School of Engineering Graduate Programs

Master of Science in Management of Technology
Master of Science in Mechanical Engineering
Master of Science in Software Engineering
Master of Science in Electrical and Computer Engineering

Graduate Certificate Programs in

Automated Manufacturing
Database Management
Information Security
Network Technology
Web Application Development

2013-14

Table of Contents

2013-14 Academic Calendar - Graduate Programs

Classes are offered on weeknights and Saturdays to accommodate those in the program who are employed full time. Refer to the schedules that are distributed each semester for calendar changes.

Fall 2013

July 8	Registration begins for all Graduate programs for Fall, 2013 Applications for degree are due for August 30th graduation
Aug. 1	Last day for students to sign up for Fall 2013 monthly payment plan
Aug. 5	Last day for online registration for Fall 2013
Sept. 2	Labor Day - University holiday
Sept. 3	Classes begin for all graduate programs
Oct. 11	Deadline for Summer, 2013 and Spring, 2013 make up of Incompletes
Oct. 14	Columbus Day - University holiday (School of Engineering has graduate classes)
Oct. 18	Last day to withdraw from Fall course
Nov. 27 - Dec. 1	Thanksgiving Recess
Dec. 2	Classes resume for all schools Applications for degree are due for January 30th graduation Registration begins for all Graduate Studies Programs for Spring, 2014
Dec. 20	Last day of classes/exams for all graduate programs Last day for students to sign up for Spring 2014 monthly payment plan

Winter 2014 Intersession

Jan. 2 - Jan. 14	Winter Intersession - Dolan School of Business

Spring 2014

Jan. 2	Last day for online registration for Spring 2014
Jan. 16	Classes begin for all schools
Jan. 20	Martin Luther King, Jr. Day - University Holiday
Feb. 17	President's Day - University holiday (School of Engineering has graduate classes)
March 7	Last day to withdraw from Spring course
March 24 - March 28	Spring Recess
March 31	Classes resume
April 1	Registration begins for all Graduate programs for Summer, 2014 Applications for degree are due for May graduation - all schools
April 17 - April 20	Easter Recess all Graduate programs
April 21	Classes resume
May 9	Last day of classes/exams for all graduate programs
May 17	Baccalaureate Mass
May 18	64th Commencement Graduate Ceremony - 3 p.m.

Summer 2014

May 19 - May 30	Graduate Business Summer Session I
May 19 - Aug. 8	Engineering Summer Session
June 2 - June 27	Graduate Business Summer Session II
June 30 - Aug. 1	Graduate Business Summer Session III (July 4 Holiday)
July 7	Registration begins for all Graduate Programs for Fall, 2014 Applications for Degree are due for August 30th graduation (all schools)
Aug. 4 - Aug. 23	Graduate Business Summer Session IV

A Message from the President

Dear Student,

Welcome to Fairfield University, and thank you for your interest in our graduate and professional programs.

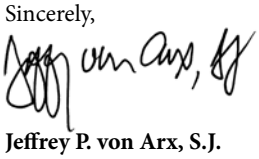
As a student at Fairfield you will learn from our first-class faculty, who are leaders in their fields, with a strong personal commitment to the education of men and women who share their passion for making a difference in the world.

Fairfield is consistently ranked as one of the top master's level universities in the Northeast and provides advantages to our graduate and professional students that lead to success in their future endeavors. The graduates of our professional and master's programs go on to successful and fulfilling careers, as global leaders in business, education, engineering, nursing, and countless other professions where they are sought after for their intellectual acumen, professional skills, and strength of character.

What distinguishes Fairfield from many other colleges and universities is that as a Jesuit institution, we are the inheritor of an almost 500-year-old pedagogical tradition that has always stressed that the purpose of an education is to develop students as "whole persons" - in mind, body, and in spirit. These Jesuit values are integral to our graduate and professional programs. It is our mission at Fairfield to form men and women who are prepared to be global citizens, confident in their capacities, trained to excel in any circumstance, and inspired to put their gifts at work to transform the world for the betterment of their fellow men and women.

A Fairfield education will shape you in this manner, preparing you to meet future challenges. We invite you to browse through the catalog of courses and take the first step towards your graduate education at Fairfield University.

Sincerely,



Jeffrey P. von Arx, S.J.

President

Fairfield University Mission

Fairfield University, founded by the Society of Jesus, is a coeducational institution of higher learning whose primary objectives are to develop the creative intellectual potential of its students and to foster in them ethical and religious values, and a sense of social responsibility. Jesuit education, which began in 1547, is committed today to the service of faith, of which the promotion of justice is an absolute requirement.

Fairfield is Catholic in both tradition and spirit. It celebrates the God-given dignity of every human person. As a Catholic university, it welcomes those of all beliefs and traditions who share its concerns for scholarship, justice, truth, and freedom, and it values the diversity that their membership brings to the University community.

Fairfield educates its students through a variety of scholarly and professional disciplines. All of its schools share a liberal and humanistic perspective, and a commitment to excellence. Fairfield encourages a respect for all the disciplines - their similarities, their differences, and their interrelationships. In particular, in its undergraduate schools, it provides all students with a broadly based general education curriculum with a special emphasis on the traditional humanities as a complement to the more specialized preparation in disciplines and professions provided by the major programs. Fairfield is also committed to the needs of society for liberally educated professionals. It meets the needs of its students to assume positions in this society through its undergraduate and graduate professional schools and programs.

A Fairfield education is a liberal education, characterized by its breadth and depth. It offers opportunities for individual and common reflection, and it provides training in such essential human skills as analysis, synthesis, and communication. The liberally educated person is able to assimilate and organize facts, to evaluate knowledge, to identify issues, to use appropriate methods of reasoning, and to convey conclusions persuasively in written and spoken word. Equally essential to liberal education is the development of the aesthetic dimension of human nature, the power to imagine, to intuit, to create, and to appreciate. In its fullest sense, liberal education initiates students at a mature level into their culture, its past, its present, and its future.

Fairfield recognizes that learning is a lifelong process and sees the education that it provides as a foundation upon which its students may continue to build within their chosen areas of scholarly study or professional development. It also seeks to foster in its students a continuing intellectual curiosity and a desire for self-education that will extend to the broad range of areas to which they have been introduced in their studies.

As a community of scholars, Fairfield gladly joins in the broader task of expanding human knowledge and deepening human understanding, and to this end it encourages and supports the scholarly research and artistic production of its faculty and students.

Fairfield has a further obligation to the wider community of which it is a part, to share with its neighbors its resources and its special expertise for the betterment of the community as a whole. Faculty and students are encouraged to participate in the larger community through service and academic activities. But most of all, Fairfield serves the wider community by educating its students to be socially aware and morally responsible people.

Fairfield University values each of its students as individuals with unique abilities and potentials, and it respects the personal and academic freedom of all its members. At the same time, it seeks to develop a greater sense of community within itself, a sense that all of its members belong to and are involved in the University, sharing common goals and a common commitment to truth and justice, and manifesting in their lives the common concern for others which is the obligation of all educated, mature human beings.

Fairfield University Overview

Fairfield University offers education for an inspired life, preparing students for leadership and service through broad intellectual inquiry, the pursuit of social justice, and cultivation of the whole person: body, mind, and spirit.

A comprehensive university built upon the nearly 500-year-old Jesuit traditions of scholarship and service, Fairfield University is distinguished by a rigorous curriculum, close interaction among faculty and students, and a beautiful, 200-acre campus with views of Long Island Sound.

Since its founding in 1942 by the Society of Jesus (the Jesuits), the University has grown from an all-male school serving 300 to a competitively ranked coeducational institution serving 3,400 undergraduate students, 1,200 graduate students, and more than 400 students enrolled for degree completion programs, as well as personal and professional enrichment courses and certificates.

Fairfield offers over 40 undergraduate majors, 17 interdisciplinary minors, and 41 graduate programs. The University is comprised of five schools: the College of Arts and Sciences, the Charles F. Dolan School of Business, and the schools of Engineering, Nursing, and Graduate School of Education and Allied Professions. Students benefit from small class sizes, an outstanding faculty, a rich array of study abroad, internship, and service opportunities, and the resources and reputation of a school consistently ranked among the top regional universities in the north by the U.S. News & World Report.

Since 1993, 63 Fairfield students have been named Fulbright scholars, and the University is among the 12 percent of four-year colleges and universities with membership in Phi Beta Kappa, the nation's oldest and most prestigious academic honor society.

Fairfield is located one hour north of New York City at the center of a dynamic corridor of educational, cultural and recreational resources, as well as leading corporate employers.

Diversity Vision Statement

As a Jesuit and Catholic institution, Fairfield University's commitment to the God –given dignity of the human person requires that we create an environment that promotes justice and fosters a deep understanding of human and cultural diversity. Fairfield is committed to encouraging dialogue among those with differing points of view in order to realize an integral understanding of what it means to be human. The University recognizes that transcending the nation's political and social divisions is a matter of valuing diversity and learning respect for individuals, in their similarities and their differences. Fairfield will continue to integrate diversity in all facets of University life – academic, administrative, social, and spiritual – as together, the community seeks to realize a vision of common good that is rooted in genuine human solidarity.

Fairfield University defines diversity in the broadest sense, reflecting its commitment to creating a more inclusive community that is reflective of the richly diverse global community of which we are part. Diversity encompasses not only racial, ethnic, and religious diversity, but also diversity of socioeconomic contexts, cultural perspectives, national origins, sexual orientation, gender identity, age, physical ability, and educational backgrounds.

Campus Resources & Services

Student Handbook

For information about the Office of Graduate Student Life, parking regulations and stickers, the StagCard, Quick RecPlex, and campus resources and student services, please see the Student Handbook at www.fairfield.edu/studenthandbookand the Graduate Student Reference Guide at www.fairfield.edu/gradstudentlife.

DiMenna-Nyselius Library

The DiMenna-Nyselius Library is the intellectual heart of Fairfield's campus and its signature academic building, combining the best of the traditional academic library with the latest access to print and electronic resources. Carrels, leisure seating, and research tables provide study space for up to 900 individual students, while groups meet in team rooms, study areas, or convene for conversation in the 24-hour cafe. Other resources include a 24-hour, open-access computer lab with Macintosh and Windows-based computers; a second computer lab featuring Windows-based computers only; two dozen multimedia workstations; an electronic classroom; a 90-seat multimedia auditorium; photocopiers, scanners, microform readers and printers; and audiovisual hardware and software. Workstations for the physically disabled are available throughout the library.

The library's collection includes more than 365,000 bound volumes, 376,000 e-books, 515 print journal and newspaper subscriptions, electronic access to 60,000 full-text journal and newspaper titles, and 15,000 audiovisual items. To borrow library materials, students must present a StagCard at the Circulation Desk. Students can search for materials using the research portal, Summon Discovery system. Library resources are accessible from any desktop on or off campus at http://www.fairfield.edu/library/. From this site, students use their NetID and password to access their accounts, read full-text journal articles from more than 170 databases, submit interlibrary loan forms electronically, or contact a reference librarian around the clock via IM, e-mail, Skype or "live" chat.

The library has an Information Technology Center consisting of a 30-seat, state-of-the-art training room, a 12-seat conference/group study room with projection capability, and 10 collaborative work areas. Also, the Center for Academic Excellence and the Writing Center are both housed on the lower level. The IT Help Desk is on the main level.

During the academic year, the library is open Monday through Thursday, 7:45 a.m. to midnight; Friday, 7:45 a.m. to 10:30 p.m.; Saturday, 9 a.m. to 9 p.m.; and Sunday, 10:30 a.m. to midnight with an extended schedule of 24/7 during exam periods.

Rudolph F. Bannow Science Center

The Rudolph F. Bannow Science Center houses advanced instructional and research facilities that foster the development of science and engineering learning communities, engage students in experiential learning, and invite collaborative faculty and student research in biology, chemistry, computer science, engineering, mathematics, physics, and psychology.

Early Learning Center

The Early Learning Center provides an early care and education program based on accepted and researched theories of child development; individualized programs designed to meet the needs of each child; a curriculum that is child-oriented and emergent by the children; and teaching staff who have specialized educational training in child development and developmentally appropriate practice with young children, including health, safety, and nutritional guidelines.

The Center is open all year (when the campus is open) from 7:30 a.m.-5:30 p.m. for children aged 6 weeks to 5 years. Children may be enrolled on a full or part-time basis depending upon space availability. For tuition details, registration requirements, or other information, call the Center at (203) 254-4028 or visit www.fairfield.edu/gseap/elc.

The Writing Center

The Writing Center is located on the lower level of the DiMenna-Nyselius Library and offers writing assistance and resources to all students. Tutors work with students on any writing project and at any stage of the project's development. For more information or to schedule an appointment, please visit www.fairfield.edu/writingcenter.

Aloysius P. Kelley, S.J. Center

Located on Loyola Drive, the Aloysius P. Kelley, S.J. Center houses the offices of Undergraduate and Graduate Admission, the Registrar, Financial Aid, Enrollment Management, Exploratory Advising, Disability Support Services, New Student Programs, as well as the Career Planning Center.

Computing Services

Fairfield University has high-speed fiber-optic cable connectivity, with transmission speeds of up to 1 gigabit-per-second. This technology connects our classrooms, residence halls, and offices, providing fast and reliable access to the online library catalogue, email, various databases, and other electronic resources.

Students, staff, and faculty have access to 12 computer labs located throughout campus. These labs are supported by knowledgeable lab assistants, and are open 14 hours a day for both walk-in and classroom use. Each computer lab offers hardware and software for Windows and Macintosh environments. Every dormitory room has access to wired/wireless internet, cable television, and a phone/voicemail connection. Students are issued individual NetID accounts, and are given access to our secure portal my.Fairfield. Here, students are able to check their e-mail, grades, register for courses, review their academic and financial records, and access campus-wide announcements.

Information Technology Services (ITS)

Located within the DiMenna-Nyselius Library, the ITS Help Desk is open Monday through Friday from 8:30 a.m. to 7:00 p.m. and can be reached by phone at (203) 254-4069 or by email at its@fairfield.edu. The ITS offices are located on the first and second floors of Dolan Commons. The ITS team manages all technology services on campus including academic computing, administrative computing, network services, project management, training, and support services.

Arts and Minds Programs

Fairfield University serves as an important hub for students and visitors from the region seeking entertaining and inspiring cultural events and activities. The **Regina A. Quick Center for the Arts** houses the Aloyisius P. Kelley, S. J. Theatre, the Lawrence A. Wien Experimental Theatre, and the Thomas J. Walsh Art Gallery. Various departments also host exhibitions, lectures and performance programs throughout the academic year, including the popular lecture series **Open Visions Forum** . The new **Bellarmine Museum of Art** is located in Bellarmine Hall and displays a rich and varied collection of paintings, sculpture and decorative arts objects. Not only is the Museum a showcase for significant art objects, but it serves as a learning laboratory for students and members of the regional community. All Fairfield students receive free or discounted tickets for arts events. For a cultural calendar visit www.fairfield.edu/arts.

Other Requirements

NetID

A NetID is your username and password combination that provides you access to a variety of University online services, including Gmail and access to my.Fairfield.

- Your NetID username is not case sensitive
- It is generated from University records, and it is a combination of your first, middle, and last names or initials
- Your NetID is not the same as your Fairfield ID number, which is on the front of your StagCard

Your NetID will remain active until you graduate. You will need to change your password every 90 days.

To activate (or "claim") your NetID account, you will need to log in to the Fairfield University NetID Manager Web site: http://netid.fairfield.edu. For more detailed information, including step-by-step instructions, visit www.fairfield.edu/netid.

You will need your eight-digit Fairfield ID number to activate your NetID, which can be found on the front of your StagCard, or in the upper right-hand corner of your student schedule.

After claiming your NetID, visit http://mail.student.fairfield.edu to log in. Please check your Gmail account regularly, and be sure to use it to communicate with all University officials (faculty, staff, etc.).

Your e-mail address follows this format: netid@student.fairfield.edu. If your name is John Smith, and your NetID is john.smith, then your e-mail address is john.smith@student.fairfield.edu.

my.Fairfield (http://my.Fairfield.edu)

All graduate students are issued individual accounts for my.Fairfield, a secure website used to view course schedules, access library services remotely, register for classes and parking permits, view and pay tuition bills, print unofficial transcripts, and much more.

Students may also register their cell phone number for entry into the StagAlert system, Fairfield University's emergency notification system. Click on the "Update Cell Phone Number" link under Student tab, Personal Information link, and follow the prompts.

Students can log in to my.Fairfield with their Net ID and password, and the account will be available within 24 hours of registering for classes for the first time. For assistance with my.Fairfield call the help desk at (203) 254-4069 or e-mail helpdesk@fairfield.edu.

