003 - Advanced Test Engineering

Prerequisite: Fundamental Test Engineering equivalent to ECET 3600

3-3-4

An in-depth study of test engineering with emphasis on computer-aided instrumentation utilizing the IEEE-488 bus and protocols. LabVIEW for windows will be used to develop automated test systems and virtual instruments. Component, board, backplane, in-circuit, functional and systems testing will be researched and analyzed in relationship to cost, testability and fault analysis. Surface-mounted device and ASIC testing are also studied. Boundary-scan, VXI/VME, commercially available software and other test strategies will be explored.

4 Credits

ECET 6004 - System Engineering

ECET 6004 - System Engineering

3-3-4

This course provides a knowledge base of those elements comprising good design practices beyond circuit design and analysis. Topics include: concurrent engineering, quality, reliability, maintainability, productivity, life-cycle cost, projectizing, manufacturing and logistic support.

4 Credits

ECET 6100 - Discrete-Time Signals and Systems

ECET 6100 - Discrete-Time Signals and Systems

3-0-3

Underlying principles of discrete-time signals and digital signal processing. Topics include mathematical representation of discrete-time signals and systems, sampling theorem and aliasing, introduction to difference equations, IIR and FIR filters, Z-Transform, DFT, FFT and Spectral analysis. (Non-MSET majors only)

3 Credits

ECET 6101 - Digital Signal Processing

ECET 6101 - Digital Signal Processing

3-3-4

This course is presented in three units. Unit one reviews underlying principles of discrete-time signals and systems, difference equations, and the design of finite impulse response and infinite impulse response filters. Topics of second unit include frequency response, Z-Transform, DTFT, DFT, and FFT with practical applications. The subject of third unit is implementation of digital filters and speech processing examples using popular DSP microprocessors such as TMS320, DSP56000, and ADSP21xxx families.

4 Credits

ECET 6102 - Mechatronics

ECET 6102 - Mechatronics

3-3-4

This course is about integrating electronics, mechanical engineering and computer science. It is essential for engineers or engineering technologists who have a need to work across disciplinary boundaries. The main topics covered in the course will be mechatronic system design which involves: 1) Modeling, analysis and control of dynamic physical systems; 2) Control sensors and actuators with special emphasis on brushless, stepper, linear and servo-motors; 3) Electronics for mechatronics with special emphasis on special purpose digital and analog integrated devices; and 4) Analog, digital and hybrid mechatronic systems such as hard-disk drives and robots.

4 Credits

ECET 6201 - Advanced Digital Design

ECET 6201 - Advanced Digital Design

Prerequisite: Digital Theory and Application, C and Assembly Language equivalent to ECET 2210, ECET 4710

3-3-4

A detailed study of modern digital design principles and techniques. Topics will be investigated utilizing advanced programmable logic devices such as CPLD's, EPLD's, and FPGA's. Device development using both VHDL and schematic capture tools will be thoroughly explored. Practical experience and additional insight will be gained in the design and development of practical solutions to modern problems.

4 Credits

ECET 6202 - Embedded PC Systems

ECET 6202 - Embedded PC Systems

3-3-4

This course will focus on the latest developments in the field of embedded PCs (80186 & 80386ex processors). Emphasis will be on single-board systems used in the control environment. Customizing the ROM BIOS and developing ROM code will be studied. C, assembly language and real-time executive programming tools will be used.

4 Credits

ECET 6203 - Topics in Machine Intelligence

ECET 6203 - Topics in Machine Intelligence

3-3-4

The principles, theory and current applications of fuzzy-logic and neural-networks are covered in this course. Discussions will include how neural network simulations are used to solve decision-making tasks. Other topics included are machine vision and speech analysis. Practical experience and additional insight will result from students using the principles and theories studied in class to develop practical solutions to actual problems.

4 Credits

ECET 6204 - Networked Embedded PCs

ECET 6204 - Networked Embedded PCs

Prerequisite: ECET 6202

3-3-4

A course covering the basics of embedded PCs and their applications in networks and wireless systems. Covers the 80x86 architecture and C++ programming, then covers network programming using TCP/IP. Emphasizes connecting embedded PCs via Ethernet, wireless systems and the Internet. Also, Win CE development will be introduced.

4 Credits

ECET 6300 - Telecommunications Networking

ECET 6300 - Telecommunications Networking

3-0-3

A study of the fundamentals of telecommunications systems, emphasizing the management viewpoint. Course covers voice and data networks, and the regulations and standards affecting them. Laboratory demonstrations will illustrate key concepts. Course cannot be used as credit for ECET majors.

3 Credits

ECET 6301 - Telecommunications

ECET 6301 - Telecommunications

Prerequisite: Communications background equivalent to ECET 3400, ECET 4820
3-3-4

The study of technologies and services deployed in today's public and private wide-area networks. Circuit-switched and packet-switched networks for voice and data will be studied. Topics include ISDN, X.25, SONET/SDH, ATM, and more. Students gain practical experience through detailed studies of actual WAN solutions used by various organizations.

4 Credits

ECET 6302 - Digital Communication Networks

ECET 6302 - Digital Communication Networks

Prerequisite: Communications background equivalent to ECET 3400, ECET 4820
3-3-4

A detailed study of local area networks emphasizing characteristics, standards, protocols, and performance. Topics include Ethernet, Token Ring, routing, domain and peer networking, and network security. The configuration and interaction of networking devices, operation systems, and applications will be examined. Lab exercises and projects illustrate concepts.

4 Credits

ECET 6303 - Wireless Communication Systems

ECET 6303 - Wireless Communication Systems

Prerequisite: Communications background equivalent to ECET 3400, ECET 3410
3-3-4

A detailed study of wireless communication networks with special emphasis on applications, access techniques and interconnection with other networks. Topics include cellular telephones, personal communication systems, wireless LANs, and satellite systems. Students will gain practical experience by studying networks used by enterprises to enhance productivity and competitiveness.

4 Credits

ECET 6304 - Antenna Design

ECET 6304 - Antenna Design

Prerequisite: Background equivalent to ECET 3410
3-3-4

Course covers antenna measurements, design, and performance analyses. Topics include radiation and propagation; basic radiators, arrays; reflector and lens antennas, optimized performance parameters, and measurement facilities.

4 Credits

ECET 6305 - Radar Systems

ECET 6305 - Radar Systems

Prerequisite: Background equivalent to ECET 3410 and ECET 4420
3-3-4

Course includes introduction to radar principles and applications, radar concept design, and performance analyses using digitally simulated radar signals. Topics include modern radar system concepts; characteristics of target signals, noise, and clutter; target echo extraction; range, velocity and bearing determination; tracking and moving target processing.

4 Credits

ECET 6401 - Linear Control System Analysis and Design

ECET 6401 - Linear Control System Analysis and Design

3-3-4

This course is a thorough study of Modern Control Systems. Both time-domain and frequency domain methods of analysis, design and compensation of linear feedback control systems are covered. Topics include Laplace Transform methods, State Space analysis, stability analysis using Root Locus and frequency response methods, Nyquist criterion, and practical examples of design and compensation of feedback control systems. This course will make extensive use of computer-aided design packages such as MATLAB.

4 Credits

ECET 6402 - Power Flow Studies and Fault Analysis

ECET 6402 - Power Flow Studies and Fault Analysis

Prerequisite: Power system analysis background equivalent to ECET 4510
3-3-4

This is a course on modern power system analysis and design. The first part of the course is devoted to the typical topics in Power System analysis. In the second part of the course, emphasis is placed on topics such as power flow solutions, symmetrical faults, symmetrical components and sequence networks, unsymmetrical faults and power system stability.

4 Credits

ECET 6403 - Applications of Power Electronics in Electric Drive Systems

ECET 6403 - Applications of Power Electronics in Electric Drive Systems

Prerequisite: Undergraduate machinery course equivalent to ECET 3500
3-3-4

This course combines electric machinery, control and power electronics. The first part of the course is devoted entirely to Power Electronics. The second part is devoted to the application of power electronics in the speed control of electric machinery. Both dc and ac motor drive systems are covered. MATLAB and Spice will be extensively used for computation and verification purposes. Practical and hands-on experience will be gained using practical electric drive systems in the second part of the course.

4 Credits

ECET 6404 - Switching Power Supplies

ECET 6404 - Switching Power Supplies

3-3-4

This course presents the theory and practical skills necessary to design switching power supplies, focusing on DC-to-DC converters. Topics addressed include switching functions, converter topologies, magnetics design and feedback control. Students will design, build and test several power supplies.