Accreditations

Fairfield University is fully accredited by the New England Association of Schools and Colleges, which accredits schools and colleges in the six New England states. Accreditation by one of the six regional accrediting associations in the United States indicates that the school or college has been carefully evaluated and found to meet standards agreed upon by qualified educators.

Additional accreditations include:

AACSB International - The Association to Advance Collegiate Schools of Business (Charles F. Dolan School of Business)

Accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org

B.S. Computer Engineering Program
B.S. Electrical Engineering program
B.S. Mechanical Engineering program
B.S. Software Engineering Program

American Chemical Society

(College of Arts and Sciences)
B.S. in Chemistry

Commission on Accreditation of Marriage and Family Therapy Education

(Graduate School of Education and Allied Professions, GSEAP)
Marriage and Family Therapy program

Connecticut State Office of Higher Education

(GSEAP)

Council for Accreditation of Counseling and Related Educational Programs

(GSEAP)
Counselor Education programs

Commission on Collegiate Nursing Education

(School of Nursing)
Undergraduate Nursing programs
Master's Nursing programs
Doctoral programs

National Council for the Accreditation of Teacher Educators (NCATE)

Elementary Education
Secondary Education
School Counseling
School Library Media Specialist
School Psychology
Special Education
TESOL/Bilingual Education programs

National Association of School Psychologists (NASP)

(GSEAP)
School Psychology

Program approvals include:

Connecticut State Office of Financial and Academic Affairs for Higher Education

- Elementary and Secondary Teacher certification programs
- Graduate programs leading to certification in specialized areas of education
- School of Nursing programs

Connecticut State Department of Education and National Council for the Accreditation of Teacher Educators (NCATE)

- Elementary and Secondary Education
- Special Education
- TESOL/Bilingual Education
- School Counseling
- School Library Media
- School Psychology

Connecticut State Board of Examiners for Nursing

- Undergraduate Nursing programs

Council on Accreditation of Nurse Anesthesia Educational Programs

The University holds memberships in:

AACSB International - The Association to Advance Collegiate Schools of Business
American Association of Colleges for Teacher Education
American Association of Colleges of Nursing
American Council for Higher Education
American Council on Education
ASEE - American Society for Engineering Education
Association of Catholic Colleges and Universities
Association of Jesuit Colleges and Universities
Connecticut Association of Colleges and Universities for Teacher Education
Connecticut Conference of Independent Colleges
Connecticut Council for Higher Education
National Action Council for Minorities in Engineering
National Association of Independent Colleges and Universities
National Catholic Educational Association
New England Business and Economic Association

Compliance Statements and Notifications

Catalog

The provisions of this catalog are not to be regarded as an irrevocable contract between Fairfield University and the students. The University reserves the right to change any provision or any requirement at any time. The course listings represent the breadth of the major. Every course is not necessarily offered each semester.

Compliance Statements and Notifications

For information about student rights under the Family Education Rights and Privacy Act (FERPA), the Non-Discrimination Statement, and the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act, please see the Student Handbook at www.fairfield.edu/studenthandbook.

School of Engineering

A Message from the Dean

The four graduate programs in the School of Engineering - master of science degrees in Management of Technology (MSMOT), in Software Engineering (MSSE), in Electrical and Computer Engineering (MSECE), and in Mechanical Engineering (MSME) are driven by the needs of the School's constituencies, the students, and their employers, who establish multifaceted requirements for current knowledge and skills at the workplace.

The MSMOT program includes some courses from the MBA program in the Charles F. Dolan School of Business. In further response to workplace needs, the School has instituted a five-year dual degree BS/MS program in Software Engineering with both degrees awarded at the end of the five-year course of study. Finally, the School offers graduate certificate programs – each comprised of a sequence of four courses – to benefit practicing engineers who are in need of specialized knowledge and skills in Automated Manufacturing, Database Management, Information Security, Network Technologies or Web Application Development strategies.

Hence, the engineering programs are inherently dynamic and responsive to industry and business. Their capacity to change, and so remain current, originates with the faculty in the School of Engineering who are leading-edge professionals in their areas of expertise and in instruction and mentoring. It is also prompted by the administration team, which is entrepreneurial in delivering graduate education and in maintaining close contacts and open lines of communication with the industry and business sectors that are the main beneficiaries of the School's Master degree graduates.

Located in Fairfield County, Fairfield University is in the middle of a high-density concentration of hardware and software industries and businesses; nearly 40 Fortune 500 companies are headquartered within 50 miles of the campus. This environment provides opportunities for studies of real-world problems in courses and in the capstone professional project required by the graduate programs, and for advancement and employment of Fairfield graduates. Our various programs offer many opportunities for our students to pursue their special interests and grow professionally and personally.

I would like to extend a warm welcome to all who choose to undertake the exciting adventure of graduate education in the School of Engineering at Fairfield University.

Dr. Bruce W. Berdanier, PE, PS
Dean, School of Engineering

The School of Engineering Overview

The School of Engineering has laboratory and instructional facilities and faculty offices in McAuliffe Hall as well as in the Rudolph F. Bannow Science Center. Among these resources are several networked computer laboratories and Internet services, completely dedicated to the instructional purposes of the School. The School of Engineering operates its own separate network linking all its classrooms and laboratories.

The School continuously measures the outcomes of its educational enterprise through the Assessment and Continuous Quality Improvement Process (ACQIP), a three-year cycle of quality management. This process includes identifying the constituencies and stakeholders of the engineering programs, determining which learning goals and program objectives are compatible with the needs of those constituencies, crafting curriculum content, and developing resources to satisfy student learning and development in accord with those needs. ACQIP leads to two concrete results: It assesses the degree to which student learning goals are achieved, and it identifies opportunities for improving program design and implementation.

The School of Engineering maintains an appropriate balance of faculty in each discipline within the School, and strives to create an environment conducive to faculty development and consistent with achieving excellence in pedagogy and professional advancement. The School also maintains a close working relationship with industry through its Advisory Board and other conduits, to better understand the needs of the engineering workplace, and draws from its network of practitioners in the engineering disciplines for assistance in program development and assessment.

Mission

In keeping with the mission of Fairfield University, the School of Engineering is committed to preparing students for leadership and success in their personal and professional lives, and to educating the whole person, one who is socially responsible and prepared to serve others as well as able to contribute to his/her discipline.

Objectives

The programs and curricula of the School of Engineering are directed to a diverse student population. Through innovation and an integration of disciplines in the arts and sciences with those of engineering, technology, and business, the programs provide the interdisciplinary knowledge, personal skills, and technical competencies necessary in our increasingly complex and sophisticated world. Project management and leadership skills are also overarching competencies needed for engineers to meet the grand challenges of the profession in the 21st century.

Specifically, the engineering programs have adopted four major program objectives:

- to provide students with knowledge in the discipline,
- to teach students the skills necessary in exercising the discipline, such as problem solving, design, and an aptitude for innovation, as well as project management and communication skills
- to encourage students to adopt life-long learning practices across the spectrum of human knowledge,
- to convey to students a sense of social responsibility and provide opportunities for service learning.

The key to educating students in their chosen disciplines rests on curricula and instructional practices crafted to promote the students' ability to design solutions to complex problems, assess the effectiveness of the design from a variety of perspectives, including economy and reliability, and proceed to implementation, testing, and validation of design.

The School of Engineering emphasizes excellence in the classroom, in research and development, and in the application of ideas to the world of technology and business. It fosters currency, relevance, and excellence in the curricula, and devotes resources to its facilities and programs, and to the professional development of faculty and staff.

School of Engineering Graduate Admission

Admission Policies

In carrying out its mission, the School of Engineering admits graduate students to master of science degree programs in management of technology, software engineering, electrical and computer engineering, and mechanical engineering. Candidates for admission to those programs must have earned the requisite bachelor's degree from a regional accredited college or university or the international equivalent, and have knowledge and skills in certain areas such as computer programming and statistics (and financial accounting, in the case of the management of technology program). Students with gaps in those areas are expected to complete bridge courses soon after they enter the program. Students create their plan of study early in their graduate career, under the supervision and guidance of program directors, so that they may meet their educational and professional goals in a time-effective and intellectually satisfying manner. Graduate courses are offered in evening classes and on weekends to serve the needs of part-time graduate students from the regional technology and business community, as well as the needs of full-time graduate students. Class sizes are small - 10 to 20 students on average - with an emphasis on close interaction between participants and faculty.

Management of Technology (MSMOT)

Admission will be granted to applicants with a bachelor of science degree in science or engineering, or the equivalent, or to applicants with extensive experience in a technology environment, whose academic and professional records suggest the likelihood of success in a demanding graduate program. Applicants will have completed one course in introductory probability and statistics, one course in computer programming that uses a high-level language and includes applications, and one course in financial accounting, or demonstrate aptitude in these subjects. Applicants who have not completed these courses and who are unable to demonstrate aptitude in these subjects must register for one or more of the bridge courses (undergraduate level) offered in these subjects early in their graduate studies.

Software Engineering (MSSE)

Applicants must hold a bachelor's degree from a regionally accredited college or university (or the international equivalent) or demonstrate adequate experience as a professional software developer or programmer, whose academic and professional record-suggest the likelihood of success in a demanding graduate program. Applicants with an undergraduate degree in an area other than software engineering, computer science, or the equivalent, may need to take the following bridge courses to develop the required background for the program: SW131 Fundamentals of Programming for Engineers, SW 232 Advanced Programming and Data Structures, SW 355 Database Management Systems.

Electrical and Computer Engineering (MSECE)

Admission will be granted to applicants with a bachelor's degree in science or engineering or its equivalent, or to those with work experience in a technology environment, whose academic and professional records suggest the likelihood of success in a demanding graduate program in the electrical or computer engineering disciplines. Furthermore, applicants should demonstrate aptitude in the subject matter of such bridge courses (undergraduate level) as EE 213, Electric Circuits, and EE 231, Electronic Circuits and Devices, or begin their studies by registering for one or more of the bridge courses.

Mechanical Engineering (MSME)

Admission will be granted to applicants with a bachelor's degree in science or engineering, or its equivalent, in the general area of mechanical engineering, or to those with work experience in a technology environment, whose academic and professional records suggest the likelihood of success in a demanding graduate program. Furthermore, applicants should demonstrate aptitude in the subject matter of engineering design, materials and thermodynamics, or begin their studies by registering for one or more bridge courses (undergraduate level) in these areas.

Application Materials

Applicants for admission in all programs must submit the following materials for consideration:

- A completed online Application for Admission. Apply online at www.fairfield.edu/soeapp
- A non-refundable $60 application fee
- An official copy of transcripts from all previously attended colleges or universities
- Two letters of recommendation, one of which must be from a current supervisor or professor, accompanied by the University online recommendation forms.
- A professional resume
- A personal statement. Students should describe why they want to undertake graduate studies in the program for which they are applying for admission.

Applications are accepted on a rolling basis.

Mandatory Immunizations

Connecticut State law requires each full-time or matriculated student to provide proof of immunity or screening against measles, mumps, rubella, varicella (chicken pox), meningitis and tuberculosis. Certain exemptions based on age and housing status apply. Matriculating students are defined as those enrolled in a degree seeking program. More detailed information and the required downloadable forms are available online at http://www.fairfield.edu/student/health_immunization.html. Completed forms should be submitted directly to the Student Health Center. Although this is not required to complete an application, you must provide proof of immunity/screening prior to course registration. Please consult you private health care provider to obtain the necessary immunizations. Questions may be directed to the Student Health Center: (203) 254-4000 ext. 2241 or e-mail Health@fairfield.edu.

International Students

International applicants must also provide a certificate of finances (evidence of adequate financial resources in U.S. dollars) and must submit certified English translations and course-by-course evaluations, done by an approved evaluator (found on our website at www.fairfield.edu/eval) of all academic records. All international students whose native language is not English must demonstrate proficiency in the English language by taking either TOEFL or IELTS exams. A TOEFL composite score of 550 for the paper test, 213 for the computer-based, or 80 on the internet based test is strongly recommended for admission to the graduate school. Scores must be sent directly from the Educational Testing Service. An IELTS score of 6 .5 or higher is strongly recommended for admission to the graduate school. Scores must be sent directly from the IELTS.org (Fairfield's ETS code is 3390). TOEFL and IELTS may be waived for those international students who have earned an undergraduate or graduate degree from a regionally accredited U.S. college or university. International applications and supporting credentials must be **submitted at least three months prior to the intended start date** .

Students with Disabilities

Fairfield University is committed to providing qualified students with disabilities an equal opportunity to access the benefits, rights, and privileges of its services, programs, and activities in an accessible setting. Furthermore, in compliance with Section 504 of the Rehabilitation Act, the Americans with Disabilities Act, and Connecticut laws, the University provides reasonable accommodations to qualified students to reduce the impact of disabilities on academic functioning or upon other major life activities. It is important to note that the University will not alter the essential elements of its courses or programs.

If a student with a disability would like to be considered for accommodations, he or she must make this request in writing and send the supporting documentation to the director of Disability Support Services. This should be done prior to the start of the academic semester and is strictly voluntary. However, if a student with a disability chooses not to self-identify and provide the necessary documentation, accommodations need not be provided. All information concerning disabilities is confidential and will be shared only with a student's permission. Fairfield University uses the guidelines suggested by CT AHEAD to determine disabilities and reasonable accommodations.

Send letters requesting accommodations to: Director of Disability Support Services, Fairfield University, 1073 North Benson Road, Fairfield, CT 06824-5195.

School of Engineering Tuition, Fees and Financial Aid

Tuition and Fees

The schedule of tuition and fees for the academic year:

Application for matriculation (not refundable)	$60
Registration per semester	$30
Graduate Student Activity Fee per semester	$35
MSMOT tuition per credit	$750
MSSE tuition per credit	$725
MSECE tuition per credit	$725
MSME tuition per credit	$725
Commencement fee (required of all degree recipients)	$150
Transcript	$4
Promissory note fee	$25
Returned check fee	$30

The University's Trustees reserve the right to change tuition rates and the fee schedule and to make additional changes whenever they believe it necessary.

Full payment of tuition and fees, and authorization for billing a company must accompany registration for Summer sessions and Intersessions. For the Fall and Spring semesters, it must be received by the initial due date. Payments may be made in the form of cash (in person only), check, money order, credit card (MasterCard, VISA, or American Express), or online payment at www.fairfield.edu/bursar. All checks are payable to Fairfield University.

Degrees will not be conferred and transcripts will not be issued until students have met all financial obligations to the University.

Deferred Payment

During the fall and spring semesters, eligible students may defer payment on tuition. Initially, the student pays one-third of the total tuition due plus all fees and signs a promissory note to pay the remaining balance in two consecutive monthly installments.

Failure to honor the terms of the promissory note will prevent future deferred payments and affect future registrations.

Reimbursement by Employer

Many corporations pay their employees' tuition. Students should check with their employers. If they are eligible for company reimbursement, students must submit a letter on company letterhead acknowledging approval of the course registration and explaining the terms of payment. The terms of this letter, upon approval of the Bursar, will be accepted as a reason for deferring that portion of tuition covered by the reimbursement. Even if covered by reimbursement, all fees (registration, processing, lab, or material) are payable by the due date.

Students will be required to sign a promissory note, which requires a $25 processing fee, acknowledging that any outstanding balance must be paid in full prior to registration for future semesters. If the company offers less than 100-percent unconditional reimbursement, the student must pay the difference by the due date and sign a promissory note for the balance. Letters can only be accepted on a per-semester basis. Failure to pay before the next registration period will prevent future deferred payments and affect future registration.

Refund of Tuition

All requests for tuition refunds must be submitted to the appropriate dean's office immediately after withdrawal from class. Fees are not refundable. The request must be in writing and all refunds will be made based on the date notice is received or, if mailed, on the postmarked date according to the following schedule. Refunds of tuition charged on a MasterCard, VISA, or American Express must be applied as a credit to your charge card account.

Official Withdrawal Date	Refund % of Charge
7 days before first scheduled class	100 percent
6 days or less before first scheduled class	80 percent
Before second scheduled class	60 percent
Before third scheduled class	40 percent
Before fourth scheduled class	20 percent
After fourth scheduled class	0 percent

Refunds take two to three weeks to process.

Financial Aid

Assistantships

A limited number of part- and full-time University graduate assistantships are available to assist promising and deserving students. Assistantships are awarded for one semester only and students must reapply each semester for renewal of an assistantship award. Renewal of an award is based on academic performance and previous service performance, and is at the discretion of the hiring department. A list of known assistantships is available at http://www.fairfield.edu/gradadmission/gfa_assist.html.

Scholarships

The School of Engineering provides modest scholarships to select graduate students on the basis of need and merit. Interested students should complete a Financial Aid application with the School of Engineering and submit it to the Dean's office with supporting materials.

Federal Direct Stafford Loans

Under this program, graduate students may apply for up to $20,500 per academic year, depending on their educational costs. Beginning July 1, 2012, interest payments are no longer subsidized by the federal government during graduate student enrollment.

When a loan is unsubsidized, the student is responsible for the interest and may pay the interest on a monthly basis or opt to have the interest capitalized and added to the principal. There is a six-month grace period following graduation or withdrawal before loan payments must begin.

How to Apply for a Direct Stafford Loan

Step One:

Complete a Free Application for Federal Student Aid (FAFSA) online at www.fafsa.ed.gov, indicating your attendance at Fairfield University (Title IV code 001385).

Step Two:

Complete the required Entrance Counseling and Master Promissory Note (MPN) at www.studentloans.gov.

Step Three:

Financial Aid administrators at Fairfield University will process your loan once your file is finalized, entrance counseling has been completed, and the MPN is signed.
You will be notified of the approval of the loan via the Notice of Loan Guarantee and Disclosure Statement.

Loan Disbursement

If you are a first time borrower at Fairfield University, your loan will not disburse until you have completed the required entrance counseling.

Your loan will be disbursed according to a schedule established by Fairfield University and federal guidelines. Disbursement will be made in two installments for the year and transferred electronically to your University account.

The total amount of the funds (minus any origination fees) will be outlined in the Notice of Loan Guarantee and Disclosure Statement sent to you by the Department of Education.

If you have any questions, please contact the Office of Financial Aid at (203) 254-4125 or finaid@fairfield.edu.

Alternative Loans

These loans help graduate and professional students pay for their education at the University. For further information view online at: www.fairfield.edu/gradloans.

Tax Deductions

Treasury regulation (1.162.5) permits an income tax deduction for educational expenses (registration fees and the cost of travel, meals, and lodging) undertaken to: maintain or improve skills required in one's employment or other trade or business; or meet express requirements of an employer or a law imposed as a condition to retention of employment job status or rate of compensation.

Veterans

Veterans may apply educational benefits to degree studies pursued at Fairfield University. Veterans should consult with the Office of Financial Aid regarding the process and eligibility for possible matching funds through Fairfield's Veterans Pride Program. Information about the program, including free tuition for some veterans, is available at www.fairfield.edu/veterans. The University Registrar's office will complete and submit the required certification form for all VA benefits.

Consumer Information

Fairfield now offers Gainful Employment Disclosures for certificate programs as required. This information can be found at http://www.fairfield.edu/about/about_gainful_employ.html.

Graduate Academic Policies and General Regulations

Academic Advising and Curriculum Planning

Specialty Track Directors advise all fully matriculated students in their respective tracks. The Assistant Dean advises all non-matriculated students. Students must meet with their advisor during their first semester of enrollment to plan a program of study. The advisor must be consulted each subsequent semester regarding course selection, and the advisor's signature of approval on the University registration form is required. Students must register no later than one week prior to the first day of class.

Information about state certification requirements may be obtained from the certification officer or graduate faculty advisors.

Student Programs of Study

All programs of study must be planned with an advisor. In granting approval, the advisor will consider the student's previous academic record and whether the prerequisites set forth for the specific program have been met. Should a student wish to change his or her track or concentration, this request must be made in writing and approved by the advisor and the dean.

Academic Freedom and Responsibility

The statement on academic freedom, as formulated in the 1940 Statement of Principles endorsed by the AAUP (American Association of University Professors) and incorporating the 1970 interpretive comments, is the policy of Fairfield University. Academic freedom and responsibility are here defined as the liberty and obligation to study, to investigate, to present and interpret, and discuss facts and ideas concerning all branches and fields of learning. Academic freedom is limited only by generally accepted standards of responsible scholarship and by respect for the Catholic commitment of the institution as expressed in its mission statement, which provides that Fairfield University "welcomes those of all beliefs and traditions who share its concerns for scholarship, justice, truth, and freedom, and it values the diversity which their membership brings to the university community."

Freedom of Expression

As an academic institution, Fairfield University exists for the transmission of knowledge, pursuit of truth, development of students, and the general well-being of society. Free inquiry and free expression are indispensable to the attainment of these goals. Fairfield University recognizes that academic freedom, freedom of expression, and responsibility are required to realize the essential purposes of the University. Academic freedom and responsibility (distinguished from freedom of expression) are herein defined as the liberty and obligation to study, to investigate, to present, interpret, and discuss facts and ideas concerning all branches and fields of inquiry.

Student Rights

As constituents of the academic community, students should be free, individually and collectively, to express their views on issues of institutional policy and on matters of general interest to the student body.

Fairfield University students are both citizens and members of the academic community. As citizens of a private institution, Fairfield's students enjoy the same freedom of speech, peaceful assembly, and right of petition that students at other private institutions enjoy as accorded by law, and as members of the academic community, they are subject to the obligations which accrue to them by virtue of this membership. Faculty members and administration officials should ensure that institutional powers are not employed to deprive students of their rights as accorded to them by law and University policy. At the same time, the institution has an obligation to clarify those standards which it considers essential to its educational mission and its community life. These expectations and regulations should represent a reasonable regulation of student conduct.

As members of the academic community, students should be encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. They do this within the requirements of the curriculum and the courses in which they are enrolled.

The professor in the classroom and in conference should encourage free discussion, inquiry, and expression. Student performance should be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. This means that students are free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students in professional programs are expected to understand and uphold the standards required in their profession.

Students bring to the campus a variety of interests previously acquired and develop many new interests as members of the academic community. They should be free to organize and join associations to promote their common interests. Students and student organizations should be free to examine and discuss all questions of interest to them and to express opinions publicly and privately. Students should be allowed to invite and to hear any person of their own choosing. Those procedures required by an institution before a guest speaker is invited to appear on campus should be designed only to

ensure that there is orderly scheduling of facilities and adequate preparation for the event, and that the occasion is conducted in a manner appropriate to an academic community. Guest speakers are subject to all applicable laws, and to the University policies on harassment and discrimination.

Students' freedom of expression extends to their ability to express their opinions in writing or through electronic means, and to distribute and post materials expressing their opinions. Any restrictions should be designed only to ensure the orderly use of space and facilities, to provide reasonable restrictions on commercial messages, to comply with applicable fire, health or safety codes, to comply with the University's Non-Discrimination and Harassment Policy, or to comply with state or federal law.

Students should always be free to support causes by orderly means which do not disrupt operations of the institution. At the same time, it should be made clear to the academic and larger community that in their public expressions or demonstrations, students or student organizations speak only for themselves and not the institution.

Student Responsibilities

Freedom of expression enjoyed by students is not without limitations. The rights set forth herein must be balanced against and considered in the context of the following responsibilities:

- Students have the obligation to refrain from interfering with the freedom of expression of others.
- Students have the responsibility to respect the rights and beliefs of others, including the values and traditions of Fairfield University as a Jesuit, Catholic institution.
- Students have the responsibility to support learning, and when learning, to engage others in a respectful dialogue, to never threaten the safety or security of others, and to comply with all University policies prohibiting harassment, hate crimes, and discrimination.

All policies in this Handbook and the actions taken under them must support Fairfield University's Mission Statement and the Statement on Academic Freedom.

Academic Honesty

All members of the Fairfield University community share responsibility for establishing and maintaining appropriate standards of academic honesty and integrity. As such, faculty members have an obligation to set high standards of honesty and integrity through personal example and the learning communities they create. Such integrity is fundamental to, and an inherent part of, a Jesuit education, in which teaching and learning are based on mutual respect.It is further expected that students will follow these standards and encourage others to do so.

Students are sometimes unsure of what constitutes academic dishonesty. In all academic work, students are expected to submit materials that are their own and to include attribution for any ideas or language that is not their own. Examples of dishonest conduct include but are not limited to:

- Falsification of academic records or grades, including but not limited to any act of falsifying information on an official academic document, grade report, class registration document or transcript.
- Cheating, such as copying examination answers from materials such as crib notes or another student's paper.
- Collusion, such as working with another person or persons when independent work is prescribed.
- Inappropriate use of notes.
- Falsification or fabrication of an assigned project, data, results, or sources.
- Giving, receiving, offering, or soliciting information in examinations.
- Using previously prepared materials in examinations, tests, or quizzes.
- Destruction or alteration of another student's work.
- Submitting the same paper or report for assignments in more than one course without the prior written permission of each instructor.
- Appropriating information, ideas, or the language of other people or writers and submitting it as one's own to satisfy the requirements of a course - commonly known as plagiarism. Plagiarism constitutes theft and deceit. Assignments (compositions, term papers, computer programs, etc.) acquired either in part or in whole from commercial sources, publications, students, or other sources and submitted as one's own original work will be considered plagiarism.
- Unauthorized recording, sale, or use of lectures and other instructional materials.

In the event of such dishonesty, professors are to award a grade of zero for the project, paper, or examination in question, and may record an F for the course itself. When appropriate, expulsion may be recommended. A notation of the event is made in the student’s file in the academic dean's office. The student will receive a copy.

Honor Code

Fairfield University's primary purpose is the pursuit of academic excellence. This is possible only in an atmosphere where discovery and communication of knowledge are marked by scrupulous, unqualified honesty. Therefore, it is expected that all students taking classes at the University adhere to the following Honor Code:

"I understand that any violation of academic integrity wounds the entire community and undermines the trust upon which the discovery and communication of knowledge depends. Therefore, as a member of the Fairfield University community, I hereby pledge to uphold and maintain these standards of academic honesty and integrity."

University Course Numbering System

Undergraduate

01-99	Introductory courses
100-199	Intermediate courses without prerequisites
200-299	Intermediate courses with prerequisites
300-399	Advanced courses, normally limited to juniors and seniors, and open to graduate students with permission

Graduate

400-499	Master's and Certificate of Advanced Study courses, open to undergraduate students with permission
500-599	Master's and Certificate of Advanced Study courses
600-699	Doctoral courses, open to qualified Master's students

Option for Graduate Level Courses

Undergraduates with permission could take a graduate course for undergraduate credit and as part of their undergraduate load. It would appear on their undergraduate transcript. A student could later petition to have those courses provide advanced standing in their graduate program and it would be up to the faculty to determine if the credits should apply to the graduate program at that point. Student might receive credit for these courses as part of a graduate program if the student did not apply the credits to complete the undergraduate degree.

An undergraduate student who has advanced beyond degree requirements and also has permission could take a graduate level course for graduate credit as part of their regular undergraduate load. The number of graduate courses a full time undergraduate could take would be limited to two. The five year pre-structured programs would follow their own required sequence.

Registration for graduate courses is on a space available basis, with preference given to graduate students. Undergraduates with permission to enroll in a graduate course may petition to register in late August for the fall and early January for the spring.

Normal Academic Progress

Academic Load

A full-time graduate student will normally carry nine credits during the fall or spring semester. Twelve credits is the maximum load permitted. During summer sessions, full-time students are permitted to carry a maximum load of 12 credits. Students who work full time or attend another school may not be full-time students. Such individuals are ordinarily limited to six credits during the fall or spring semesters and nine credits during the summer sessions.

Academic Standards

Students are required to maintain satisfactory academic standards of scholastic performance. Candidates for a master's degree or certificate must maintain a 3.00 grade point average.

Auditing

A student who wishes to audit a graduate course may do so only in consultation with the course instructor. A Permission to Audit form, available at the dean's office, must be completed and presented at registration during the regular registration period. No academic credit is awarded and a grade notation (AU) is recorded on the official transcript under the appropriate semester and course name. The tuition for auditing is one-half of the credit tuition, except for those hands-on courses involving the use of a computer workstation. In this case, the audit tuition is the same as the credit tuition. Conversion from audit to credit status will be permitted only before the third class and with the permission of the course instructor.

Independent Study

The purpose of independent study at the graduate level is to broaden student knowledge in a specific area of interest. Students must submit a preliminary proposal using the Independent Study Application form, which is available in the dean's office, to the major advisor. Frequent consultation with the major advisor is required. Students may earn from one to six credits for an independent study course.

Matriculation/Continuation

To remain in good academic standing, a student must achieve a 3.00 cumulative quality point average upon completion of the first 12 semester hours. A student whose cumulative quality point average falls below 3.00 in any semester is placed on academic probation for the following semester. Students on academic probation must meet with their advisors to program adjustments to their course load. If, at the end of the probationary semester, the student's overall average is again below 3.00, he or she may be dismissed.

Time to Complete Degree

Students are expected to complete all requirements for the M.A. and M.S. programs within five years after beginning their course work. Each student is expected to make some annual progress toward the degree or certificate to remain in good standing. A student who elects to take a leave of absence must submit a request, in writing, to the dean.

Applications for and Awarding of Degrees

All students must file an application for the master's degree in the dean's office by the published deadline. Graduate students must successfully complete all requirements for the degree in order to participate in commencement exercises. Refer to the calendar for the degree application deadline.

Graduation and Commencement

Diplomas are awarded in January, May, and August (see calendar for application deadlines). Students who have been awarded diplomas in the previous August and January, and those who have completed all degree requirements for May graduation, are invited to participate in the May commencement ceremony. Graduate students must successfully complete all requirements for the degree in order to participate in commencement.

Disruption of Academic Progress

Academic Probation/Dismissal

A student whose overall grade point average falls below 3.00 in any semester is placed on probation for the following semester. If the overall grade point average is again below 3.00 at the end of that semester, the student may be dismissed. Any student who receives two course grades below 2.67 or B- will be excluded from the program.

Course Withdrawal

Candidates who wish to withdraw from a course must do so in writing or in person at the Registrar's Office on or before the published last day to withdraw (see academic calendar). Written withdrawals are effective as of the date received or postmarked. In-person withdrawals are made in the Registrar's Office by completing and submitting a Change of Registration form. Those who need to withdraw from a course after the posted last day to withdraw must submit a written statement justifying their need to withdraw to the dean for approval to withdraw without academic penalty. Failure to attend class or merely giving notice to an instructor does not constitute an official withdrawal and may result in a penalty grade being recorded for the course. In general, course withdrawals are not approved after the posted last day to withdraw. When there are extenuating circumstances (e.g., medical condition requiring withdrawal) exceptions may be approved by the dean. Withdrawal after the posted deadline will not be permitted simply to prevent receipt of a grade that might not meet the student's satisfaction.

Readmission

If a student has been inactive for three terms or longer, students must submit a written update to the dean for reinstatement. Depending on the individual circumstances it may be necessary to complete a full application for admission. A review of past work will determine the terms of readmission.

Grades; Academic Average

The work of each student is graded on the following basis:

A	4.00
A-	3.67
B+	3.33
B	3.00
B-	2.67
C+	2.33
C	2.00
F	0.00
I	Incomplete
W	Withdrew without penalty

No change of grade will be processed after a student has graduated. Any request for the change of an earned letter grade is at the discretion of the original teacher of the course and must be recommended in writing to the dean by the professor of record within one calendar year of the final class of the course or before graduation, whichever comes first.

A student may request an extension of the one-year deadline from the dean of their school if he or she can provide documentation that extenuating circumstances warrant an extension of the one-year deadline. Such an extension may be approved only if the professor of record agrees to the extension and an explicit date is stipulated by which the additional work must be submitted.

A student who elects to withdraw from a course must obtain written approval from the dean. Refunds will not be granted without written notice. The amount of tuition refund will be based upon the date the notice is received. Fees are not refundable unless a course is canceled.

Multiplying a grade's numerical value by the credit value of a course produces the number of quality points earned by a student. The student's grade point average is computed by dividing the number of quality points earned by the total number of credits completed, including failed courses. The average is rounded to the nearest second decimal place.

A change of an incomplete grade follows the established policy.

Incomplete

An Incomplete is issued when, due to an emergency situation such as a documented illness, a student arranges with the course instructor to complete some of the course requirements after the term ends. All course work must be completed within 30 days after the beginning of the next regular semester. Any requests to extend the 30-day time period for completing an Incomplete require approval by the appropriate Dean.

Any incomplete grade still outstanding after the 30-day extension will become an F and the candidate may be excluded from the program.

Transfer of Credit

Transfer of credit from another approved institution of higher learning will be allowed if it is graduate work done after the completion of a bachelor's program and completed prior to entering Fairfield University.

No more than six credits may be transferred. Transfer credit will be considered for graduate coursework earned with a grade of B or better. An official transcript of the work done must be received before a decision will be made on approving the transfer.

Grade Reports

Grade reports for all graduate students are issued electronically by the Registrar via the student's web portal (my.Fairfield) at the end of each semester.

Scholastic Honors

Alpha Sigma Nu

Alpha Sigma Nu, the national Jesuit honor society, serves to reward and encourage scholarship, loyalty, and service to the ideals of Jesuit higher education. To be nominated for membership, graduate students must have scholastic rank in the top 15 percent of their class, demonstrate a proven concern for others, and manifest a true concern and commitment to the values and goals of the society. The Fairfield chapter was reactivated in 1981 and includes outstanding undergraduate and graduate students who are encouraged to promote service to the University and provide greater understanding of the Jesuit ideals of education.