4 Credits

ECET 6704 - Project Proposal

ECET 6704 - Project Proposal

Prerequisite: At least 24 hours completed toward degree and permission of project advisor
1-8-4

Guided by his/her Project Committee, the student will prepare a Proposal for his/her Masters Project. This proposal must conform to the published guidelines, be approved by the Project Committee and filed with the ECET office. In addition, the student will make substantial progress toward meeting the goals stated in the proposal and file an approved Progress Report. The filing of the Project-Committee approved Proposal and Progress Report will constitute completion of this course.

4 Credits

ECET 6901 - Special Topics

ECET 6901 - Special Topics

1 to 5

The topic election and credit for this course will be by written agreement among the student, the instructor and the department head.

1 to 5 Credits

ECET 6902 - Special Topics

ECET 6902 - Special Topics

1 to 5

The topic election and credit for this course will be by written agreement among the student, the instructor and the department head.

1 to 5 Credits

ECET 6903 - Special Topics

ECET 6903 - Special Topics

1 to 5

The topic election and credit for this course will be by written agreement among the student, the instructor and the department head.

1 to 5 Credits

ECET 6904 - Special Topics

ECET 6904 - Special Topics

1 to 5

The topic election and credit for this course will be by written agreement among the student, the instructor and the department head.

1 to 5 Credits

ECET 6905 - Special Topics

ECET 6905 - Special Topics

1 to 5

The topic election and credit for this course will be by written agreement among the student, the instructor and the department head.

1 to 5 Credits

ECET 7504 - Research

ECET 7504 - Research

Prerequisite: At least 28 hours completed toward degree and permission of instructor

2-6-4

A seminar in research and development methods, current industrial practice and application of new technologies. Guided by the instructor, each student will choose a current topic in Electrical or Computer Engineering Technology, become informed about the principles and applications of that topic and ultimately produce a research report which is presented during the ECET Forum.

4 Credits

ECET 7704 - Project

ECET 7704 - Project

Prerequisite: ECET 6704 and permission of project advisor
1-8-4

Guided by his/her Project Committee, the student will complete his/her Masters Project. The student must demonstrate completion of the project to his/her committee and obtain the committee's approval. The student will prepare a final report that completely documents the project and will present this report to the department. Written acceptance by the Committee of the Final report will constitute the completion of this course.

4 Credits

Information Design and Communication

IDC 5001 - Writing in the Professions

IDC 5001 - Writing in the Professions

3-0-3

Introduction to the conventions of professional written discourse for graduate-level work. Course reviews grammar, style and writing for students who demonstrate weak writing skills or for students without writing-intensive undergrad degrees. Also introduces writing for areas of information design, content development, visual thinking and instructional design. Taken the first semester of enrollment in the MSIDC, MSIID and certificate in Technical Communication programs.

3 Credits

IDC 5002 - Graphics in the Profession

IDC 5002 - Graphics in the Profession

3-0-3

For students without page layout or graphic backgrounds: introduction to the conventions of professional graphics and document layout for graduate-level work. Course reviews industry standard page layout and graphic application skills such as initial setting up of documents, creating styles, adding graphics and graphic elements; creating and manipulating elementary digital graphics in both raster and vector formats, including changing color modes, resolving resolution issues, and choosing correct file formats; understanding different types of graphs and how to create them and when to use them; and identifying copyright issues.

3 Credits

IDC 6001 - Professional Practices of Communication

IDC 6001 - Professional Practices of Communication

3-0-3

Overview of technical writing and editing. Emphasis on drafting and editing many documents that reflect the variety of writing done in the field of professional communication. Both experienced and inexperienced writers will benefit from this course, which must be taken the first semester of enrollment in the master's program.

3 Credits

IDC 6002 - Information Design

IDC 6002 - Information Design

Prereq/Corequisite: IDC 6001, IDC 6030
3-0-3

Study of the main design elements in information products with an emphasis on rhetorical and theoretical underpinnings for design decisions. Students work on designing and redesigning products in various media. Requirements include a report on document design that demonstrates solid application of theoretical principles. Should be taken as soon as possible after admission.

3 Credits

IDC 6004 - Research Methods

IDC 6004 - Research Methods

Prereq/Corequisite: IDC 6001, IDC 6030
3-0-3

Introduction to how to make practical use of research to inform information design and communication decisions. Students learn to create and to be critical consumers of research reports by getting hands-on exposure to quantitative and qualitative methods, including interviewing, survey design, and analysis. The course teaches how to use standard software products such as MS Word and MS Excel to perform basic qualitative and quantitative analyses. Although students learn important statistical concepts, formulas and calculations are de-emphasized.

3 Credits

IDC 6005 - Visual Thinking

IDC 6005 - Visual Thinking

Prereq/Corequisite: IDC 6001, IDC 6030
3-0-3

Course examines principles of effective visual communication. Students analyze visual artifacts, select visual representations for key concepts, and identify appropriate visual forms for different information structures.

3 Credits

IDC 6010 - Writing Across Media

IDC 6010 - Writing Across Media

Prerequisite: IDC 6001
Prereq/Corequisite: IDC 6030
3-0-3

Course examines rhetorical, structural, and stylistic requirements of various communications media. Topics include writing for the Web, narrative design, and document engineering.

3 Credits

IDC 6015 - Strategic Communication

IDC 6015 - Strategic Communication

Prerequisite: IDC 6001, IDC 6002
3-0-3

This course focuses on: 1) the role of strategic communications in the process of marketing products, ideas and people, 2) components of strategic communication campaigns, 3) ethics and regulation of strategic communications, 4) professional specialties within the field of strategic communications.

3 Credits

IDC 6030 - Visual Design Strategy

IDC 6030 - Visual Design Strategy

Prerequisite: IDC 6001 or departmental approval
3-0-3

Application of fundamental elements and principles of graphic design to professional communication. Students without solid background in graphics and page layout applications are encouraged to take IDC 5002 before IDC 6030.

3 Credits

IDC 6035 - Information Graphics

IDC 6035 - Information Graphics

Prerequisite: IDC 6001 and IDC 6030
Corequisite: IDC 6002
3-0-3

Process and product of visual representation and display of information utilizing advanced techniques to produce infographics. Research and production of data infographics, visual instructions and comics as infographics, dashboards, and news infographics. Must have working knowledge of Photoshop and Illustrator or comparable raster-based and vector-based image applications.

3 Credits

IDC 6040 - Applied Graphics

IDC 6040 - Applied Graphics

Prerequisite: IDC 6001 and IDC 6030

Prereq/Corequisite: IDC 6002

3-0-3

Students develop competency in raster-based digital image editing for information design and technical communication. Students complete practical graphics projects using typography and digital illustrations.

3 Credits

IDC 6042 - Applied Digital Graphics

IDC 6042 - Applied Digital Graphics

Prerequisite: IDC 6001 and IDC 6030

Prereq/Corequisite: TCOM 6002

3-0-3

Students develop competency in complex digital image editing for information design and communication. Students complete practical graphics projects using typography and digital illustrations.

3 Credits

IDC 6045 - Foundations of Multimedia

IDC 6045 - Foundations of Multimedia

Prerequisite: IDC 6001 and IDC 6030

Prereq/Corequisite: IDC 6002

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. This course is double-listed for both undergraduate and graduate students. Graduate students will be required to complete additional work that emphasizes theory and research over application. Thus they must demonstrate a higher level of learning than undergraduates. Students who took TCOM 4045 Foundations of Multimedia as undergraduates may not count IDC 6045 for credit toward their graduate degree.

3 Credits

IDC 6060 - Strategies for Global Communication

IDC 6060 - Strategies for Global Communication

Prerequisite: IDC 6001 and IDC 6030

Prereq/Corequisite: IDC 6002

3-0-3

Focuses on issues affecting global communication. Readings in culture and international communication give students the research

and theory to make strategic decisions regarding the design of communication products in international contexts.

3 Credits

IDC 6071 - User Assistance

IDC 6071 - User Assistance

Prerequisite: IDC 6001, IDC 6002
3-0-3

Course examines the theories and practices of developing user assistance (help systems). Minimalist documentation practices and rhetorical analysis inform how content for UA is created. Instructional graphics are emphasized throughout the semester. Students use various commercial UA products to develop and deliver help.