Academic Grievance Procedures

Purpose

Procedures for review of academic grievances protect the rights of students, faculty, and the University by providing mechanisms for equitable problem solving.

Types of Grievances

A grievance is defined as a complaint of unfair treatment for which a specific remedy is sought. This procedure is concerned solely with academic grievances. It excludes circumstances that may give rise to a complaint for which explicit redress is neither called for nor sought, or for those for which other structures within the university serve as an agency for resolution.

Academic grievances relate to procedural appeals, academic dishonesty appeals, or quality of work appeals.

Procedural appeals are defined as those seeking a remedy in which no issue of the quality of a student's work is involved. For example, a student might contend that the professor failed to follow previously announced mechanisms of evaluation.

Academic dishonesty appeals are defined as those seeking a remedy because of a dispute over whether plagiarism, cheating, or other acts of academic dishonesty occurred. Remedies would include but not be limited to removal of a file letter, change of grade, or submitting new or revised work.

Quality of work appeals are defined as those seeking a remedy, following the completion of a course, because the evaluation of the quality of a student's coursework is alleged to be prejudiced or capricious.

Time Limits

The procedure herein defined must be initiated by the end of the subsequent fall or spring semester after the event that is the subject of the grievance. If the grievance moves forward, all subsequent steps of the informal process must be completed and the formal process must be initiated before the end of the second semester subsequent to the event that is the subject of the grievance.

Informal Procedure

Step one: The student attempts to resolve any academic grievance with the faculty member. If, following this initial attempt at resolution, the student remains convinced that a grievance exists, she or he advances to step two.

Step two: The student consults with the chair or program director, bringing written documentation of the process to this point. If the student continues to assert that a grievance exists after attempted reconciliation, she or he advances to step three.

Step three: The student presents the grievance to the dean of the school in which the course was offered, bringing to this meeting documentation of steps one and two. After conversation with the instructor of record and the department chair/program director, the dean will inform the student whether or not the grade shall be changed by the instructor of record. If the student is dissatisfied with the outcome, the dean will inform the student of the right to initiate formal review procedures.

Formal Procedure

Step one: If the student still believes that the grievance remains unresolved following the informal procedures above, she or he initiates the formal review procedure by making a written request for a formal hearing through the dean to the Senior Vice President for Academic Affairs (SVPAA). Such a request should define the grievance and be accompanied by documentation of completion of the informal process. It should also be accompanied by the dean's opinion of the grievance.

Step two: The SVPAA determines whether the grievance merits further attention. If not, the student is so informed. If, however, the grievance does merit further attention, the SVPAA determines whether it is a procedural appeal, an academic dishonesty appeal, or a quality of work appeal.

For procedural appeals and academic dishonesty appeals, the SVPAA will convene a Grievance Committee according to the process described below, providing the committee with the written documentation resulting from the previous steps in the appeal process.

For quality of work appeals, the SVPAA will request that the chair of the department through which the course is taught, or if the chair is the subject of the grievance a senior member of the department, assemble an ad hoc committee of three department/program members to review the appeal, providing the committee with the written documentation resulting from the previous steps in the appeal process.

Step three: For procedural appeals and academic dishonesty appeals, the Grievance Committee takes whatever steps are deemed appropriate to render a recommendation for resolving the grievance. The committee adheres to due process procedures analogous to those in the Faculty Handbook.

For quality of work appeals, the department committee shall make itself available to meet and discuss the appeal with the student, and shall discuss the appeal with the instructor of record for the course. If the final consensus of the department committee is that the academic evaluation that led to the course grade was neither prejudiced nor capricious, the appeals process ends here.

Step four:For procedural appeals and academic dishonesty appeals, the recommendation from the Grievance Committee is forwarded to the SVPAA in written form, accompanied, if necessary, by any supporting data that formed the basis of the recommendation. Should the Grievance Committee conclude that a change of grade is warranted, the two faculty members on the Grievance Committee will recommend an appropriate grade. In case of disagreement between the two faculty members, the dean chairing the Grievance Committee will decide which of the two recommended grades to accept. The recommended grade change shall be included in the report.

For quality of work appeals, if the final consensus of the department committee is that the academic evaluation that led to the course grade was prejudiced or capricious, the department committee will recommend an alternative course grade. If the instructor of record agrees to change the grade to that recommended by the committee, the appeals process ends here. If the instructor of record declines to change the grade, the department committee shall prepare a written report, including the department committee's recommended grade. The report will be forwarded to the SVPAA and the instructor of record, who may send the SVPAA a written response to the report.

Step five: For procedural appeals and academic dishonesty appeals, the SVPAA renders a final and binding judgment, notifying all involved parties. If such an appeal involves a dispute over a course grade given by a faculty member, the SVPAA is the only university official empowered to change that grade, and then only to the grade recommended by the Grievance Committee.

For quality of work appeals, if the SVPAA agrees with the department committee that the academic evaluation that led to the course grade was prejudiced or capricious, she or he is authorized to change the course grade to the grade recommended in the department committee's report.

Structure of the Grievance Committee

The structure of the Grievance Committee will be as follows:

- Two faculty members to be selected from the Student Academic Grievance Board. The faculty member against whom the grievance has been directed will propose four names from that panel, the student will strike two of those names, and the two remaining faculty members will serve.
- Two students to be selected from a standing pool of eight students elected by the student government. The student filing the grievance will propose four names from that panel, the faculty member will strike two of those names, and the two remaining students will serve.

In the event that any faculty member or student selected through the foregoing process is unable to meet, another elected member of the panel will serve as an alternate.

The Grievance Committee will be chaired by a dean (other than the dean of the school in which the course was offered) to be selected by the SVPAA. The dean so selected will have no vote except in the event of a tie, and will be responsible for overseeing the selection of the Grievance Committee, convening and conducting the committee meetings, and preparing the committee's report(s) and other appropriate documentation.

Due Process Procedure

- Both the student and the faculty member have the right to be present and to be accompanied by a personal advisor or counsel throughout the hearing.
- Both the student and the faculty member have the right to present and to examine and cross-examine witnesses.
- The administration makes available to the student and the faculty member such authority as it may possess to require the presence of witnesses.
- The grievance committee promptly and forthrightly adjudicates the issues.
- The full text of the findings and conclusions of the grievance committee are made available in identical form and at the same time to the student and the faculty member. The cost is met by the University.
- In the absence of a defect in procedure, recommendations shall be made to the Senior Vice President for Academic Affairs by the grievance committee as to possible action in the case.
- At any time should the basis for an informal hearing appear, the procedure may become informal in nature.

Grievance Process Complaints

Fairfield University endeavors to resolve all grievances, complaints and disputes in a timely and fair manner. In the event a student believes a complaint remains unresolved after the conclusion of Fairfield University's grievance and/or dispute resolution processes (including all appeals), the student may request that the complaint be reviewed by the State of Connecticut Office of Higher Education. The Office of Higher Education is responsible for quality review of independent colleges and will investigate complaints concerning matters within its statutory authority. For more information or to file a complaint, contact the Office of Higher Education, 61 Woodland Street, Hartford, CT 06105-2326; (800)842-0229; www.ctohe.org/studentcomplaints.shtmlFairfield University is accredited by the New England Association of Schools and Colleges (NEASC). Students may contact NEASC at 3 Burlington Woods Drive, Suite 100 Burlington, MA 01803, 855-886-3272. http://cihe.neasc.org/

Transcripts

Graduate transcript requests should be made in writing to the University Registrar's Office in the Kelley Center. There is a $4 fee for each copy (faxed transcripts are $6). Students should include the program and dates that they attended in their requests. In accordance with the general practices of colleges and universities, official transcripts with the University seal are sent directly by the University. Requests should be made one week in advance of the date needed. Requests are not processed during examination and registration periods.

Student Records

Under the Family Educational Rights and Privacy Act passed by Congress in 1974, legitimate access to student records has been defined. A student at Fairfield University, who has not waived that right, may see any records that directly pertain to the student. Excluded by statute from inspection is the parents' confidential statement given to the financial aid office and medical records supplied by a physician.

A listing of records maintained, their location, and the means of reviewing them is available in the dean's office. Information contained in student files is available to others using the guidelines below:

- Confirmation of directory information is available to recognized organizations and agencies. Such information includes name, date of birth, dates of attendance, address.
- Copies of transcripts will be provided to anyone upon written request of the student. Cost of providing such information must be assumed by the student.
- All other information, excluding medical records, is available to staff members of the University on a need-to-know basis; prior to the release of additional information, a staff member must prove his or her need to know information to the office responsible for maintaining the record.

The School of Engineering

Master of Science in Management of Technology (MSMOT)

Introduction

The MSMOT program at Fairfield University serves the needs of professional technologists, engineers and managers in their progression into management-level positions. The program instructs and trains engineers and scientists, and motivated people from any discipline who have a need to make management decisions in a technology environment or will be involved in the management of such functions as technology research and development, product design, manufacturing, human and physical resources, product and system test, information and data analysis, and product and service support.

The program is intended for technologists and those involved in technology-dependent enterprises who aspire to favorably position their companies in fast-paced markets, influence crucial decision-making in pursuing new technologies and improve the likelihood of corporate success. Graduates of the program are able to help their organizations embrace technology innovation in a timely fashion, focusing the energy of their companies on translating research and development efforts rapidly and effectively into manufacturing strategies and products that satisfy market needs.

MSMOT Mission

To prepare managers and leaders with the skills and competencies that will prepare them to:

- Understand, manage and lead organizations
- Embrace technology innovation to remain competitive,
- Translate technology into business terms to result in richer business decisions, and a higher likelihood of breakthrough business performance.
- Assess, develop and apply solutions to the challenges confronting organizations in today's global economy.

Program Overview

This two-year graduate degree program is designed to enhance your technical experience with advanced management and leadership skills. The program addresses the needs of the technically trained employee who must use business principles across the entire gamut of engineering disciplines. The non-technically trained person will also benefit from this program as business management has become intertwined with technology. Learning the skills this program affords will help prepare you to manage the domestic and global resources and processes required in today's business environment.

MSMOT graduates become effective leaders in small and large companies, providing creative guidance to the development and/or adoption and marketing of technology products and services. Specific program objectives include the following:

- To train the technically proficient by adding to their skills a deeper comprehension of business planning and economics, and an understanding of global markets, thereby empowering them to develop entrepreneurial skills. Technologists who are, or aspire to be employed as managers or supervisors and who currently engage in technology planning and development will be immersed in an educational program that integrates studies in technology management with modern management principles and practices.
- To enhance the skills of technologists in the design and manufacturing disciplines, in the management and effective use of information resources, and in the developing strategies that are crucial to effective leadership in technological entrepreneurship.
- To provide graduates in engineering, science and other disciplines with the opportunity to pursue a graduate program that expands their career paths and ultimately leads to leadership roles in technology-dependent businesses.
- To provide technology-dependent business and industry enterprises in Connecticut with people skilled in the management of technology and capable of enhancing the strength and competitiveness of those businesses. The outcome will serve to enrich the entrepreneurial climate in the state.
- To learn the skills relevant to today's competitive global environment where technology is increasingly a core competency of all organizations.

As a consequence of participating in this degree experience, the student will gain the following specific learning outcomes:

- Identify, prioritize, and solve technical and management related problems through analysis, synthesis, and evaluative processes.
- Understand how to plan, organize, lead, and control within an organizational setting.
- Interact with team members and/or work groups to achieve a common goal.
- Increase their individual knowledge and understanding of group and team interactions, and their impact upon business productivity, efficiency, and effectiveness.
- Recognize the skills and techniques needed for problem solving and decision making.
- Communicate effectively both orally and in writing.
- Understand basic accounting methods and their business applications.
- Use financial analysis within a business environment.
- Apply the strategic management process to an analysis of the business environment and make recommendations on preferred courses of action.
- Recognize ethical issues in the management of technology and in the decision making process in business and industry; and stimulate the student's sense of responsibility and help them deal with ambiguity.

Almost all of the MSMOT faculty have been engineers, managers and leaders in industry. Some have started their own companies. They know what it takes to succeed in the business world. They stand ready to help you move your career into overdrive with the new skills and competencies that you will gain.

Students

The MSMOT program is designed to accommodate students who wish to attend on a full-time or part-time basis. The program is directed toward the following student groups: (a) engineers and scientists who need skills in critical thinking and decision-making to effectively guide the technology that will enhance product and service quality and their employer's business opportunities; (b) professionals who are charged with implementing technology initiatives in order to effectively compete in the 21st century with a lead over their competitors; (c) managers of technical and business activities responsible for creating strategic business plans and overseeing their execution; (d) research and development practitioners who require skills to recognize relevant technologies developed outside their own business organization and who must judge the merits of investing in them; (e) engineers and scientists who aspire to careers in management and require the knowledge to systematically integrate technology into their company's activity; (f) engineers and scientists interested in academic careers combining science, engineering, and management; and (g) technologists who require broad management skills to provide leadership in business.

The program does not require GRE or other standardized testing. International students must take either the TOEFL or the IELTS exam.

The MSMOT Curriculum

The MSMOT program offers courses affording students the opportunity to establish the foundations of technology management, and then choose a set of electives that best reflects their interests. Of these courses, several are in the School of Business MBA program. A total of 12 courses, including the two-term capstone course, will earn a student the Master's degree. Entering students are required to have an adequate background in probability and statistics, computer programming using at least one higher order language, and financial accounting. Complete matriculation into MSMOT program, requires that the student have knowledge in the following areas:

BR 1 - Probability and Statistics
BR 2 - Computer Programming with a High-Level Language with Applications
BR 3 - Financial Accounting

Students who have not completed courses in these areas may be admitted to the program provisionally and must complete these courses as early as possible in their program.

To learn the skills relevant to today's competitive global environment where technology is increasingly a core competency of all organizations.

Degree Requirements

The degree requires the completion of a minimum of 12 three-credit courses (36 total credits) as indicated below. The designations (B) and (E) following a course name indicate courses offered through the School of Business or the School of Engineering, respectively. Students pursuing the MSMOT degree in the School of Engineering may take a maximum of five courses from the MBA curriculum in the Charles F. Dolan School of Business.

Required Courses - 24 credits

All MSMOT students are required to complete each of the following three-credit courses except where alternatives are approved by the program director.

AC 500 Accounting for Decision-Making (B)
DM 460 Project Management (E)
GK 415 Information Systems (E)
MG 508 Strategic Management of Technology and Innovation (B)
MG 584 Global Competitive Strategy (B)
OR RD 500 An Introduction to Systems Engineering (E)

RD 460 Leadership in Technical Enterprise (E)
CP 551 Capstone I Project Definition and Planning (E)
CP 552 Capstone II Project Execution and Results (E)

Of particular note among the required courses is the sequence of CP 551 and CP 552 courses, which constitute the MSMOT capstone, a team-driven effort to define and design realizable solutions to real-world technical/business projects. The capstone courses are supervised by faculty mentors.

Elective Courses - 12 credits

In addition to the required courses, students must complete four elective courses. MSMOT students may elect to enroll in graduate courses in any discipline within the University that will assist them in meeting their career objectives. Students may, if they choose, take courses in concentration areas such as Management of Design and Manufacturing, Strategic Management of Resources, Management of Information Technology, Systems Engineering Concepts and Methods, and health care. Representative concentrations and course electives are shown below:

Management of Design and Manufacturing
DM 405 Supply Chain Design (E)
DM 407 Design of Manufacturing Systems and Processes (E)
DM 420 Design for Economy and Reliability (E)
DM 430 Management of Design for Automation (E)

Management of Resources
MG 584 Global Competitive Strategy (B)
RD 450 Management of Risk in Research and Development (E)
RD 485 Management of Intellectual Property (E)

Management of Information Technology
SW 400 Software Engineering Methods (E)
SW 402 Database Concepts (E)
SW 508 Data Warehouse Systems (E)
SW 518 Data Mining and Business Intelligence (E)

Systems Engineering Concepts and Methods
RD 500 Introduction to Systems Engineering (E)
RD 525 Principles of Quality Management (E)

Other Elective Courses

MSMOT students may also select any of the courses listed below, or graduate courses offered through the School of Engineering (mechanical engineering, software engineering, and electrical and computer engineering) or in the School of Business. Consult the MOT program director to discuss your specific needs.

MG 500 Managing People for Competitive Advantage (B)
MG 503 Legal and Ethical Environments of Business (B)
MK 400 Marketing Management (B)
OM 400 Integrated Business Processes (B)
SW 404 Network Concepts (E)
SW 530 Introduction to Information Security (E)
SW 531 Applications and Data Security (E)
SW 406 Web Client-Side Development I (E)
SW 408 Java for Programmers I (E)
SW 512 Web Development II with ASP.NET (E)
SW 409 JAVA for Programmers II (E)
SW 410 Enterprise Java (E)
SW 505 Advanced Database Concepts (E)

Master of Science in Mechanical Engineering (MSME)

Introduction

The MSME program is designed as a course of study to provide graduate engineers with a deeper and broader understanding of the methods and skills in the area of mechanical engineering.

The program outcomes are achieved through knowledge and skills that students gain by virtue of expert curriculum design, instruction in an effective learning environment, and opportunities for inquiry and professional development.

Students will take courses in the following broad domains:

- Thermal Systems: This domain includes instruction in renewable energy, energy conversion, computational fluid dynamics, turbomachinery, gas dynamics, heat and mass transfer.
- Mechanical Systems: This domain includes courses in applications of theory of elasticity, advanced kinematics, advanced dynamics, composite materials and fracture mechanics.

Students will be able to identify, formulate, and solve advanced mechanical engineering problems. They will also be able to use the techniques, skills, and modern analytical and software tools necessary for the mechanical engineering practice. Sequences of electives, as well as a master's Project/ Thesis, will assist in achieving the program's learning goals.

Program Overview

The aim of the MSME program is to achieve the following basic objectives:

- Students will be educated in methods of advanced engineering analysis, including the mathematical and computational skills required for advanced problem solving. They will be trained to develop the skills and the ability to formulate solutions to problems, to think independently and creatively, to synthesize and integrate information/data, and to work and communicate effectively.
- Students will be provided with in-depth knowledge that will allow them to apply innovative techniques to problems and utilize the tools they need to focus on new applications.
- Students will avail themselves of a breadth of knowledge that fosters an awareness of and skills for interdisciplinary approaches to engineering problems.
- Undergraduate students in mechanical, aerospace, civil, chemical, industrial, and manufacturing engineering have the opportunity to pursue, upon completion of their undergraduate studies, a graduate program that would allow them broader career paths and leadership roles in the mechanical engineering area. Students outside the above engineering fields will be assigned to take specific bridge courses in their area of specialization interest to meet the course prerequisite.

Students

Mechanical engineering is a highly diverse discipline that ranges from the aesthetic aspects of design to highly technical research and development. The student population for the MSME program has several origins. Typical examples are as follows:

- Engineers and scientists who, responding to the specific needs of their industry across the spectrum of special domains listed above, need to acquire skills so that they may effectively guide the development of technologies which will enhance product quality and business opportunities
- Engineers and scientists who wish to fulfill their need for personal and professional growth in the mechanical engineering domain
- Engineers who aspire to academic careers and those who wish to eventually continue their studies toward a Ph.D. degree
- Engineers aspiring to a career change
- Current undergraduate engineering students and alumni who desire an opportunity to continue their studies for an advanced engineering degree at Fairfield University

The MSME Curriculum

The MSME program offers two options for graduation: (a) a thesis option which requires 33 credits, including the two-term thesis, and (b) the non-thesis option which requires 36 credit hours.

Required Courses

In both options, the program entails five required courses as follows:

MC 400 Feedback and Control Systems
ME 451 Energy Conversion
ME 425 Engineering Applications of Numerical Methods
ME 470 Applications of Finite Element Analysis
SW 407 Introduction to Programming

Thesis Option

Students may choose the thesis option provided they select an academic advisor and secure the approval of the program director.

In the event that a student in the thesis track wishes to switch to the non-thesis option, credits that might have been earned in the pursuit of a thesis will not count toward fulfilling the graduation requirement.

Core Concentration Courses

Students select seven elective courses from the list below, from which up to two courses may be taken from other graduate engineering courses related to their field of interest. The objective of the core concentration elective courses is to provide students with areas of in-depth study, which are at the core of their major interests and career objectives. The core concentration elective courses are as follows:

1. Thermal Systems: This domain considers the broad areas of energy and turbomachinery, fluid dynamics and heat transfer. It includes study of conduction, convection, radiation, compressible and heated flows, combustion, and laminar and turbulent flows. Applications in design and analysis, processes and devices, gas turbines and renewable energy are considered. The courses offered are:

ME 428 Computational Fluid Dynamics
ME 450 Gas Dynamics
ME 452 Heat and Mass Transfer
ME 453 Turbomachinery

2. Mechanical System: The courses in this domain cover the broad areas of mechanical systems. More specifically, the focus includes, but is not limited to, the dynamic behavior of mechanisms, machines, engineering materials and manufacturing. Research methods include a blend of techniques involving mathematics and computer simulation. The courses are:

ME 410 Vibration Analysis
ME 411 Advanced Kinematics
ME 412 Advanced Dynamics
ME 427 Applications of Fracture Mechanics in Engineering Design
ME 444 Mechanics of Composite Material
ME 472 Applications of Theory of Elasticity
DM 405 Supply Chain Design
MF 330 Computer Aided Manufacturing (CAM) I
MF 440 Computer Aided Manufacturing (CAM) II
MF 461/462 Automation and Robotics I/II
MF 450 Advanced Programmable Logic Control Systems
RD 525 Principles of Quality Management

Additional Courses

ME 495 Independent Study
ME 496 Special Projects
ME 550 Thesis I
ME 551 Thesis II

Graduate Certificate Program in Automated Manufacturing

A certificate program in Automated Manufacturing Engineering is also available for practicing engineers with at least three years experience in a manufacturing environment.

The course of study for the Certificate in Automated Manufacturing Engineering includes a four-course sequence chosen from the following list of courses:

DM 405 Supply Chain Design
DM 430 Management of Design for Automation
MF 440 Computer Aided Manufacturing (CAM)
MF 450 Programmable Logic Control Systems
MF 454 Product and Process Design for Manufacturing
MF 461 Automation and Robotics I
MF 462 Automation and Robotics II

Master of Science in Software Engineering (MSSE)

Introduction

The School of Engineering offers a master's degree in software engineering (MSSE) as well as graduate-level certificate programs in select areas of software engineering. The MSSE program is intended to serve the needs of software application developers, web programmers, network and information security administrators, database administrators, and other information technology professionals. Students who do not meet a minimum experience level, or who have other skill deficiencies, will be required to take one or more bridge courses to strengthen their capacity to meet the MSSE curriculum demands.

The certificate programs allow software professionals to upgrade their skills in selected areas. Certificate program students enroll under "special student" status and participate in courses offered through the MSSE program, earning a Certificate of Completion. The certificate credits could count toward the MSSE degree should students choose to pursue it. Four certificate programs are available: Web Applications Development, Database Management, Information Security, and Network Technologies.

Program Overview

Engineering education programs seek to impart technical, mathematical, and engineering design knowledge that can be applied to the creative development of products, or solutions to problems, that are useful to society. The MSSE program emphasizes software as the product to be built, recognizing that social progress and the national economy depend on knowledge industries as well as on traditional manufacturing, and aims to meet the challenge of progressively increasing demand for the skills and competencies of software engineers.

A special feature of the MSSE program at Fairfield is a team-driven software engineering capstone course during which students experience the various phases of the software engineering development lifecycle while working on significant software development projects chosen by the faculty. The criteria for the projects are that they are complex, allow the students to experience advanced software engineering topics, and are multi-semester long with students joining for two semesters each.

Learning Goals

Students in the MSSE program will be instructed to analyze, design, verify, validate, implement, apply, and maintain software systems. Specifically, the following methodologies and skills will be emphasized:

- Requirements gathering methodologies
- Object-oriented design and prototyping following agile and traditional software life cycles
- Project management in software design and development
- Software system implementation using various software development tools
- Software testing and maintenance
- Software documentation

In sum, students will acquire the skills and real-world knowledge to succeed in the software engineering field through an in-depth exposure to the software development methodologies and tools. A sequence of required courses and elective courses, and the final team-driven capstone project provide depth and breadth to the students' learning experiences.

In addition to required courses, those in specialization areas build strong in-depth technical knowledge and skills in the area of student's interest. Courses in other engineering and management fields are available as electives.

Students

The students who enroll in the MSSE program are:

- IT workers who, responding to the demands of their industry, need to acquire new skills and master new tools to effectively guide software development in their company,
- technologists who wish to fulfill their needs for personal and professional growth,
- engineers and scientists who aspire to a career change,
- undergraduate students in software engineering, computer engineering, or computer science who seek the opportunity to continue their studies for an advanced engineering degree at Fairfield University.

Students who wish to retrain to move from a different discipline into software engineering are welcome to enroll in the program. They may expect to do as many as 9 credits of work to catch up in the field. For example, students with no prior programming experience would be required to take programming language courses under advisement from the program director. Students may also be encouraged to take additional non-credit courses during their graduate work as needed. These additional prerequisites will be determined on an individual basis.

Software is ubiquitous in all modern technology, and software engineers with skills and knowledge of software design, development and management are a valuable resource, and very well-sought after.

The MSSE Curriculum

MSSE students will complete seven required courses, as described below. In addition, students should select one specialization area in which they have an interest, namely computer programming, web technologies, database architecture, computer networking, and health informatics. Each specialization area consists of three required courses. Students may also take two elective courses offered in any engineering graduate program.

Prerequisites and Foundation Competencies

The MSSE degree requires students to have competencies that will allow them to pursue graduate coursework. Knowledge and/or experience in data structures, applications programming, systems analysis and design, and mathematics is required. Gaps in knowledge and experience in these areas can be remedied by following bridge courses offered in the MSSE program:

- SW 131 Fundamentals of Programming for Engineers
- SW 232 Advanced Programming and Data Structures
- SW 355 Database Management Systems

Students may take *SW 407 Introduction to Programming course* , a fast-paced one semester bridge course combining SW 131 and SW 232. Students who are accepted conditionally into the program with certain bridge courses should complete the bridge requirement within two semesters with a grade of B or higher to satisfy the bridge requirement. Students may take graduate level courses and bridge courses at the same time. Bridge courses do not count for credit towards the degree.

The MSSE Program Requirements

Completion of a minimum of 10 three-credit courses, plus the two-semester capstone or thesis course, for a total of 36 credits, comprise the graduation requirement for the MSSE program.

Required Courses - 21 credits

The program requires two capstone or thesis courses and five required core courses listed below to cover the software project management and software development life cycle of requirements gathering, analysis, design, prototyping, implementation, testing, deployment, and maintenance.

Five required core courses (15 credits) are:

- SW 400 Software Engineering Methods - an exploration of requirements gathering, system analysis, to a specific software project.
- SW 401 Software Design Methods - an exploration of software design, modeling language, design patterns, and prototyping of application to a specific software project.
- SW 409 Advanced Programming in Java or SW 506 Advanced Programming in C# - build proficiency at an advanced level in one programming language.
- SW 420 Software Testing and Maintenance - an exploration of software testing and maintenance of the software system.
- SW 421 Software Project Management - an exploration of software project activities from conception to completion based on best practices.

Two options for a two-semester long required course sequence as described below.

Capstone Option, SW 550, SW 551 (6 credits)

The Capstone projects are team driven. The results of these projects provide a library of case studies, designs, and tools that will be of general interest to information technology professionals and organizations in the area.

Students in the Software Capstone Project class are typically organized into teams that contribute to a significant software development project. These projects are chosen to advance the student's knowledge in topics related to the specialization areas. Students consult with their advisors and instructors to determine which projects will contribute most to their education. Students may also suggest projects if they are of sufficient complexity and will advance their knowledge in an area of interest. A capstone topic should be approved by the instructor and accepted by the director of the program prior to starting the capstone sequence.

Thesis Option, SW 560, SW 561 (6 credits)

Students may choose the thesis option at the agreement of a faculty member and approval by the program director.

In the event that a student in one option (Capstone or Thesis) wishes to switch to the other option, the course that was taken in one option will not count toward fulfilling the graduation requirement. Capstone or thesis classes can be taken only after the completion of 18 credits at the minimum.

Specializations / Concentration Courses - 9 credits

A. Computer Programming
This specialization allows professionals to gain a greater understanding of object-oriented programming languages and object-oriented design of software systems. It includes Operating Systems, Algorithms, and Network Programming.

Courses in this area are:
SW 427 Operating Systems and Programming
SW 499 Algorithms
ECE 460 Network Programming

B. Web Technology
This specialization allows professionals to gain a greater understanding of the leading technologies in building web application systems. Coursework focuses upon topics important to the web architect such as Web design, web development, sever management, and web application security. The tools used by the student are the most up to date tools available such as Dreamweaver, Visual Studio, .NET, JBoss, Eclipse, and WebSphere, etc.

Courses in this area are:
SW 406 Web Client-Side Development I
SW 512 Web Development II with ASP.NET
SW 410 Enterprise Java
SW 516 High Performance Database Web Applications
SW 448 Server Management
SW 531 Applications and Data Security

C. Database Architecture
This specialization allows professionals to gain a greater understanding of database architecture and design. It includes modeling, designing, implementation, testing of the complex database with associated software, and database maintenance. Coursework in database architecture focuses on database performance issues, database clusters, distributed databases, data warehousing, data mining, object relational mapping, and information security.

Courses in this area are:
SW 505 Advanced Database Concepts
SW 508 Data Warehouse Systems
SW 518 Data Mining and Business Intelligence

D. Computer Networking
Students get hands-on experience with network system architecture, networking programming, routers and switches, and develop the skills to perform secure network capacity planning and performance monitoring. This course of study combines vendor independent concepts and analytical skills development with work utilizing state of the art equipment from Cisco and Microsoft and other important vendors in the networking industry.

Courses in this area are:
SW 404 Network Concepts
SW 596 Network Routing and Switching
ECE 460 Network Programming
SW 448 Server Management
SW 599 Information Security Measures and Countermeasures

D. Health Informatics
This specialization provides students with the knowledge and skills to innovate and lead in Health Informatics area in the framework of research and development in academic institutions, research institutions, service organizations and a wide variety of science, technology or business domains. Students build the knowledge and tools to create the next generation of Health Informatics solutions to technological and societal problems.

Courses in this area are:
SW 480 Health Information Systems
SW 481 Human Computer Interface
RD 500 An Introduction to Systems Engineering
RD 525 Principles of Quality Management

Elective Courses - 6 credits
Electives may be chosen from courses listed under Software Engineering Graduate Certificate Programs, as well as SW 482: Special Topics, and SW 483: Independent Study, or any other Engineering Master level course.

Software Engineering Graduate Certificate Programs

Applicants interested in earning a certificate of advanced study in Software Engineering (12 credits) and those interested in taking selected courses from the Software Engineering curriculum may be admitted on a non-matriculating basis to the School of Engineering as special-status students. Non-matriculated students must have a Bachelor degree from an accredited university and a minimum of three years experience as a professional software developer or programmer, and academic and professional records that suggest the likelihood of success in demanding graduate courses. Non-matriculated students are admitted to courses on a seating-available basis only. Matriculated students are given preference for course offerings, especially for required and core courses.

Web Applications Development Certificate

SW 406 Web Client-Side Development I
SW 506 Visual C# for Programmers II
SW 512 Web Development II with ASP.NET
SW 531 Applications and Data Security
OR
SW 406 Web Client-Side Development I
SW 409 Java for Programmers II
SW 410 Enterprise Java
SW 531 Applications and Data Security

Database Management Certificate

SW 505 Advanced Database Concepts
SW 508 Data Warehouse Systems
SW 518 Data Mining and Business Intelligence
SW 531 Applications and Data Security

Information Security Certificate

SW 404 Network Concepts
SW 530 Introduction to information Security
SW 531 Applications and Data Security
SW 599 Information Security Measures and Countermeasures

Network Technology Certificate

SW 404 Network Concepts
SW 448 Server Management
SW 596 Network Routing and Switching
SW 599 Information Security Measures and Countermeasures

Note: The sequence of courses SW 404 and SW 596 provides students with the course materials needed to prepare for and take Cisco Certificated Networking Associate (CCNA) examination. These students are provided with the opportunity for a voucher to partially cover the cost of that certification test.

Master of Science in Electrical and Computer Engineering (MSECE)

Introduction

Electrical and computer engineering at Fairfield University is an inter-disciplinary program that enables its graduates to study several fields including (but not limited to) engineering, mathematics, science and business. The interdisciplinary nature of the program affords the students a chance to establish an educational identity that is unique. Students can learn topics in subject areas that include computer hardware, power, VLSI, sensors, mixed signals, measurement, control, biomedical, computer and nanotechnology.

An MSECE graduate student can focus on topics that can result in a leadership position in a high-technology industry. In a time when the ability to innovate is the only sustainable competitive advantage, an ECE degree unlocks the door to an entrepreneurial career. Our graduates work to design and build state-of-the-art products and are highly sought after by employers.