3 Credits

IDC 6080 - Professional Oral Presentations

IDC 6080 - Professional Oral Presentations

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Course designed to enhance students' presentation skills in a technical and business environment. Students practice various speech types such as briefings, interviews, formal technical presentations, panels, and impromptu presentations. Whenever possible, presentations are videotaped for analysis and review.

3 Credits

IDC 6090 - Medical Communication

IDC 6090 - Medical Communication

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Course examines the scope of medical communication, with emphasis on opportunities for technical communication professionals. Students will analyze, edit, and revise various medical document types, such as medical research abstracts, patient education materials, professional medical training documents, medical advertisements, and pharmaceutical package inserts. Students will independently study medical terminology and develop a portfolio of medical writing samples.

3 Credits

IDC 6110 - Communications Project Management

IDC 6110 - Communications Project Management

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Reviews the roles and responsibilities of project managers through the project lifecycle. Topics include communication management, risk management, scope management, resource management, and project quality. Assignments provide experience with industry-accepted software, tools, and approaches.

3 Credits

IDC 6120 - Usability Testing

IDC 6120 - Usability Testing

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
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.

3 Credits

IDC 6135 - Website Design

IDC 6135 - Website Design

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Advanced theoretical study and application of best practices for the design and delivery of information on the World Wide Web. Students learn the fundamentals of HTML, use of HTML authoring tools, web content writing and editing, page layout, design of web graphics and multimedia elements, and website architecture and content management. Students work individually and in teams to design and develop websites. Some instruction is provided in basic HTML and XHTML coding, the composition of cascading style sheets, and the use of a current web site development software package.

3 Credits

IDC 6150 - Marketing Communication

IDC 6150 - Marketing Communication

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Strategies for planning and implementing a marketing plan for a sponsored project. Students also develop individual assignments for self-promotion and white papers.

3 Credits

IDC 6160 - Rhetoric: History, Theory, and Practice

IDC 6160 - Rhetoric: History, Theory, and Practice

Prerequisite: IDC 6001
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.

3 Credits

IDC 6175 - Digital Rhetoric

IDC 6175 - Digital Rhetoric

Prereq/Corequisite: IDC 6001, IDC 6030, and IDC 6002
3-0-3

Course provides students with a foundation in rhetoric as a study of argument, persuasion, and convention. In particular, the course focuses on rhetorical practice within a digital environment. Students will develop strong digital literacy skills to help them analyze both audience and content of new media. They will explore how a medium creates assumptions for its users, and how these media interact with one another in a larger social context. Through case studies and applied projects, students will learn to integrate digital rhetoric into the practices of professional and technical communication.

3 Credits

IDC 6180 - Information Architecture

IDC 6180 - Information Architecture

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Course examines key concepts involved in communicating information in complex Web environments. Topics include audience analysis, organizational schemas, labeling, and navigation.

3 Credits

IDC 6210 - Business Analysis

IDC 6210 - Business Analysis

Prerequisite: IDC 6001, IDC 6030 and IDC 6002 or permission of instructor
3-0-3

This course focuses on problem definition, stakeholder analyses and communication strategies to support development. Business interface analysis fundamentals, requirements planning, analysis and documentation are covered.

3 Credits

IDC 6220 - Mobile User Experience

IDC 6220 - Mobile User Experience

Prerequisite: IDC 6001, IDC 6030, IDC 6002 or permission of instructor
3-0-3

Introduction to how user experience design, evaluation and documentation influence the mobile design lifestyle. Coursework involves case studies and project work to build student portfolios.

3 Credits

IDC 6240 - Content Strategy

IDC 6240 - Content Strategy

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

An introduction to the practices and processes of developing, implementing, assessing, and refining content for strategic and brand marketing purposes.

3 Credits

IDC 6901 - Special Topics

IDC 6901 - Special Topics

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
1 to 3

A course on a special topic of importance and relevance to the field of technical communication not covered in the graduate curriculum. Offered when needed.

1 to 3 Credits

IDC 6902 - Special Topics

IDC 6902 - Special Topics

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
1 to 3

A course on a special topic of importance and relevance to the field of technical communication not covered in the graduate curriculum. Offered when needed.

1 to 3 Credits

IDC 6903 - Special Topics

IDC 6903 - Special Topics

Prerequisite: IDC 6001 and IDC 6030;
Corequisite: IDC 6002
Prereq/Corequisite: IDC 6002
1 to 3

A course on a special topic of importance and relevance to the field of technical communication not covered in the graduate curriculum. Offered when needed.

1 to 3 Credits

IDC 7503 - Independent Study

IDC 7503 - Independent Study

Prerequisite: IDC 6001 and IDC 6030;
Corequisite: IDC 6002
Prereq/Corequisite: IDC 6002
3-0-3

A directed study for a graduate student who wishes to pursue a special interest in information not covered in the curriculum. The student submits to the IDC graduate program coordinator a proposal that clearly defines the course of study and the benefits to be obtained. The proposal must be submitted at least one semester prior to registration for independent study hours. Once the proposal is approved, the student is assigned a faculty advisor and registers for 3 credit hours.

3 Credits

IDC 7601 - Internship

IDC 7601 - Internship

Prerequisite: Completion of 27 hours of IDC coursework or consent of the program coordinator, confirmation of approved internship
1 to 3

Course provides student with hands-on experience in information design and technical communication in a professional environment. Work should be typical of information designers and technical communicators. Work may be either an extended project or a variety of shorter assignments. (Total of 6 hours of Masters Internship required.)

1 to 3 Credits

IDC 7602 - Internship

IDC 7602 - Internship

Prerequisite: Completion of 27 hours of IDC coursework or consent of the program coordinator, confirmation of approved internship
1 to 3

Course provides student with hands-on experience in information design and technical communication in a professional environment. Work should be typical of information designers and technical communicators. Work may be either an extended project or a variety of shorter assignments. (Total of 6 hours of Masters Internship required.)

1 to 3 Credits

IDC 7603 - Internship

IDC 7603 - Internship

Prerequisite: Completion of 27 hours of IDC coursework or consent of the program coordinator, confirmation of approved internship
1 to 3

Course provides student with hands-on experience in information design and technical communication in a professional environment. Work should be typical of information designers and technical communicators. Work may be either an extended project or a variety of shorter assignments. (Total of 6 hours of Masters Internship required.)

1 to 3 Credits

IDC 7801 - Thesis

IDC 7801 - Thesis

Prerequisite: Completion of 30 hours of IDC coursework or consent of the program coordinator, approval of thesis proposal
1 to 3

Intensive research project that results in a formal written thesis. Usually flows from an area of interest discovered by the student in early stages of the Information Design and Communication program or through work experience. Thesis work will be closely supervised by the student's advisor. Students may enroll for a maximum of 3 hours per term for thesis credit, with exceptions at the discretion of the department chair. (Total of 6 hours of Thesis required.)

1 to 3 Credits

IDC 7802 - Thesis

IDC 7802 - Thesis

Prerequisite: Completion of 30 hours of IDC coursework or consent of the program coordinator, approval of thesis proposal
1 to 3

Intensive research project that results in a formal written thesis. Usually flows from an area of interest discovered by the student in early stages of the Information Design and Communication program or through work experience. Thesis work will be closely supervised by the student's advisor. Students may enroll for a maximum of 3 hours per term for thesis credit, with exceptions at the discretion of the department chair. (Total of 6 hours of Thesis required.)

1 to 3 Credits

IDC 7803 - Thesis

IDC 7803 - Thesis

Prerequisite: Completion of 30 hours of IDC coursework or consent of the program coordinator, approval of thesis proposal
1 to 3

Intensive research project that results in a formal written thesis. Usually flows from an area of interest discovered by the student in early stages of the Information Design and Communication program or through work experience. Thesis work will be closely supervised by the student's advisor. Students may enroll for a maximum of 3 hours per term for thesis credit, with exceptions at the discretion of the department chair. (Total of 6 hours of Thesis required.)

1 to 3 Credits

IID 6050 - Instructional Applications of Multimedia Design

IID 6050 - Instructional Applications of Multimedia Design

Prerequisite: IDC 6135 and IDC 6045
3-0-3

Course introduces and applies theories, tools and techniques of professional multimedia use in instructional design settings.