The MSECE program takes advantage of elective courses offered by the School of Engineering master's degree programs in mechanical engineering, mathematics, software engineering and management of technology. As a consequence, students gain technical skills and a sense of the economic and business values needed to employ technology to serve society's needs. Some of our students have selected to participate in business plan competitions and engage in engineering entrepreneurship. We have strong ties to the Inventors Association of Connecticut, the Technology Venture community and local industry.

Program Overview

The MSECE program provides students with the knowledge and skills to innovate and lead in their discipline in the framework of research and development in academic institutions, the industrial workplace, research laboratories, or service organizations. The basic objectives of the MSECE program include the following:

- Students receive the tools they need to take the lead in creating next generation technologies using fundamental design disciplines. Sequences of electives, as well as a master's thesis, provide depth in their learning experiences.
- Students gain exposure to the high-tech areas of electrical and computer engineering, including system and product engineering, hardware and software design, embedded systems, communications, control systems, computer architecture, and visualization and multimedia systems. Students have the opportunity to become skilled in creating unique object-oriented designs. State of the art facilities available in the School of Engineering, and close interactions with industry, assist in those tasks.
- The MSECE program provides undergraduate students with the opportunity to pursue a graduate degree program that broadens their career path, ultimately leading to leadership roles.

Students

Electrical and computer engineering embodies the science and technology of design, implementation, and maintenance of software and hardware components of modern electrical, electronics, computing and network systems. This discipline has emerged from the traditional fields of electrical engineering and computer science. Hence, the student population for the program has several origins. Typical examples include the following:

- Engineers and scientists who, responding to the specific needs of their industry across the spectrum of electrical and computer engineering domains, need to acquire skills to effectively guide the development of technologies that will enhance product quality and business opportunities
- Engineers and scientists who wish to fulfill their needs for personal and professional growth and achieve entrepreneurship in the IT domains
- Engineers aspiring to a career change
- Undergraduate engineering students and alumni with B.S. degrees, who seek an opportunity to continue their studies for a graduate engineering degree at Fairfield University.

In addition to mathematics and science, MSECE graduates have a solid foundation in electronics, logic design, micro-devices, computer organization and architecture, and networking, as well as an understanding of software design, data structures, algorithms, and operating systems.

Graduates are employed in several industries, including the computer, aerospace, telecommunications, power, manufacturing, defense, and electronics industries. They can expect to design high-tech devices ranging from tiny microelectronic integrated-circuit chips to powerful systems that use those chips, and efficient interconnected telecommunication systems. Applications include consumer electronics; advanced microprocessors; peripheral equipment; systems for portable, desktop, and client/server computing; communications devices; distributed computing environments such as local and wide area networks, wireless networks, Internets, Intranets; embedded computer systems; and a wide array of complex technological systems such as power generation and distribution systems and modern computer-controlled processing and manufacturing plants.

The MSECE Curriculum

Students in the MSECE program must complete either 33 credits, including a thesis, or a non-thesis option comprising 36 credits. Several electives are available to students across several areas of specialization. Upon admission, students meet with an advisor to prepare a plan of study that will lead to a master's degree in electrical and computer engineering in the most time-effective manner while meeting the student's professional needs.

Students must have an approved plan of study by the end of their first term. The curriculum advisor must approve the plan of study. A plan of study may be changed at any time, with advisor approval.

Required courses

- Graduate Programming Elective
- Graduate Mathematics Elective
- ECE 420 Readings in Electrical and Computer Engineering

Thesis Option

- ECE 550 Thesis I
- ECE 551 Thesis II
- ECE 552 Thesis III

Students may continue the thesis option provided they earn an A- or better in the Readings class, ECE 420, and secure the approval of the program director. In the event that a student in the thesis track wishes to switch to the non-thesis option, Thesis I and Thesis II credits that might have been earned in the pursuit of a thesis will not count toward fulfilling the graduation requirement.

Graduate Programming Electives:
SW 410 Enterprise Java
ECE 406 Advance Digital Design
ECE 410 Voice and Signal Processing
ECE 433 Biomedical Visualization
ECE 440 Computer Graphics
ECE 460 Network Programming
ECE448 Embedded Microcontrollers
ECE431 Biomedical Signal Processing

Graduate Mathematics Electives:
ECE 415 Numerical Methods of Engineering
MA 400-500 Mathematic Elective
MA 435/436 Algebra and Linear Algebra
MA 451/452 Probability and Statistics
MA 550 Financial Mathematics
MA 577 Numerical Analysis

Core Courses and Electives

Ten domains of knowledge and skills, shown below, specify available tracks and electives in the MSECE program. This portion of the program provides students with areas of study that are at the core of their major interest and career objectives.

ECE Domains

1. Electronic Product Design. The courses in this domain cover the nature and properties of materials used in electronic devices and, in particular, management of the thermal environment for the safe operation of the devices.

ECE 405 Electronic Materials
ECE 425 Thermal Management of Microdevices
ECE 448 Embedded Microcontrollers
ECE 448L Embedded Microcontrollers Lab
ECE 510L Product Design Lab

2. The Architecture of Microelectronics. The courses in this domain consider the design of analog, digital, and mixed-mode integrated circuits, along with the methods of fabricating high density interconnection structures for manufacturing microelectronic assemblies: thick films, thin films, printed circuit boards and nanotechnology.

ECE 435 Microelectronics
ECE 445 Digital Integrated Circuit Design
ECE 447 Analog Integrated Circuit Design
ECE 515L Microelectronics Lab
ECE 451 Nanoelectronics I
ECE 452 Nanoelectronics II

3. Systems Design. This domain includes studies of the fundamentals of linear and nonlinear electric circuits.

ECE 455 Sensor Design and Applications
ECE 457 Advanced Linear Systems
ECE 465 Nonlinear Control Systems
ECE 520L System Design Lab

4. Communications Systems. This domain considers the generation and transmission of electromagnetic waves. Structures used in microwave propagation, including transmission lines, waveguides, resonators, and antennas are also considered.

ECE 407 Fiber Optic Transmission and Communication
ECE 407L Fiber Optic Transmission and Communication Lab
ECE 475 Microwave Structures I
ECE 476 Microwave Structures II
ECE 480 Wireless Systems I
ECE 481 Wireless Systems II
ECE 485 Digital Communications
ECE 490 Analog Communications Systems
ECE 525L Communications Systems Lab

5. Power and Power Electronics. The courses in this domain consider the design and application of electronic circuits related to power generation, conversion and distribution.

ECE 495 Power Generation and Distribution
ECE 496 Fault Analysis in Power Systems
ECE 505 Advanced Power Electronics
ECE 530L Power Electronics Laboratory

6. Signal Processing. This domain covers one-dimensional and two-dimensional signal processing. These include audio devices like CD players, electronic music synthesizers, sound cards, etc. It also includes image processing applications like machine inspection,remote sensing, and security.

ECE 410 Voice and Signal Processing
ECE 430 Image Processing

7. Scientific Visualization. This domain examines the process of converting to a visual form to improve understanding of the data. Applications are in gaming, simulation computational physics, high-energy astrophysics, cosmology, and high-energy physics.

ECE 433 Biomedical Visualization
ECE 440 Computer Graphics
ECE 460 Network Programming

8. Embedded Systems. The embedded systems domain is critical to the creation and deployment of smart systems, which are today embedded in networks that use microchips and computers. Understanding the process by which software and hardware mechanisms allow computations and communications with networks of computers is crucial to this domain.

ECE 406 Advanced Digital Design
ECE 460 Network Programming

9. Enterprise Computing. The enterprise computing domain addresses the needs of companies based on information technology for their successful operations by providing expertise in server-side application development. This is the enabling technology for deploying business services on the Web; it is further in accord with the new model of Internet services where Web content is replicated in different geographic locations on the Internet for faster accessibility by Web users and Web-based technologies.

SW 402 Database Concepts
SW 410 Enterprise Java

10. Biomedical Engineering. The courses in biomedical engineering address the application of engineering principles and techniques to the medical field. It combines the design and problem solving skills of engineering with medical and biological sciences to help improve patient healthcare and the quality of life of individuals.

ECE 431 Biomedical Signal Processing
ECE 432 Biomedical Imaging
ECE 433 Biomedical Visualization

MSMOT Course Descriptions

Students in the MSMOT Program are required to complete 12 courses (36 credits). This includes six required courses, two semesters of the capstone course and four electives. Upon earning 27 credits, students are qualified to take the first of the two capstone courses. Core courses will be selected from the areas of concentration that are (a) Management of Information Technologies, (b) Management of Design and Manufacturing, and (c) Strategic Management of Resources. The 12 courses should be taken within a five-year period to obtain the degree.

Bridge Courses

Students without prior formal knowledge and experience in probability and statistics, computer programming, and accounting are required to complete courses BR 1, BR 2 and BR 3 as early as possible.

BR 1 Probability and Statistics
This bridge requirement may be satisfied by an undergraduate level course in statistics and probability given by any accredited institution of higher learning. Courses at Fairfield University recommended for this bridge are MA 17 or MA 217. (See undergraduate catalog or SOE website for a description.)

BR 2 Computer Programming
This bridge requirement may be satisfied by an undergraduate level course in a programming language given by any accredited institution of higher learning. Courses at Fairfield University recommended for this bridge are SW 131 or CS 141. (See undergraduate catalog or SOE website for a description.)

BR 3 Financial Accounting
This bridge requirement may be satisfied by an undergraduate-level course in financial accounting given by an accredited institution of higher learning. Courses at Fairfield University recommended for this bridge are AC 11 or AC 400. (See the Dolan School of Business catalog for a description.)

Required Courses

AC 500 Accounting for Decision Making
This course emphasizes the use of accounting information by managers for decision-making. It is designed to provide managers with the skills necessary to interpret analytical information supplied by the financial and managerial accounting systems. The financial accounting focus is on understanding the role of profitability, liquidity, solvency and capital structure in the management of the company. The managerial accounting focus is on the evaluation of organizational performance of cost, profit, and investment centers. (Prerequisite: AC 400 or an equivalent course in financial accounting) Three credits.

CP 551 Capstone I - Project Definition and Planning
In this first semester of the capstone course, students form project groups, conceive technical approaches to problem solutions, and develop detailed plans and a schedule for project activities. Students execute the planning process using appropriate professional software such as Microsoft Project. The course includes software refresher lectures early in the semester. Students in each team produce a detailed project plan defining the work to be done (task descriptions), the task/subtask organizational structure, task responsibilities (assigning who does what), the task execution schedule (using Gantt charts as managing tools), areas of risk and risk abatement concepts, and provide an explanation of the value of the work to be performed to fulfill the objectives. Three credits.

CP 552 Capstone II - Project Execution and Results

The second semester of the capstone course concerns implementation of the project plan developed in the prior semester. This typically includes hardware fabrication, software development supporting analytical work, detailed design, experimental studies, system integration, and validation testing, all of which serve as proof of meeting project objectives in data and functional demonstrations. Project teams submit a final report for grading and make a formal presentation to faculty, mentors, and interested personnel from associated industries. Three credits.

DM 460 Project Management

This course concentrates on the general methodology of managing a technology project from concept to operational use with emphasis on the functions, roles, and responsibilities of the project manager. Study of the basic principles and techniques related to controlling resources (i.e. people, materials, equipment, contractors, and cash flow) to complete a technology project on time and within budget while meeting the stated technical requirements. Through group and individual activities, including case study review, students will learn to apply project management tools and techniques. Three credits.

GK 415 Information Systems

This course offers insights into the capabilities of modern software and computing systems, allowing prospective technology managers to discriminate between effective and ineffective applications of software and network systems - considerations essential to managing businesses that depend upon efficient data and information processing. The course covers inputs, outputs, storage, transmission media and information processing, and networking. The course presents current Information Technology (IT) topics designed to enable one with knowledge vital to a successful career as a manager. The student is provided with a knowledge of: hardware and software fundamentals, system categories, overviews of programming languages, networks and communications concepts, e-commerce concepts, cloud and distributed computing, middleware, database technology, ERP with an overview of the SAP product, system planning, systems development methodologies, traditional and object oriented analysis and design techniques, software package evaluation & selection techniques, IT management issues and practices. In class case studies are discussed and lectures may at times delve into deeper technical matters. This course provides the student with both conceptual and managerial knowledge as well as practical hands on knowledge, useful in joint project team settings and designed to allow one to better lead and participate in company projects. Three credits.

MG 508 Strategic Management of Technology and Innovation: The Entrepreneurial Firm

This course begins by presenting cutting-edge concepts and applications so that students understand the dynamics of innovation, the construction of a well-crafted innovation strategy, and the development of well-designed processes for implementing the innovation strategy. It then focuses on the building of an entrepreneurial organization as a critical core competency in the innovation process. Concurrent with this, it focuses on the development and support of the internal entrepreneur or Intrapreneur as part of the process of developing organizational core competencies that build competitive comparative advantages that, in turn, allow the firm to strategically and tactically compete in the global marketplace. Topics explored include technology brokering, lead users, disruptive technologies and the use of chaos and complexity theory in the strategic planning process. Three credits.

MG 584 Global Competitive Strategy

This course considers the formulation of effective policy and accompanying strategy actions, and the management of such policies and actions. It examines the role of the general manager in this process and presents the diversified issues and problems the management of a business firm may be required to consider and solve in strategic planning. This course also examines the problems and tasks of strategy implementation and the general manager's function of achieving expected objectives and establishing new ones to assure the continuity of the business organization. Students are required to prepare a business plan as part of this course. Three credits.

RD 460 Leadership in Technical Enterprise

This course introduces major leadership theories and explores the issues and challenges associated with leadership of technical organizations. The course integrates readings, experiential exercises, and contemporary leadership research theory. Participants investigate factors that influence effective organizational leadership as well as methods of enhancing their own leadership development. The course prepares executives, supervisors, and managers to master the complex interpersonal, social, political, and ethical dynamics required for leading modern organizations. Three credits.

RD 500 An Introduction to Systems Engineering

This course introduces students to the fundamental principles of systems engineering (SE) and their application to the development of complex systems. It describes the role that systems engineering plays as an integral component of program management. Topics include requirements analysis, concept definition, system synthesis, design trade-offs, risk assessment, interface definition, engineering design, system integration, and related systems engineering activities. The Friedman-Sage matrix is used as a framework for analysis purposes. The course defines the breadth and depth of the knowledge that the systems engineer must acquire concerning the characteristics of the diverse components that constitute the total system. Case studies and examples from various industries are used to illustrate the systems engineering process. Three credits.

RD 525 Principles of Quality Management

This course is designed to provide a comprehensive coverage of quality management including planning, assurance and control. It provides an introduction to the fundamental concepts of statistical process control, total quality management, Six Sigma and the application of these concepts, philosophies, and strategies to issues arising in government and industry. Emphasis will be placed on both theory and implementation methods. Students will gain an understanding of the application of the numerical tools used by teams in the quality management problem-solving process. Statistical methods and case studies are employed. The course is designed to assist students in developing processes by which they will be able to implement these methods in their working environment. Three credits.

NOTE:

The following section presents descriptions of typical courses that may be used to fulfill the elective requirements.

DM 405 Supply Chain Design

This course deals with the optimization of processes in a supply chain using analytical techniques and modeling. The term "supply chain" refers to all the resources required in moving material through a network of manufacturing processes, quality assurance measures, maintenance, and customer interfaces to produce, deliver, and maintain a product. These are modeled using simulation of this chain, permitting an analyst to design the supply chain and to predict its performance. Students are taught to create discrete simulation models that will reflect the actual performance of a supply chain, prior to committing investments in inventory, procurement and fabrication. These simulations offer three general benefits: a) may be used to achieve an optimized design; b) may be used in solving production expansion needs; and c) can be used to locate and correct problems in an existing manufacturing system. Three credits.

DM 407 Design of Manufacturing Systems and Processes

In this course, students will learn the significance and ramifications of "Lean Manufacturing" practices and advantages they provide to a manufacturing company. They will learn how to analyze the cross functional processes and to understand how strategic business objectives are translated into specific actions involving facilities, equipment, new skills, and process improvements that must be achieved. Tactical planning and execution design are introduced using specific analytical techniques including: (1) statistical segmentation of demand, (2) production and inventory considerations of facility and product design, including the impacts of variability, (3) use of statistical segmentation for make-to-stock, make-to-order, and make-to-plan strategies, (4) introduction to replenishment techniques including: level loading, rhythm cycles and considerations for safety and cycle stock, and (5) use of postponement strategies in optimizing inventory control. Three credits.

DM 420 Design for Economy and Reliability

Considerations of reliability permit a product to achieve a desired performance throughout its service life, thereby satisfying those who have purchased it. Careful thought and design produce reliability and economy of manufacture. This course instructs the prospective technology manager in the considerations leading to creation of cost-effective products of quality and presents: (1) the Total Design method, (2) concurrent engineering and the effective use of design reviews, (3) quality function deployment, (4) cost structures and models, (5) materials selection and economics, (6) robust design validation techniques and the Taguchi method, and (7) the Fault Tree and its use as a diagnostic aid in design validation. Three credits.

DM 430 Management of Design for Automation

This course addresses the need for inherent flexibility in modern manufacturing systems that must accommodate changing product lines through the application of robotics and other forms of programmable automation, and the need to provide rapid, accurate communications between business managers, design engineers, and product managers. Effective product design requires a basic understanding of the manufacturing system being used in production including: mechanical design of all material manipulators and material handling equipment, design compatibility between all parts and the automation equipment considered for use. Coursework dealing with these issues includes: 1) the organization and scheduling of manufacturing processes, 2) the principles of programmable automation, 3) the theory and application of Boothroyd's design for assembly methodology, 4) process cost estimation techniques, 5) methods for judging the soundness of investments in manufacturing equipment that a specific design may require, 6) market implications and the effect of design features on sales revenue and product market life, and 7) social impacts. Three credits.

MG 500 Managing People for Competitive Advantage

This course focuses on effectively managing people in organizations by emphasizing the critical links between strategy, leadership, organizational change, and human resource management. The course assists students from every concentration including finance, marketing, information systems, and accounting to become leaders who can motivate and mobilize their people to focus on strategic goals. Topics include the strategic importance of people leading organizational change, corporate social responsibility, implementing successful mergers and acquisitions, and fundamentals of human resource practices. Discussions interweave management theory and real world practice. Class sessions are a combination of case discussions, experiential exercises, and lectures. Three credits.

MG 503 Legal and Ethical Environments of Business

This course helps students become more responsible and effective managers when involved in the gray areas that call for insightful judgment and action. Students develop skills in logical reasoning, argument and incorporation of legal, social, and ethical considerations into decision-making. The course teaches the importance of legal and ethical business issues and enables students to make a difference in their organizations by engaging in reasoned consideration of the normative actions of the firm. Using the case study method, the course provides an overview of current topics, including the legal process, corporate governance, employee rights and responsibilities, intellectual property and technology, and the social responsibility of business to its various stakeholders. Three credits.

MK 400 Marketing Management
This course examines analytical and managerial techniques that apply to marketing functions with an emphasis on the development of a conceptual framework necessary to plan, organize, direct, and control the product and strategies needed for promotion, distribution and pricing of a firm's products. The course also considers the relationship of marketing to other units within a firm. Three credits.

OM 400 Integrated Business Processes
Process management is concerned with the design and control of processes that transform inputs (such as labor and capital) into finished goods and services. Course topics include process mapping, quality management and control, capacity planning, supply chain management, and operations strategies. The course uses case studies to show how concepts and models presented in lectures and readings apply to real-world business situations. Three credits.

RD 450 Management of Risk in Research and Development
This course addresses the formation and development of new ideas and their subsequent use in the creation of products and services. This involves the creation of systems developed from the integration of knowledge in design, development, software and economics and the application of Earned Value and Accountancy. The knowledge so gained is to be applied, often iteratively, to create new conceptions of products and service. This work simultaneously addresses performance and cost. Graphic methods for planning projects are instructed. In addition specialized analytical processes are presented that permit an evaluation and critique of new concepts. These processes and techniques are applied in group activities. In addition, the course requires essential research into specific issues. This research is to be undertaken as part of homework assignments on recommended subjects in which the students will learn the methods that serve to enhance their knowledge and communicate this to enrich the lecture sessions in each class. In summary, the means for developing new ideas and methods to apply them are presented in this course. These newly learned resources will be applied in group actions to gain experience in their use and thus create useful tools for future circumstances that require their application. Three credits.

RD 485 Management of Intellectual Property
Intellectual property may exist in many forms and often goes unrecognized as a part of the wealth of corporations when it can actually represent the most valuable property a corporation holds. This course instructs students in how to recognize the different types of intellectual property and the different forms of protection that may be used to protect its loss to competitive agencies. In addition to enlightenment as to what form it may take, the students are instructed in how to determine its monetary value and how to use it to advance important company objectives such as increasing sales volume and how to establish policies and methods to protect it from theft by competitive firms. Throughout the course, students learn how to address the legal issues surrounding the rights of ownership and the existence of infringements. They recognize the specific issues that distinguish an invention (or any other form of intellectual property) from its competition, causing it to obtain an edge in the market place. Three credits.

MSSE Course Descriptions

SW 400 Software Engineering Methods
This course explores the requirements gathering, system analysis, software design methods and prototyping of software application following the software processes required for the production of high quality software. Techniques for creating documentation and using software development tools will be presented. Students will gain experience in software project management; requirements, analysis, and design; procedural maturity; social, ethical, cultural, and safety issues in software development; interpersonal skills for management and team membership; and the software engineering discernment of systems architecture. Three credits.

SW 401 Software Design Methods
This course is designed to introduce fundamental concepts of object orientation techniques. Through the use of case studies and project work that has the student gradually building a large design specification, students will achieve an understanding of how complex applications are designed and built. (Prerequisite: SW 400 or permission of the instructor.) Three credits.

SW 402 Database Concepts
This course focuses on the steps required to build and maintain relational database infrastructure for modern n-tiered applications. It covers logical and physical design; implementation of the database; the use of the database to meet the informational needs of a software system; and the installation, operation and maintenance of the software. Specific topics include database design, SQL, interacting with the DBMS, backup and recovery of data security. Students perform a number of hands-on exercises using the Oracle Database Server running on the Microsoft Windows platform. This course serves as one of the bridge courses to the MSSE program. Three credits.

SW 404 Network Concepts
This course covers the structure and technologies of computer networks architecture including cabling, wiring hubs, file servers, bridges, routers, and network interface cards. It discusses network software and hardware configurations and demonstrates network concepts such as configuring protocol stacks and connecting a personal computer to a network. The course examines the OSI-model, TCP/IP protocol and routing protocols. Student will be able to do subnet of TCP/IP networks. Three credits.

SW 406 Web Client Side Development I
This course introduces the student to developing browser applications for use on the web. Students learn client side concepts including the display of static information. The course topics include designing and authoring web pages, usability, search engine optimization, markup languages, style sheet, the client side document object model, and making web pages dynamic on the client side. Three credits.

SW 409 Advanced Programming in Java
This course covers advanced topic of Java programming. Topic covers multithreading, networking, nested references, design patterns, JDBC, persistence, I/O and advanced GUI such as swing. Data structure concepts such as linked list, tree and basic searching and sorting algorithms will be covered. Lab included. (Prerequisite: SW 407 or permission of the instructor) Three credits.

SW 410 Enterprise Java
Advanced server-side Java technologies. Coverage includes state-of-the-art explorations into server-side technologies such as JDBC, Google Web Toolkit, Enterprise JavaBeans (EJB), Android, XML, etc., as time permits. Lab included. (Prerequisite: SW 409 or permission of the instructor.) Three credits.

SW 420 Software Testing and Maintenance
This course will cover in-depth methods for software testing, reliability and maintenance of software. Students will learn the principles of software testing and how to apply software testing techniques to the development of quality software and how to deploy software systems, maintain, enhance and reuse software systems. (Prerequisite: SW 400) Three credits

SW 421 Software Project Management
This course explores software project activities from conception to completion based on best practices. Topics include software systems engineering, personal/team software process management and control, and project planning and management. Through group and individual activities, students apply project management tools and techniques, and address typical problems that occur during the life cycle of the software project. (Prerequisite: SW 407 or permission of the instructor) Three credits.

SW 427 Operating Systems and Programming
This course introduces the internal operation of modern operating systems and students learn how to program on non-Window OS platform. The topics cover a brief history of operating system, the major components of modern operating systems, and the object-oriented methodology on UNIX-like platform. Various UNIX tools will be used in the course and participants study examples using object-oriented programs as well as large system integration by object-oriented methodology. (Prerequisite: SW 407 or permission of the instructor) Three credits.

SW 448 Server Management
Server Management is a course designed to provide the student with the tools necessary to manage Window Server. The topics include user management, installation and configuration of web server, mail server, FTP server, LDAP and backup and other routine system and network administration. Three credits.

SW 482 Special Topics
This course provides an in-depth study of selected topics in software engineering of particular interest to the students and instructor. The course is counted as a major elective/specialization course. The topics and prerequisites will be announced when this course is offered. Three credits.

SW 483 Independent Study
This course is an individualized study under the supervision of the faculty member. The course emphasizes individual creativity. Students work with a faculty mentor in studying and investigating topics of current interest in software engineering. Students may earn from one to three credits for an independent study course. (Prerequisite: permission of the instructor) One to three credits.

SW 499 Algorithms
This course explores the development and evaluation of algorithms. This class covers classic algorithms, algorithm analysis, searching and sorting algorithms, dynamic programming, heuristics, and graphic algorithms. Algorithm efficiency and performance is a focus as the student gains experiences through problems and programming projects. (Prerequisite: SW 407 or permission of the instructor) Three credits.

SW 505 Advanced Database Concepts
This course covers topics in database implementation designed to provide software engineers with a wide variety of server-side problem solving techniques. Topics include cursors, query and index optimization, advanced SQL programming, distributed databases, object-oriented databases, clustering, partitioning, and working with XML and other unstructured data. While Microsoft SQL Server is primarily used for demonstration, the topics covered are applicable to any database platform, and the different approaches of the major database vendors are frequently contrasted. Format consists of lecture and lab. (Prerequisites: SW 402 and SW 407, or permission of the instructor) Three credits.

SW 506 Visual C# for Programmers II

This course teaches application developers the more advanced elements of programming with Visual C# for the .NET framework. Students learn object oriented programming using classes, objects and inheritance, and cover topics such as multithreading, design patterns, and advanced GUI. Data structure concepts such as linked list, tree and basic searching and sorting algorithms will be covered. At the completion of this course, students will be able to produce complete Windows and console based applications with Visual C#. Lab included. (Prerequisite: SW 407 or permission of the instructor) Three credits.

SW 508 Data Warehouse Systems

This course examines the tools, techniques and processes used in the design and development of data warehouses. As such we will examine how to successfully gather structure, analyze, and understand the data to be stored in the data warehouse, discuss techniques for modeling the data in the data warehouse, discuss the ETL process and describe techniques for presenting and analyzing the data in the warehouse. We will also discuss capacity planning and performance monitoring. Microsoft Analysis Services and Sybase ASIQ will be examined as approaches for implementing a data warehouse. (Prerequisite: SW 402 or permission of the instructor) Three credits.

SW 512 Web Development II with ASP.NET

This course teaches site developers how to create robust, scalable, data-driven ASP.NET Web. Students learn how to create ASP.NET applications using a text editor and the command-line tools, as well as using Visual Studio. Topics include the .NET framework, web forms, validation controls, database connectivity, web services, component development, user controls, custom server controls, and best practices, etc. At the end of the course, students are able to describe the issues involved in creating an enterprise web site, creating and publishing a web site, creating interactive content for a Web site, adding server scripting to a Web page using ASP.NET, implementing security in a Web site, and reading and writing information to a database from ASP.NET. (Pre- or co-requisites: SW 406 and SW 506 or permission of the instructor.) Three credits.

SW 516 High Performance Database Web Applications

This course is an introduction to the PHP programming language. Topics include installation and configuration with the Apache http server, variables and data types, language syntax, control structures, functions, strategies and tools for handling input and generating output, error handling, sending email, manipulating dates and times, string manipulation and regular expressions, SQL and MySQL database access. The course also covers advanced topics such as MVC model-based web application development using framework and packages from the PHP Extension and Application Repository (PEAR). At the conclusion of the course, students are able to design and implement scalable data-driven web applications. (Prerequisites: SW 406, or by permission of the instructor). Three credits.

SW 518 Data Mining and Business Intelligence

This course examines business intelligence concepts, methods and processes used to improve data-centric business decision support solutions with a particular focus on data mining techniques. We will first examine the principles and practices of gathering and retrieving large volumes of data for analysis and synthesis. Next we will examine analytical techniques for extracting information from large data sets. In particular, the course examines the following data mining techniques: classification, estimation, prediction, and clustering. During the course we will also discuss knowledge management, how organizations manage and use the knowledge that they acquire, and presentation of data. Three credits.

SW 530 Introduction to Information Security

This course gives students a fundamental understanding of current Social Engineering methods in the Information Security arena. Deception and human behavior is exploited to gain valuable information, which is very relevant to today's growing security concerns. This course is another key class in the Information Security track in the MSSE program and builds upon the weaknesses in the human factor. Areas of discussion will be methods, current trends, and most of all countermeasures. Instruction includes lectures and discussion assignments which involve analyzing current work places and social gatherings coupled with scenarios of exploitation. Three credits.

SW 531 Applications and Data Security

This course is structured around enterprise and web applications and the data security associated with these applications. It encompasses the encryption schemes of transmission to execution of code and complete flight of an execution. Common countermeasure and best business practices that help ensure a solid security understanding are the objective of the course. Three credits.

SW 550 and SW 551 Capstone Professional Project I and II

In these two semester capstone courses, students form teams, perform a technical study, and design software systems based on either their customer's requirements, develop, test, and deploy software systems. The results of these projects provide a library of case studies, designs, and software development techniques, and project management skills that are of general interest to local information technology professionals. A capstone prospectus, approved by your advisor, must be submitted to and accepted by the director of the program prior to starting the capstone sequence. (Prerequisites: SW 401 and completion of 18 credits MSSE courses at the minimum.) Six credits for the two-course sequence.

SW 560 and SW 561 Software Engineering Thesis I and II
In these two semester thesis courses, a student will work on individual research project that a student should formulate as a problem, solve it under the guidance of a faculty member and communicate the results. Work involves literature search, writing a proposal, analysis and/or implementation with critical thinking, and writing convincingly. The student must also submit a final paper for possible publication in a refereed journal appropriate to the topic. (Prerequisites: SW 401 and completion of 18 credits of MSSE courses at the minimum) Six credits for the two-course sequence.

SW 596 Network Routing and Switching
The course presents concepts and develops skills needed in designing, implementing, and troubleshooting local and wide-area networks. Students design and configure LAN, WAN using routers/switches and learn component of wireless networks and how to configure it and troubleshoot the network and optimize its performance. It also provides numerous lab opportunities to configure and troubleshoot networks with Cisco routers and switches (Prerequisite: SW 404) Elective. Three credits.

SW 599 Information Security Measures and Countermeasures
This course covers current information security practices and countermeasures put in place to safeguard against security breaches. The course reviews Internet infrastructures such as firewalls, IDS systems, and honey pots. Additional areas include risk analysis, computer-use policies, physical security, Internet/intranet security, Malware, firewall infrastructure, and current information security issues. (Prerequisite: SW 404) Elective. Three credits.

MSECE Course Descriptions

Bridge Courses

Required to complete one's preparation for the master's program is strong aptitude in the area of electric circuits, fields and waves, electronic circuits and devices. Students with deficiencies in those areas should confer with the Program Director to create a course of study. (See undergraduate catalog or visit the SOE website for a description.)

ECE 405 Electronic Materials
This course describes the properties and applications of certain materials used in the design and manufacture of electronic assemblies. Ceramics are often used as insulators, heat sinks, and substrates for interconnection structures. The course presents electrical, mechanical, and thermal properties of various ceramics, along with methods of fabricating and machining ceramic structures. Adhesives used to mount components and to replace mechanical fasteners such as screws and rivets provide connections that are stronger and take up less space. The course examines properties of adhesives such as epoxies, silicones, and cyanoacrylates under conditions of high temperature storage and humidity, along with methods of applications. Solders used to interconnect electronic components and assemblies are selected for temperature compatibility, mechanical properties, and reliability. The course emphasizes the new lead-free solder materials and presents the properties of plastic materials and the methods of forming plastic structures. (Prerequisite: EE degree or equivalent) Three credits.

ECE 406 Advanced Digital Design
This course covers modern methods of digital logic design via VHDL (VHSIC Hardware Description Language) and modern design methodology. Programmable Device Architectures are discussed. Targeting both FPGA and CPLD devices, structural, behavioral, and data-flow VHDL models are developed for familiar logic and arithmetic circuits, and state machines. The difference in coding for synthesis and coding for simulation is stressed. Further development of VHDL Language skills is performed in the context of an introduction to Computer Architecture. Memory and Bus models are discussed. Design projects apply the theory to practical problems. (Prerequisite: CR 245 or permission of the instructor) Three credits.