3 Credits

IID 6140 - Instructional Systems Design

IID 6140 - Instructional Systems Design

Prerequisite: IDC 6001 and IDC 6030;
Prereq/Corequisite: IDC 6002
3-0-3

Course introduces and applies the literature, tools, and techniques of systematic instructional design. Includes substantial online course elements. Students will study major models of instructional design and apply them to develop and refine a unit of instruction. The course addresses the literature and theory underlying formal instructional development – particularly cognitive psychology -- and provides practice in goal analysis, team instructional development, formative evaluation, and evaluation.

3 Credits

IID 6145 - Human Performance Technology

IID 6145 - Human Performance Technology

Prerequisite: IDC 6001
Prereq/Corequisite: TCOM 6002

3-0-3

Course applies tools, and techniques of human performance technology, the parent field of instructional design. The performance technologist analyzes and solves workplace human productivity issues.

3 Credits

IID 6155 - Online Instructional Development

IID 6155 - Online Instructional Development

Prerequisite: IID 6140

3-0-3

Course explores online instructional development and deployment in higher education and corporate arenas, addressing issues of pedagogy, current and emerging technologies, marketing, design, and evaluation. Students will create, deploy and evaluate online instructional modules in a variety of online technologies.

3 Credits

PSYC 6011 - Theories of Cognition

PSYC 6011 - Theories of Cognition

Prerequisite: Undergraduate transcript must document introduction to Psychology, Educational Psychology, Cognitive Psychology, or course equivalent of one of these. Limited to IID majors only.

3-0-3

Cognitive psychology as applied to education. Cognitive theories, models, and processes are applied to the teaching and learning of school skills and content areas. Processes such as attention, critical thinking, concept formation, language, memory, and problem solving are examined. Cognitive psychology principles are used to examine and refine instructional methods.

3 Credits

Information Technology

IT 5101 - Introduction to Database Systems

IT 5101 - Introduction to Database Systems

1.5-0-1.5

This course examines aspects of database management systems. Topics include database analysis, design, development, and management.

1.5 Credits

IT 5102 - Introduction to Security

IT 5102 - Introduction to Security

1.5-0-1.5

This course examines aspects of computer security and assurance. Topics include basic principles, architecture models, disaster recovery models, physical security, and privacy and ethics.

1.5 Credits

IT 5200 - Introduction to Platforms

IT 5200 - Introduction to Platforms

1.5-0-1.5

This course examines aspects of computer platforms, operating systems and hardware.

1.5 Credits

IT 5201 - Introduction to Networks

IT 5201 - Introduction to Networks

Prerequisite: IT 5200

1.5-0-1.5

This course examines aspects of computer networks and data communications.

1.5 Credits

IT 5302 - Introduction to Web Development

IT 5302 - Introduction to Web Development

Prerequisite: IT 5303

1.5-0-1.5

This course examines the fundamental aspects of web development in support of business needs. Web development projects are required.

1.5 Credits

IT 5303 - Introduction to Programming and Software Development

IT 5303 - Introduction to Programming and Software Development

3-0-3

This course examines concepts and practices of modern computer programming and software development. Students will learn how to design software to solve business problems by integrating existing solutions and developing new components using an object

oriented programming language.

3 Credits

IT 6103 - IT and the Law

IT 6103 - IT and the Law

Corequisite: IT 6413 or IT 6423
3-0-3

This elective course will examine aspects of how the law affects an IT operation. Topics such as contract law, internet law, privacy and security will be discussed. Graduates of the MSIT need to know how the law affects IT and understand the basic laws particularly geared toward an IT operation.

3 Credits

IT 6203 - IT Design Studio

IT 6203 - IT Design Studio

Prerequisite: IT 5101 and IT 5302
3-0-3

This core course covers technologies and methods of designing and prototyping an IT application from multiple sub-system components. Major projects included, where students will design and prototype two significant IT applications involving n-tiers of sub-system components, where n is greater than 2. The course will require foundational proficiency in all major technical areas of IT including: data management; information assurance and security; networks and communication; servers and platforms; and software and web development.

3 Credits

IT 6413 - IT Service Delivery

IT 6413 - IT Service Delivery

Prerequisite: IT 5201
3-0-3

This core course covers existing and emerging standards for IT service delivery, including ITIL and EAMM necessary for graduates who will have responsibility for IT service delivery to the organization including attaining and maintaining service level agreements. Major project included.

3 Credits

IT 6423 - IT System Acquisition

IT 6423 - IT System Acquisition

Prerequisite: IT 5303 or IT 5301
3-0-3

This core course covers methods and best practices of assessing business needs, functional requirements and value for IT system acquisition (including decisions about appropriate sourcing).

3 Credits

IT 6473 - Multimedia Applications

IT 6473 - Multimedia Applications

Prerequisite: IT 5302

3-0-3

This course introduces students to current practices, technologies, methodologies, and authoring systems in the design and implementation of systems that incorporate text, audio, images, animation and full-motion video. Students will complete multimedia projects using state-of-the-art tools.

3 Credits

IT 6503 - Foundations of Health Information Technology

IT 6503 - Foundations of Health Information Technology

3-0-3

This course provides an overview of the importance of information technology and information systems in the health care industry. It provides an overview of the healthcare IT industry in the U.S. and clinical terminologies, a review of fundamental characteristics of clinical information, health information exchange standards (HL7); healthcare payment and reimbursement systems, the challenges of IT implementation, and a detailed discussion of the primary clinical and managerial applications of information (including electronic health records - EHR). Group and individual research will be required.

3 Credits

IT 6513 - Electronic Health Record Systems

IT 6513 - Electronic Health Record Systems

Prerequisite: IT 6503

3-0-3

This course provides an overview of key technical aspects of electronic health records, the overall architecture, features and functions of major EHR systems.

3 Credits

IT 6523 - Clinical Processes & Workflows: Analysis and Redesign

IT 6523 - Clinical Processes & Workflows: Analysis and Redesign

Corequisite: IT 6503
3-0-3

The course reviews aspects of clinical care as a formal activity and addresses the impact of processes and workflows on organizational efficiency and productivity.

3 Credits

IT 6533 - Health Information Security and Privacy

IT 6533 - Health Information Security and Privacy

Prerequisite: IT 6503
3-0-3

This course covers key technical aspects of electronic health records, the overall architecture, features and functions of major EHR systems.

3 Credits

IT 6583 - Business Continuity Planning & Implementation

IT 6583 - Business Continuity Planning & Implementation

3-0-3

This course covers the current practices, technologies, methodologies and tools in the design, exercising and implementation of business continuity plans for the IT environment. Project and individual research required.

3 Credits

IT 6643 - Issues in Information Technology

IT 6643 - Issues in Information Technology

3-0-3

This course addresses current issues relating to computers, ethics, and social values. Topics include computer ethics, computer crime, abuse, social responsibility, risk analysis, computer law and cultural impact. Library and internet research components are included, and a major research paper is required.

3 Credits

IT 6663 - Data Center Management

IT 6663 - Data Center Management

Prerequisite: IT 5201

3-0-3

Issues in setting up and running a multi-user computer or data system. Includes RFP generation, vendor selection, project planning and control methods, backup and disaster recovery plans, site preparation, managing help desks, end user training, IT professional development, contract negotiation, outsourcing relationships and job scheduling.

3 Credits

IT 6683 - Management of Information Technology

IT 6683 - Management of Information Technology

3-0-3

A study of the use of computer and information management systems in the management of organizations. Includes formal characterization of management structures, identification of information needs, and integrated tools for providing MIS support. Major project included.

3 Credits

IT 6713 - Business Intelligence

IT 6713 - Business Intelligence

Prerequisite: IT 6733 or CS 6153

3-0-3

This class introduces the concepts, practices, systems and technologies of business intelligence, which supports enterprise level data management, analysis, reporting, and decision making.

3 Credits

IT 6723 - Managing Operating and Network Systems

IT 6723 - Managing Operating and Network Systems

Prerequisite: IT 5201

3-0-3

This course covers the installation and management of operating systems and telecommunications networks, including cost-benefit analysis, and evaluation of connectivity options. Students learn to evaluate, select and implement different operating and communications options to support an organization.

3 Credits

IT 6733 - Database Administration

IT 6733 - Database Administration

Prerequisite: IT 5101
3-0-3

This course covers data administration and management, backup/recovery, security, access control, performance monitoring and tuning, data warehousing, data mining, online analytical processing, centralized versus distributed environments, client server and world-wide-web database integration.

3 Credits

IT 6753 - Advanced Web Development

IT 6753 - Advanced Web Development

Prerequisite: IT 5101 and IT 5302
3-0-3

This course covers web services and content management for advanced web applications. Students will gain familiarity with: advanced business concepts for the web; best practices and development processes for web applications; and a variety of appropriate web tools both in the proprietary and open source domains.

3 Credits

IT 6763 - Electronic Commerce

IT 6763 - Electronic Commerce

Prerequisite: IT 5101 and IT 5302
3-0-3

This course covers tools, skills, business concepts, and social issues that surround the emergence of electronic commerce. The student will develop an understanding of the current practices and opportunities in EDI, electronic publishing, electronic shopping, electronic distribution, electronic collaboration and database issues. Other issues include standards, security, authentication, privacy, intellectual property, acceptable use, legal liability, and economic analysis.

3 Credits

IT 6823 - Information Security Concepts and Administration

IT 6823 - Information Security Concepts and Administration

Prerequisite: IT 5102
3-0-3

This course covers the fundamentals of computing security, access control technology, cryptographic algorithms, implementations, tools and their applications in communications and computing systems security. Topics include public key infrastructure, operating system security, database security, network security, web security, firewalls, security architecture and models, and ethical and legal issues in information security.

3 Credits

IT 6833 - Wireless Security

IT 6833 - Wireless Security

Prerequisite: IT 6823
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 802.11i security standards to protect Wi-Fi networks, wireless network intrusion detection and prevention, and security trouble-shooting WLANs.

3 Credits

IT 6843 - Ethical Hacking: Network Security and Penetration Testing

IT 6843 - Ethical Hacking: Network Security and Penetration Testing

Prerequisite: IT 6823
3-0-3

This course covers the major issues surrounding the use of penetration testing to secure network security and important skills of a professional hacker and common security challenges that an information security officer will face in his/her work. Topics include the ethics of ethical hacking, laws and regulations, vulnerability discovery and risk analysis, internal and external attacks, how malicious hackers attack and exploit system vulnerabilities, penetration testing methods and tools, latest security countermeasures, and various types of penetration testing and programming skills required to complete successful penetration tests and to secure real systems against real attacks.

3 Credits

IT 6853 - Computer Forensics

IT 6853 - Computer Forensics

Prerequisite: IT 6823
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.

3 Credits

IT 6863 - Database Security and Auditing

IT 6863 - Database Security and Auditing

Prerequisite: IT 5101 and IT 5102
3-0-3

This course provides students with an understanding of security concepts and practices in general and those specific to database security in a highly detailed implementation. Students will learn fundamental principles of database security and how to develop database applications embedding from simple to sophisticated security and auditing models using advanced database systems and software tools.

3 Credits

IT 6873 - Information Security Seminar

IT 6873 - Information Security Seminar

Prerequisite: IT 6823

3-0-3

This course covers advanced topics in information security and assurance. This course is intended to provide students a solid foundation for further research and development in the area of information security and assurance with the opportunity to develop the skill of critically reading and evaluating research papers. Topics include: Latest development in network security, threat modeling, trustworthy computing, operating system security, program security, database security, and legal and ethical issues in information security and assurance. The course will consist of a lectures, guided research project, as well as presentations and discussions.

3 Credits

IT 6903 - Special Topics in Information Technology

IT 6903 - Special Topics in Information Technology

3-0-3

Special topics selected by the Department Chair. Offered on a demand basis.

3 Credits

IT 7803 - Masters Thesis

IT 7803 - Masters Thesis

Prerequisite: Consent of the graduate coordinator

3-0-3

The thesis is designed for students wanting a research focus to their degree. The student works independently under the supervision of a designated faculty member on a thesis of substance in information technology. The student will generate a formal written thesis and give a final defense of the thesis. The course may be repeated, but only 6 hours may be applied toward the degree.

3 Credits

IT 7833 - IT Strategy, Policy and Governance

IT 7833 - IT Strategy, Policy and Governance

Corequisite: IT 6203

3-0-3

This is a core course in which students complete a major project which integrates elements and best practices of the field. It should be completed after the other core courses have been completed or begun.

3 Credits

Information & Instructional Design

IID 6001 - Foundations of Instructional Technology

IID 6001 - Foundations of Instructional Technology

Prerequisite: Successful completion of IID program core courses

3-0-3

Course provides students a detailed introduction to and overview of the field of instructional design-technology. Emphasis on historical origins and principles, seminal literature, important theorists, current and best practices, emerging technologies, and future directions. Provides students with the "big picture" of instructional technology and gives them a context for future courses.

3 Credits

PSYC 6010 - Educational Psychology - The Adult Learner

PSYC 6010 - Educational Psychology - The Adult Learner

Prerequisite: Undergraduate transcript must document introduction to Psychology, Educational Psychology, Cognitive Psychology, or course equivalent of one of these. Limited to IID majors only.

3-0-3

Learners, learning, and teaching. Course explores current theory and information on the teaching and learning process for adult learners. The behavioral and cognitive views are presented and educational theory applied to instructional development is stressed.

3 Credits

Quality Assurance

QA 5000 - Statistical Concepts for Quality Assurance

QA 5000 - Statistical Concepts for Quality Assurance

1.5-0-1.5

Students will learn basic statistical concepts including exploratory data analysis, probability distributions, confidence intervals and hypothesis tests. Analysis using Excel and Minitab will be introduced.

1.5 Credits

QA 6600 - Methods of Analysis

QA 6600 - Methods of Analysis

3-0-3

A study of the analytic processes required to identify, document, define, and measure requirements and limitations for any operating system. Class work will focus on identifying, describing, and measuring existing manufacturing and service systems. Methods available for system improvement will be investigated.

3 Credits

QA 6602 - Total Quality

QA 6602 - Total Quality

3-0-3

This course is a study of the functions and responsibilities of the quality organization. TQM concepts, quality function deployment, and the tools for continuous improvement are analyzed for sequence of use and application. Emphasis is placed on design and performance aspects of a system-wide quality assurance function.

3 Credits

QA 6610 - Statistics for Quality Assurance

QA 6610 - Statistics for Quality Assurance

3-0-3

Descriptive statistics for discrete and continuous variables, probability distributions, confidence intervals and hypothesis testing, elementary control charts for variables and attributes, the design of acceptance sampling plans, analysis of variance, and regression and correlation analysis.

3 Credits

QA 6611 - Statistical Process Control

QA 6611 - Statistical Process Control

Prerequisite: A course in statistics, such as MATH 2260, IET 3403 or QA 6610
3-0-3

The application of advanced statistical methodologies to the analysis and solution of quality and management problems, including probability theory, control charts, sampling, regression analysis, and design of experiments. The focus is on statistical process control and related quality technologies.

3 Credits

QA 6612 - Design of Experiments

QA 6612 - Design of Experiments

Prerequisite: QA 6610
3-0-3

This is an analysis of statistical experimental design strategies, and planning of experiments for the best strategy and objectives. The use of existing computer application packages will be stressed.

3 Credits

QA 6613 - Linear Regression Analysis

QA 6613 - Linear Regression Analysis

Prerequisite: QA 6611
3-0-3

In this course, students will learn linear regression analysis techniques to include first order and polynomial modeling, use of indicator variables, variance stabilizing transformations, multi-collinearity diagnostics and residual analysis. The connections among ANOVA, design of experiments and regression will be emphasized. Statistical software will be used to analyze problems.

3 Credits

QA 6615 - Applied Systems Reliability

QA 6615 - Applied Systems Reliability

Prerequisite: QA 6612
3-0-3

Analysis of appropriate probabilistic models for system reliability, including the exponential, Weibull, normal, and lognormal distributions, life prediction techniques, reliability test program plans, failure mode and effect analysis, Markov models, and maintainability concepts.

3 Credits

QA 6620 - Inspection Systems Design

QA 6620 - Inspection Systems Design

Prerequisite: QA 6613

3-0-3

This course deals with understanding inspection systems, measurement principles, and limitations. Included are acceptance sampling plans such as ANSI Z1.4, ANSI Z1.9, Dodge Romig, and stipulated risk, chain, sequential, and continuous plans.

3 Credits

QA 6630 - Technical Training Methods

QA 6630 - Technical Training Methods

3-0-3

Adult learning theory, the development and management of training programs, presentation techniques, instructional aids, and assessment will be investigated.

3 Credits

QA 6640 - Quality Cost and Supplier Evaluation

QA 6640 - Quality Cost and Supplier Evaluation

Prerequisite: QA 6602

3-0-3

A detailed analysis of cost reductions involved in continuous improvement. Supplier evaluation, including quality audits, is reviewed to establish capability. The concept of partnerships is explored.

3 Credits

QA 6650 - Quality Systems Design

QA 6650 - Quality Systems Design

Prerequisite: QA 6602

3-0-3

Quality Systems Design prepares students for the development of the quality organization, systems, and procedures necessary for effective participation in world markets. Creating and documenting methods and procedures are stressed.

3 Credits

QA 6660 - Six Sigma Black Belt Concepts

QA 6660 - Six Sigma Black Belt Concepts

Prerequisite: QA 6611 and QA 6612

Corequisite: QA 6650

3-0-3

A study and review of the Six Sigma Black Belt body of knowledge, including the DMAIC Methodology, Enterprise – wide deployment, project management, the lean enterprise and design for Six Sigma.

3 Credits

QA 6712 - Quality Systems Simulation

QA 6712 - Quality Systems Simulation

Prerequisite: QA 6610

3-0-3

This course addresses the application of simulation to quality systems. Topics covered include fundamental simulation modeling techniques, random sampling procedures and methods of estimating performance measures from simulation outputs. Emphasis will be upon hands-on simulation of various quality systems using PC-based simulation languages.

3 Credits

QA 6722 - Human Factors in Quality Assurance

QA 6722 - Human Factors in Quality Assurance

3-0-3

Human Factors in QA is a comprehensive survey of human factors theory, research, and applications which are of particular relevance to quality assurance. Emphasis will be placed on operator constraints in the design of work processes, workplaces, and instrumentation.

3 Credits

QA 6725 - Quality Assessment of the Organization

QA 6725 - Quality Assessment of the Organization

Prerequisite: QA 6602

3-0-3

Course covers the history and rationale behind various Quality Assessment systems, with particular emphasis on the National Malcolm Baldrige Quality Award. Students will interpret and apply the criteria and assess organizations through case studies.

3 Credits

QA 6763 - Software Quality

QA 6763 - Software Quality

3-0-3

The Personal Software Process (PSP) is a technology that brings discipline to the practices of individual software engineers, dramatically improving the quality, predictability, and cycle time for software-intensive systems. PSP makes engineers aware of the processes they use to do their work and the performance of those processes. The course covers quality assessment, cost estimation, configuration management, software performance measures, proof of correctness, validation and verification, and management of the total quality environment for software.

3 Credits

QA 6901 - Special Topics in Quality

QA 6901 - Special Topics in Quality

1 to 3

Students may arrange to study and perform independent research on a topic approved by a graduate faculty member. An appropriate research paper will be required and the student may be required to make an oral presentation to faculty, graduate students, and/or quality professionals.

1 to 3 Credits

QA 6902 - Special Topics in Quality

QA 6902 - Special Topics in Quality

1 to 3

Students may arrange to study and perform independent research on a topic approved by a graduate faculty member. An appropriate research paper will be required and the student may be required to make an oral presentation to faculty, graduate students, and/or quality professionals.

1 to 3 Credits

QA 6903 - Special Topics in Quality

QA 6903 - Special Topics in Quality

1 to 3

Students may arrange to study and perform independent research on a topic approved by a graduate faculty member. An appropriate research paper will be required and the student may be required to make an oral presentation to faculty, graduate students, and/or quality professionals.

1 to 3 Credits

QA 7403 - Graduate Seminar

QA 7403 - Graduate Seminar

Prerequisite: QA 6602 and QA 6611
3-0-3

The course is designed to cover various topics within the field of quality assurance which are not taught in other courses. These topics might include acceptance sampling, risk analysis, regression analysis, SPC training methods, and others.

3 Credits

QA 7503 - Research in Quality

QA 7503 - Research in Quality

Prerequisite: QA 6602 and QA 6611 or consent of the department chair
3-0-3

This course is designed to guide the student in a thorough and in-depth written examination of one or more topics relevant to the application of quality assurance. Emphasis is placed upon students using both traditional and electronic means to perform the research.

3 Credits

QA 7603 - Applications in Quality

QA 7603 - Applications in Quality

3-0-3

This course is designed to guide the students through a thorough and in-depth application of quality principles in the workplace environment. Emphasis will be on the application of the principles and measurable outcomes.

3 Credits

Software Engineering

SWE 6343 - User Interface Design and Implementation

SWE 6343 - User Interface Design and Implementation

Prerequisite: SWE 6623
3-0-3

This course covers the major frameworks, methods, and approaches to designing, engineering, implementing, and testing user interfaces. It covers user and usability requirements gathering, task analysis, user-interface design, implementation of the user interface, and evaluation with respect to requirements and the users' tasks. Illustrative design and implementation projects are completed throughout the term.

3 Credits

SWE 6613 - Requirements Engineering

SWE 6613 - Requirements Engineering

Prerequisite: SWE 6623

3-0-3

Requirements engineering (RE) plays a critical role in the software development process. This course is a thorough treatment of the engineering and definition of software requirements processes. Methods, tools, notations, and techniques for eliciting, analyzing, modeling, negotiating, validating, specifying, testing, and maintaining requirements will be examined with a focus on software-intensive systems. The course will include a major group project on the analysis and specification of software requirements.

3 Credits

SWE 6623 - Software Engineering

SWE 6623 - Software Engineering

Prerequisite: CS 5003 or CSE 1302 or equivalent

3-0-3

Transition: This course provides an overview of software engineering and explores both the theoretical principles and their application in the engineering of software-intensive systems. Topics cover the entire software development life-cycle and include software engineering process models, project management and planning, requirements engineering, software architecture and design, prototyping, verification and validation, usability and human factors, quality assurance, and professionalism and ethics. The course includes a real-world team project in which students are given hands-on experience utilizing state-of-the-art tools to analyze and design a software system.

3 Credits

SWE 6633 - Software Project Planning and Management

SWE 6633 - Software Project Planning and Management

Prerequisite: SWE 6623

3-0-3

The main phases of project management life cycle (initiation, planning, execution, monitoring/control and closeout) are covered. The emphasis is on project planning phase and on project monitoring/control phase. Various software size, cost/effort, and schedule estimation and planning techniques, including COCOMO, Function Point, and critical path analysis, are introduced as part of work breakdown structure. Project risk management is included as an integral part of project planning and project monitoring/control. Project status monitoring/control activities are discussed and practiced with a prototype team project, using the Earned Value metric.

3 Credits

SWE 6653 - Software Architecture

SWE 6653 - Software Architecture

Prerequisite: SWE 6623, CS 5011, CS 5021, CS 5031
3-0-3

This course examines the principles and methods of the architectural design of complex, large-scale software systems. Macro-level system architecture with an emphasis on approaches to interconnection and distribution of both current and emerging architectural systems (e.g., Model-View-Controller (MVC), service-oriented, agent-oriented) as well as micro-level architecture including patterns, frameworks, and component-based software engineering are covered in detail.

3 Credits

SWE 6673 - Software Quality Engineering and Assurance

SWE 6673 - Software Quality Engineering and Assurance

Prerequisite: SWE 6623, CS 5011, CS 5021, CS 5031
3-0-3

Various definitions and metrics related to quality are introduced, along with the concept of total quality management (TQM). Development of quality/test plan and the cost/value trade-off throughout the software development cycle is demonstrated. As a crucial component of quality engineering, the notion of validation and verification is explained in the context of different testing techniques, which include black box testing, white box testing, and formal verification. The emphasis of the course is on testing techniques for both non-executable and executable software artifacts as applied to different levels of testing, ranging from inspection, formal verification, unit testing to regression testing.

3 Credits

SWE 6723 - Software Engineering II

SWE 6723 - Software Engineering II

Prerequisite: SWE 6623
3-0-3

This course covers the entire software development life-cycle. Emphasis is placed on advanced topics including prototyping, verification and validation, formal methods, and quality management. A major component is a group project that utilizes a Computer Assisted Software Engineering (CASE) tool to assist in the analysis, design, and implementation of a system.

3 Credits

SWE 6733 - Software Engineering Processes

SWE 6733 - Software Engineering Processes

Prerequisite: SWE 6623, SWE 6633
3-0-3

This course gives students an in-depth introduction to the essentials of software engineering processes, methods, and tools for the engineering and evolution of complex real-world software. Emphasis is on the role of process in the various software life-cycles from requirements engineering through operation and maintenance. Topics such as personal and team software processes, organizational maturity, theory and applications of CMMI and ISO 9001, process management, process assessment, and process improvement are included.

3 Credits

SWE 6743 - Object-Oriented Analysis and Design

SWE 6743 - Object-Oriented Analysis and Design

Prerequisite: SWE 6623, CS 5123

3-0-3

This course focuses on object-oriented modeling techniques necessary to solve complex, real-world software engineering problems. Topics include the use of information hiding, object design methods, basic design patterns, abstraction and abstract data type formalisms. Object-oriented iterative development methodologies such as the Unified Process will be utilized. Techniques for transforming software requirements into high-quality language independent object-oriented design are presented. The course includes a major iterative project in which the students will gain hands-on experience modeling a real-time system using use case analysis, responsibility-driven design, UML and RealTime UML.

3 Credits

SWE 6753 - Computer Game Design and Development

SWE 6753 - Computer Game Design and Development

Prerequisite: CS 5123

3-0-3

Topics include graphics, multimedia, visualization, animation, virtual reality simulation concepts, methods, and tools of game design and developments using the software engineering life cycle are emphasized. A team project on a game prototype is required.

3 Credits

SWE 6763 - Software Metrics and QA

SWE 6763 - Software Metrics and QA

Prerequisite: SWE 6623, CS 5123

3-0-3

This course covers the principles of software measurement such as scaling, validity, and reliability. The various software metrics on volume, effort, quality, and cost estimation are explored. The theory and principles of software verification and validation effectiveness, and reliability models are studied. The application of these measurements to software customer satisfaction and total quality management is explored.

3 Credits

SWE 6783 - User Interaction Engineering

SWE 6783 - User Interaction Engineering

Prerequisite: CS 5003 and SWE 6623
3-0-3

This course follows a complete software-engineering cycle to produce software objects (classes and/or components) 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 proto-typing; embedded systems in support of ubiquitous computing; and function-behavior analysis.

3 Credits

SWE 6813 - Component-Based Development

SWE 6813 - Component-Based Development

Prerequisite: CS 5003
3-0-3

This course covers the concepts, foundations, and architectures of component-based software development (CBSD) and its related technologies. Component-based tools and languages, approaches for implementation of CBSD, including designing, building, assembling, and deploying reusable COTS and in-house software components are discussed in depth. The current concrete realizations of component technologies will be explored. Students will do projects focused on the life cycle of software components.

3 Credits

SWE 6823 - Embedded Systems Analysis and Design

SWE 6823 - Embedded Systems Analysis and Design

Prerequisite: SWE 6623
3-0-3

This project-oriented course focuses on using modern methods, techniques, and tools for specification and design of embedded systems. Topics include analytical methods, design/development methods, and notations. Performance evaluation based on modeling and simulation techniques is also covered.

3 Credits

SWE 6843 - Embedded Systems Design and Construction

SWE 6843 - Embedded Systems Design and Construction

Prerequisite: SWE 6623, CS 5021
3-0-3

This project-oriented course focuses on the use of current software building technology, testing, reliability analysis, and benchmarking. Topics include component-based development (CBD), implementation technologies, and real-time operating systems (RTOS), with emphasis on the use of measurement tools, and domain libraries. The course also covers issues in hardware/software co-design.

3 Credits

SWE 6853 - Design Patterns

SWE 6853 - Design Patterns

Prerequisite: SWE 6623 and CS 5003; SWE 6743 Recommended
3-0-3

This course builds upon basic object-oriented concepts to discover principles of good object-oriented design through the application of design patterns. The focus is on the issues and means of designing software systems for reuse, extension, and maintainability including how to leverage the powers of object-orientation embodied in well-known heuristics, principles and patterns in the design and construction of reusable systems. This course will emphasize that designing reusable systems requires anticipating requirements changes and the application of design patterns will help ensure system mutability. The course includes a major project in which the students will gain hands-on experience with design patterns.

3 Credits

SWE 6863 - Software Engineering Ethics and Legal Issues

SWE 6863 - Software Engineering Ethics and Legal Issues

Corequisite: CS 5003 or equivalent
3-0-3

This course covers ethical and legal issues related to software development. Professional ethics and responsibilities of software engineers are discussed in detail. Topics include computing and civil liberties, encryption, intellectual property and licensing, software patents and copyrights, professional codes of ethics and professional licensing, software reliability, liabilities, and hacking. Software engineering/computing case studies will be used.

3 Credits

SWE 6883 - Formal Methods in Software Engineering

SWE 6883 - Formal Methods in Software Engineering

Prerequisite: CS 5123, CS 5423, SWE 6623, SWE 6613
3-0-3

The course is concerned with formal representation of the specification of software. Formal mechanisms for specifying, validating, and verifying software systems will be introduced to check for completeness and correctness as well as to discover ambiguities in

the specifications. Both Propositional and Predicate Calculus will be reviewed and utilized to represent and reason about software specifications. Proof techniques and formal specification languages Z and the Object Constraint Language (OCL) will be explored.

3 Credits

SWE 6901 - Special Topics

SWE 6901 - Special Topics

Prerequisite: As determined by the Instructor and Department Chair
1 to 3

Special topics selected by the Department Chair. Offered on a demand basis. May Be Repeated: A student may repeat this course with special permission.

1 to 3 Credits

SWE 6902 - Special Topics

SWE 6902 - Special Topics

Prerequisite: As determined by the Instructor and Department Chair
2/0/2

Special topics selected by the Department Chair. Offered on a demand basis. May Be Repeated: A student may repeat this course with special permission.

2 Credits

SWE 6903 - Special Topics

SWE 6903 - Special Topics

Prerequisite: As determined by the Instructor and Department Chair
1 to 3

Special topics selected by the Department Chair. Offered on a demand basis. May Be Repeated: A student may repeat this course with special permission.

1 to 3 Credits

SWE 7803 - Masters Thesis

SWE 7803 - Masters Thesis

3-0-3

The thesis is designed for students wanting a research focus to their degree. The student works independently under the supervision of a designated SWE graduate faculty member on a thesis of substance in software engineering. The student will generate a formal written thesis and give a final defense of the thesis. This course may be repeated, but only 6 hours may be applied toward the degree. This course will be an alternative to SWE 7903 Software Engineering Capstone.

3 Credits

SWE 7903 - Software Engineering Capstone

SWE 7903 - Software Engineering Capstone

Prerequisite: SWE 6613, SWE 6653, SWE 6673, SWE 6633
3-0-3

This course is designed for students to give a professional focus to their degree. The students work in designated teams under the supervision of the course instructor (a CSE faculty member), on a project of practical significance in software engineering. Each of the teams will deliver a final working product, generate a substantial final report, and give a final presentation on the project.

3 Credits

Systems Engineering

SYE 5000 - Quantitative Foundations for Systems Engineering

SYE 5000 - Quantitative Foundations for Systems Engineering

3-0-3

This course provides the quantitative foundations necessary for core courses in the Systems Engineering and Certificate programs. Topics include calculus, vectors and matrices, linear systems, and probability theory. Engineering applications of the topics will be emphasized. Cannot be taken for credit for the MS SyE.

3 Credits

SYE 6005 - Introduction to Systems Engineering

SYE 6005 - Introduction to Systems Engineering

3-0-3

The goal is to introduce the student to the essential principles, processes, and practices associated with the application of Systems Engineering. The applicability and use of Process Standards will be examined. Emphasis will focus on defining the problem to be solved, establishing the initial system architecture, understanding the role of system life-cycles, requirements development, and verification and validation of the realized system.

3 Credits

SYE 6010 - Project Management Processes

SYE 6010 - Project Management Processes

3-0-3

Integrated framework for project organization, planning and control focusing on project management processes for large, complex programs to ensure cost-effective and quality outcomes for investments.

3 Credits

SYE 6015 - Systems Analysis and Design

SYE 6015 - Systems Analysis and Design

Prerequisite: SYE 6005
3-0-3

Methods used to analyze and design complex systems that meet the needs of multiple stakeholders over the system life cycle. Apply systems engineering design and analysis principles to the virtual design of a contemporary complex system.

3 Credits

SYE 6020 - System Architecture

SYE 6020 - System Architecture

Prerequisite: SYE 6005 and SYE 6010 or MGNT 6050
3-0-3

Examination of concepts and techniques for architecting systems, the establishment of a bounded and integrated structure that provides a framework for system creation, work breakdown structures, cost analysis, and subcontractor control and interface will be reviewed. A structured approach to system architecture that proceeds from a topmost "system" to an aggregation and integration of systems created in lower level development layers, both internal and external to the developer as described in the standard ANSI/EIA-632 (Processes for Engineering a System) will be explored.

3 Credits

SYE 6025 - Economic Decision Analysis

SYE 6025 - Economic Decision Analysis

Prerequisite: SYE 5000 or equivalent
3-0-3

This course covers the basic tools used in engineering economic decision making, including discounted cash flow, replacement and timing decisions, depreciation, risk analysis, and pricing mechanisms. Topics may also include an introduction to preferences and utilities, equilibrium concepts, probabilistic decisions, game theory, and incentive compatibility.

3 Credits

SYE 6035 - Modeling and Simulation

SYE 6035 - Modeling and Simulation

Prerequisite: QA 6610
3-0-3

The use of models and simulations to validate or predict expected performance, behavior, and interaction of selected design elements in a controlled environment will be examined. This course will also present guidelines for selecting and using models and simulations on projects. Various modeling and simulation methods and tools will be examined and their value and applications probed for differing engineering development needs.

3 Credits

SYE 6045 - Process Assessment and Improvement

SYE 6045 - Process Assessment and Improvement

3-0-3

This course provides an operational understanding of the differences between process standards and assessment standards where the latter provide a formal and structured means of examining a specific process or focus area to determine process capability or process maturity in an enterprise. Both EIA/IS-731-1, "Systems Engineering Capability Model", and Capability Maturity Model® Integration (CMMISM) will be examined and the strengths and weaknesses reviewed with respect to consideration of use on projects.

3 Credits

SYE 6050 - Reliability and Sustainability

SYE 6050 - Reliability and Sustainability

Prerequisite: QA 6610

3-0-3

Concepts for reliability and sustainability (maintainability) engineering and their integration into system development will be examined. In addition, techniques for ensuring the integration of these factors into core design decisions through specified requirements will be explored.

3 Credits

SYE 6055 - System Engineering Project

SYE 6055 - System Engineering Project

Prerequisite: Consent of instructor

3-0-3

In this capstone class, students will be presented with an engineering problem statement constituting acquirer needs and expectations. Multi-disciplinary teamwork will be required to achieve a solution to the presented problem statement.

3 Credits

SYE 6065 - System Optimization

SYE 6065 - System Optimization

Prerequisite: SYE 5000 or equivalent
3-0-3

This course focuses on methods of operations research and their applications. Operations Research methods include linear programs, network models, queuing models, markov chains, and heuristics. Applications in inventory & production planning, transportation & logistics, and finance will be covered.

3 Credits

SYE 6070 - Logistics and Supply Chain Management

SYE 6070 - Logistics and Supply Chain Management

3-0-3

This course focuses on decisions vital to success in typical business environments characterized by competition and scarce resources. Students will develop skills in applying a variety of techniques to solve logistics and supply chain management problems. Topics covered will include information sharing and aligning incentives along the supply chain; demand forecasting; inventory decisions; transportation mode and route selection; and pricing and revenue management.

3 Credits

SYE 6075 - Manufacturing Systems Planning and Design

SYE 6075 - Manufacturing Systems Planning and Design

3-0-3

This course focuses on decisions important in production and warehousing environments. Production topics include analysis of flows, bottlenecks and queuing, types of manufacturing operations, aggregate production planning, lot sizes and lead times, and pull production systems. Warehouse topics include design and analysis of warehouse layout, order picking strategies, warehousing inventories, and integration of production and distribution systems.

3 Credits

SYE 6901 - Special Topics in Systems Engineering

SYE 6901 - Special Topics in Systems Engineering

3-0-3

Topics not covered in the department's regular systems engineering offerings. Course content may vary each semester depending on instructor and the perception of students' needs.

Course may be repeated for credit.

3 Credits

SYE 6902 - Special Topics in Systems Engineering

SYE 6902 - Special Topics in Systems Engineering

3-0-3

Topics not covered in the department's regular systems engineering offerings. Course content may vary each semester depending on instructor and the perception of students' needs.

Course may be repeated for credit.

3 Credits

SYE 6903 - Special Topics in Systems Engineering

SYE 6903 - Special Topics in Systems Engineering

3-0-3

Topics not covered in the department's regular systems engineering offerings. Course content may vary each semester depending on instructor and the perception of students' needs.

Course may be repeated for credit.

3 Credits

SYE 7801 - Masters Thesis Hours

SYE 7801 - Masters Thesis Hours

Prerequisite: Consent of the Program Director and the Thesis Advisor

3-0-3

The thesis is designed for students wanting a research focus to their degree. The student works independently under the supervision of a designated SyE faculty member on a thesis, generates a formal written thesis, and gives a final defense of the thesis.

This course may be repeated, but only 6 hours may be applied toward the degree.

3 Credits

SYE 7802 - Masters Thesis Hours

SYE 7802 - Masters Thesis Hours

Prerequisite: Consent of the Program Director and the Thesis Advisor
3-0-3

The thesis is designed for students wanting a research focus to their degree. The student works independently under the supervision of a designated SyE faculty member on a thesis, generates a formal written thesis, and gives a final defense of the thesis.

This course may be repeated, but only 6 hours may be applied toward the degree.

3 Credits

SYE 7803 - Masters Thesis Hours

SYE 7803 - Masters Thesis Hours

Prerequisite: Consent of the Program Director and the Thesis Advisor
3-0-3

The thesis is designed for students wanting a research focus to their degree. The student works independently under the supervision of a designated SyE faculty member on a thesis, generates a formal written thesis, and gives a final defense of the thesis.

This course may be repeated, but only 6 hours may be applied toward the degree.

3 Credits

Other Courses

LIBR 5001 - Research Skills in the Professions

LIBR 5001 - Research Skills in the Professions

1-0-1

Introduction to graduate-level research skills. Course reviews search strategies, source evaluation, and citation. Introduces a variety of search engines, catalogs, databases, and other search interfaces.

1 Credits

Graduate Faculty Listing

Business Administration Faculty

Richardson, Ronny

Professor and Department Chair, Operations Management

Ph.D., Georgia State University
M.S., Georgia State University
M.B.A., Georgia State University
B.S., University of Southern Mississippi
A.S., Community College of the Air Force

Kelani, Zeynep

Lecturer, Economics

M.S., Southern Polytechnic State University
M.S., Marmara University
B.S., Mimar Sinan University

Khayati, Amine

Assistant Professor, Finance

Ph.D., Southern Illinois University
M.S., The University of Memphis
B.A., University of Tunis

Melnick, Mikhail

Associate Professor, Economics

Ph.D., Georgia State University
M.A., Boston University
B.S., Georgia State University

Tsay, Bor-Yi

Assistant Professor, Accounting

Ph.D., University of Houston
M.B.A., Eastern Washington University
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Institutions of the University System of Georgia

Research Universities

Georgia Institute of Technology	Atlanta
Georgia Regents University	Augusta
Georgia State University	Atlanta
University of Georgia	Athens

Regional Universities

Georgia Southern University	Statesboro
Valdosta State University	Valdosta

State Universities

Albany State University	Albany
Armstrong Atlantic State University	Savannah
Augusta State University	Augusta
Clayton State University	Morrow
Columbus State University	Columbus
Fort Valley State University	Fort Valley
Georgia College & State University	Milledgeville
Georgia Southwestern State University	Americus
Kennesaw State University	Kennesaw
Savannah State University	Savannah
Southern Polytechnic State University	Marietta
University of North Georgia	Dahlonega
University of West Georgia	Carrollton

State Colleges

Abraham Baldwin Agricultural College	Tifton
Atlanta Metropolitan State College	Atlanta
Bainbridge State College	Bainbridge

College of Coastal Georgia
Dalton State College
Darton State College
East Georgia State College
Georgia Gwinnett College
Georgia Highlands College
Georgia Perimeter College
Gordon State College
Middle Georgia State College
South Georgia State College

Brunswick
Dalton
Albany
Swainsboro
Lawrenceville
Rome
Decatur
Barnesville
Macon
Douglas