ECE 407 Fiber Optic Transmission and Communication
This course examines the theory and basic elements of fiber optic communications systems; fundamentals of transmission in optical fibers; source component operations including light emitting diodes and solid-state lasers; and coupling element and detector devices. Students analyze modulation and demodulation techniques and determine overall loop performance relative to bandwidth and signal-to-noise ratio. Design problems enhance student understanding. (Prerequisites: EE 231, EE 301) Three credits.

ECE 407L Fiber Optic Transmission and Communication Laboratory
Students are introduced to fiber optics with experiments on Snell's Law and total internal reflection. Students then use optical test equipment to measure the characteristics and applications of fiber optic cables, including simple communication systems. Fiber optic characteristics may include losses due to transmission, mismatch, and bending, optical fiber connections and splicing, and frequency response. Both in-lab computer assisted instruction and a textbook will be used to supplement the experiments. Students prepare laboratory reports each week on their results. (Co-requisite: ECE 407) One credit.

ECE 410 Voice and Signal Processing
This course supports the signal processing and computer systems domain. It provides an overview of digital audio and its application, and discusses the current state of streaming audio on the Internet and digital audio processing fundamentals. Students apply these theories by creating programs that synthesize and process music and voice. The course exposes students to the elements of multimedia network delivery of audio content. (Prerequisite: Some Java programming or permission of the instructor) Three credits.

ECE 415 Engineering Applications of Numerical Methods
This course provides students with the theoretical basis to proceed in future studies. Topics include root-finding, interpolation, linear algebraic systems, numerical integration, numerical solution of ordinary and partial differential equations, modeling, simulation, initial boundary value problems, and two point boundary value problems. (Prerequisite: programming language skills) Three credits.

ECE 420 Readings in Electrical and Computer Engineering
Students formulate a project proposal, perform literature surveys, and learn the finer points of technical writing and presentation at the graduate level. The course requires a meta-paper written about the literature in the field. It emphasizes the basics of technical writing and research, and is organized to emphasize methods of the writing and the research process. Students learn to state a problem, the techniques of analysis, methods of investigation, and functional organization. Three credits.

ECE 425 Thermal Management of Microdevices
This course considers the generation and removal of heat in electronic assemblies. The course describes the sources of heat in an electronic assembly, such as the contribution of the switching speed and the "ON" resistance of field effect transistors at the device level, covers the effects of heat on system reliability analytically, and describes the resulting failure mechanisms in detail. It presents methods of removing heat from electronic circuits, including heat pipes, Peltier effect devices (thermoelectric coolers), and convection, using both gases and fluids to transfer heat, and describes methods of measuring heat, including contact and non-contact methods. (Prerequisite: EE degree or equivalent) Three credits.

ECE 430 Image Processing
This first course in image processing with biomedical applications covers image algebra, arithmetic operations, Boolean operations, matrix operations, achromatic and colored light, selecting intensities, Gamma correction, chromatic color, psychophysics, color models, color space conversion, low-level pattern recognition, as well as video processing, compression and two-dimensional streaming, and multi-resolution multimedia network streaming. This course requires substantial programming effort and emphasis is placed on good software engineering practices. Students write image-processing applications. (Prerequisite: ECE 410 or CR 310 or permission of the instructor) Three credits.

ECE 431 Biomedical Signal Processing
This course presents an overview of different methods used in biomedical signal processing. Signals with bioelectric origin are given special attention and their properties and clinical significance are reviewed. In many cases, the methods used for processing and analyzing biomedical signals are derived from a modeling perspective based on statistical signal descriptions. The purpose of the signal processing methods ranges from reduction of noise and artifacts to extraction of clinically significant features. The course gives each participant the opportunity to study the performance of a method on real, biomedical signals. (Prerequisites: Some Java programming or permission of the instructor) Three credits.

ECE 432 Biomedical Imaging
The course presents the fundamentals and applications of common medical imaging techniques, for example: x-ray imaging and computed tomography, nuclear medicine, magnetic resonance imaging, ultrasound, and optical imaging. In addition, as a basis for biomedical imaging, introductory material on general image formation concepts and characteristics are presented, including human visual perception and psychophysics. (Prerequisite: ECE 431) Three credits.

ECE 433 Biomedical Visualization
An introduction to 3D biomedical visualization. Various technologies are introduced, include UltraSound, MRI, CAT scans, PET scans, etc. Students will learn about spatial data structures, computational geometry and solid modeling with applications in 3D molecular and anatomical modeling. (Prerequisite: Some Java programming or permission of the instructor) Three credits.

ECE 435 Microelectronics
This course considers the methods of interconnecting electronic components at very high circuit densities and describes methods of designing and fabricating multilayer printed circuit boards, co-fired multilayer ceramic substrates, and multilayer thin film substrates in detail. It discusses the methods of depositing thick and thin film materials, along with their properties, and analyzes these structures and compares them for thermal management, high frequency capability, characteristic impedance, cross-coupling of signals, and cost. The course also includes techniques for mounting components to these boards, including wire bonding, flip chip, and tape automated bonding. (Prerequisite: EE degree or equivalent.) Three credits.

ECE 440 Computer Graphics
This course supports the visualization and computer systems domain with computer gaming applications. It is an introduction to GUI and game design and computer graphics concepts. Topics include human-computer interfaces using the AWT; applied geometry; homogeneous coordinate transforms. (Prerequisite: Some Java programming or permission of the instructor.) Three credits.

ECE 441 Computer Systems Architecture
An investigation into computer architectures (past, present and future). We will explore various hardware and software techniques designed to maximize parallelism and improve performance. Front-end design (branch prediction, instruction fetch, trace caches), HW/SW techniques of parallelism, Memory system design (caching, prefetching), Technology issues (low power, scaling, reliability, nanotechnology), multiprocessors. Class will include a mix of lectures and discussions on assigned readings of recent publications. Students will be responsible for leading and participating in these discussions. A course project exploring a particular topic in depth will be required. (Prerequisite CR 245 or permission of the instructor) Three credits.

ECE 445 Digital Integrated Circuit Design
This course considers the design and layout of digital integrated circuits. It presents the fabrication, structure, and properties of CMOS devices in detail along with the structure of basic building blocks, such as flip-flops and counters, and covers digital circuit design techniques and simulation. Students learn how to lay out digital circuits to incorporate the design requirements. The course also discusses custom integrated circuit specification and design techniques, along with economics. Three credits.

ECE 447 Analog Integrated Circuit Design
This course considers the design of CMOS analog integrated circuits. The fabrication, structure, and properties of analog CMOS devices are presented in detail along with the structure of basic building blocks, such as current mirrors and operational amplifiers. Students design and simulate circuits using Spice and lay out analog CMOS circuits using software designed for this purpose. (Prerequisite: EE 331 or equivalent.) Three credits.

ECE 448 Embedded Microcontrollers
Introduction to embedded microcontrollers in electronic and electromechanical systems. Hardware and software design techniques are explored for user and system interfaces, data acquisition and control. These tools are used to develop software code for practical applications such as motor speed control and voltage regulation for power supplies. Three credits.

ECE 448L Embedded Microcontroller Laboratory
This laboratory covers the basic operation and applications of a microprocessor. Students learn to program a microprocessor to control applications such as motor speed by the use of an emulator connected to a PC. They design a circuit using a microprocessor for a specific application and write a program to control the circuit. On completion of the program, they use the emulator to program an actual microprocessor for use in their circuit. (Co-requisite: ECE 448.) One credit.

ECE 450 Computer Animation
This overview of computer animation techniques includes traditional principles of animation, physical simulation, procedural methods, and motion-capture-based animation. The course discusses computer science aspects of animation, with lessons ranging from kinematic and dynamic modeling techniques to an exploration of current research topics - motion re-targeting, learning movements and behaviors, and video-based modeling and animation. Class projects offer hands-on animation experience. Three credits.

ECE 451 Nanoelectronics I
Building on the two introductory courses in nanotechnology, this course is the first of two that describe how nanotechnology can be integrated into the electronics industry. The unique electrical, mechanical, and optical properties of structures in the nanometer range and how they may be applied to electronics products are discussed. Principles of electronic materials, semiconductor devices, and microfabrication techniques will be extended to the nanoscale. Students will increase their knowledge of electronic structure, quantum mechanics, and the behavior of optoelectronic and low-dimensional systems. Students make extensive use of the available literature to seek out potential applications of nanotechnology. Intended for students interested in the minor in nanotechnology - Nanoelectronics track. Also open to interested graduate students in ECE. Lecture course. (Prerequisite: EG 212 or permission of the instructor). Three credits.

ECE 452 Nanoelectronics II
This second course in Nanoelectronics emphasizes present and potential applications of nanotechnology in the various fields of next-generation electronics. The course will discuss topics relevant to electromagnetism at the nanoscale, MEMS/NEMS, nanosensors, nano-optics, molecular electronics, and nanoelectronic interfaces with biology. Student teams will survey the available literature and companies involved in designing and manufacturing devices with Nanoelectronics as a core to select a product for analysis in terms of technical and economic advantages, and present their findings. Teams of students also conceptualize a potential product, and perform the same analysis. Intended for students interested in the minor in nanotechnology - Nanoelectronics track. Also open to interested graduate students in ECE. (Prerequisite: ECE 315 /ECE 451). Three credits.

ECE 455 Sensor Design and Application
This course covers the design, fabrication, and properties of sensors intended to measure a variety of parameters, such as stress, temperature, differential pressure, and acceleration. Sensors of different types are used in a wide range of equipment, especially automated equipment, to detect changes in state and to provide the signals necessary to control various functions. Sensors are generally connected to electronics systems that process and distribute the signals. The support electronics must identify the signal, separate it from noise and other interference, and direct it to the appropriate point. These support electronics are a critical part of the sensor technology; students discuss their design and packaging in detail. (Prerequisite: EE degree or equivalent.) Three credits.

ECE 457 Advanced Linear Systems
This course considers the use of Laplace transforms to solve linear systems with multiple time constants and the solution of multiple linear simultaneous equations. The analysis of linear systems usually results in the generation of transfer functions in s, the Laplace transform variable. Particular attention is given to the electrical and mechanical implementation of these transfer functions in linear systems using both analysis and synthesis techniques. (Prerequisite: EE 301 or equivalent.) Three credits.

ECE 460 Network Programming
This course covers principles of networking and network programming. Topics include OSI layers, elementary queuing theory, protocol analysis, multi-threading, command-line interpreters, and monitors. Students write a distributed computing system and check their performance predictions with experiments. Three credits.

ECE 461 Green Power Generation
This course compares various methods of green power generation including solar power, wind power, water power, and several others. This course covers how power is generated from these sources, the startup costs, the efficiency, and the practicality. These methods are compared to the present most common method of using oil and gas to heat water into steam to turn turbines. The student does not necessarily need a background in engineering and any necessary background material will be covered to the understanding of all. Three credits.

ECE 465 Nonlinear Control Systems
Control systems are used in many industrial applications to control processes or operations and in many non-industrial applications as well. Nonlinear control systems are frequently used in applications where the control variables have a wide dynamic range. Unlike linear systems, the analysis of nonlinear systems rarely results in a closed-form mathematical expression. This course considers the analysis and applications of nonlinear control systems by numerical and graphical techniques and considers means of implementing the solutions. (Prerequisites: EE 302 or equivalent.) Three credits.

ECE 470 Network Embedded Systems
This course covers distributed development - connecting peripherals to networks via Java. Plug-and-play paradigm is used to add services on the fly. Students learn about the following topics: multicast and unicast protocols, service leasing, lookup services, remote events, sharing data between distributed processes, and distributed transactions. The course also covers interfacing hardware (sensors, robotics, etc.) to the Web. Three credits.

ECE 475 Microwave Structures I
This course considers the analysis and design of structures used in microwave transmission and reception. The course covers distributed parameters in detail, leading to a discussion of the properties of transmission lines. It presents the utilization of distributed parameter structures to design filters, couplers, and mixers, along with methods of implementation. Also included are strip line and microstrip transmission lines and filters. The course discusses microwave devices, both Si and GaAs, including low-power and high-power devices and laser diodes. (Prerequisite: EE 321 or equivalent.) Three credits.

ECE 476 Microwave Structures II
This course is a continuation of ECE 475 and covers the design and analysis of microwave amplifiers, oscillators and mixers, frequency multipliers, and antennas. The course begins by presenting electrical models of RF components and relating those models to design methods. The effects of internal and external noise are considered in the models. Practical applications and design are emphasized. (Prerequisite: ECE 475). Three credits.

ECE 480 Wireless Systems I
The applications of wireless communication are expanding rapidly - from cellular phones to wireless internet to household appliances - and involve many disciplines other than microwave transmission. This course covers several aspects of wireless communication, including antenna design, FCC regulations, and multi-channel transmission protocols. In addition, it discusses modern design approaches such as Bluetooth. Students learn how analog and digital signals are coded. The course also discusses transmission during interference and EMI/RFI as well as fiber optics communication. (Prerequisite: EE 321 or equivalent.) Three credits.

ECE 481 Wireless Systems II
This is a continuation of ECE 480. The topics to be covered include diversity, coding, multiple antennas, and equalization. Modern applications requiring Multicarrier Modulation and Spread Spectrum techniques are also discussed. The course concludes with an examination of 3G and 4G methods and applications. (Prerequisite: ECE 480) Three credits.

ECE 483 Independent Study
Students pursue special topics, projects, and/or readings in selected areas. Students must meet with the instructor to discuss the proposed topic of study. (Prerequisite: Permission of the instructor.) Three credits.

ECE 485 Digital Communications
This course is designed to explore current digital communications features, including network communications between computers. It includes discrete time signals and systems, Z-transforms, discrete Fourier transforms, fast Fourier transforms, digital filter design, and random signals. Fundamentals of sampling principles and channel coding are utilized to develop common baseband and digital modulation techniques (ASK, FSK, PSK, PCM, and delta modulation). Transmission over bandwidth constrained channels, and signal detection and extraction. Multiplexing and multiple access networks are also analyzed. The lecture material is illustrated with practical examples. (Prerequisite: EE 301 or equivalent.) Three credits.

ECE 490 Analog Communication Systems
The course focuses on analog communication systems and the effects of noise on those systems, developing modulation and demodulation techniques (amplitude, frequency, and phase modulation and pulse code). It discusses dealing with non-linear system elements and presents a mathematical treatment of the effects of various noise sources on these systems. Historical design studies and topics in communication applications permit students to apply these concepts to meet system requirements. The course clarifies important concepts through simulation of modulation techniques on multimedia computing systems. (Prerequisite: EE 301.) Three credits.

ECE 495 Power Generation and Distribution
This course considers the generation and distribution of electrical power to large areas. Three-phase networks are described in detail, including both generators and loads. Methods of modeling distribution systems by per-unit parameters are covered, along with power factor correction methods. Fault detection and lightning protection methods are also described. Some economic aspects of power generation and distribution are presented. (Prerequisite: EE degree or permission of instructor.) Three credits.

ECE 496 Fault Analysis in Power Systems
This course covers three types of faults in electrical power grids: open lines, lines shorted to ground, and lines shorted to each other. Methods of locating faults are covered, along with an analysis of the effects. Methods of protection and fault isolation are also covered. (Prerequisite: ECE 495.) Three credits.

ECE 505 Advanced Power Electronics
This course considers the design and application of electronic circuits related to power generation and conversion including inverters, power supplies, and motor controls. Topics include AC-DC, DC-DC, DC-AC, AC-AC converters, resonant converters, and the design of magnetic components. Models of electric motors and generators are presented to facilitate the design of controls for these structures. (Prerequisite: EE 331 or equivalent.) Three credits.

ECE 510L Product Design Laboratory
This laboratory course provides hands-on experience in measuring and analyzing the electrical and mechanical properties of materials used in the design of electronic products. It also covers thermal analysis and methods of removing the heat from electronic circuits. Experiential learning includes measurement of temperature coefficient of expansion, measurement of thermal resistance, measurement of tensile strength, measurement of material hardness, temperature measurement of electronic components, Peltier effect (thermoelectric coolers), heat pipes, convection cooling (fins and air flow), and heat flow across a bonding interface such as solder or epoxy. (Prerequisite: ECE 405 or equivalent.) One credit.

ECE 515L Microelectronics Laboratory
This laboratory provides students with an understanding of the processes used to fabricate thick and thin film circuits. As part of their experiential learning, students sputter several materials onto a ceramic substrate and investigate the properties of the sputtered film, such as resistivity and adhesion. Students screen print thick film materials, including conductors, resistors, and insulators onto a ceramic substrate and fire them at an elevated temperature, and investigate the properties of the fired film, plot the distribution of resistor values, and apply statistical methods to determine design curves. Students solder components to the substrates to complete a circuit and analyze the properties of the finished circuit. (Corequisite: ECE 435.) One credit.

ECE 520L System Design Laboratory
This laboratory provides students with an understanding of sensors and non-linear control systems. Experiments include temperature sensors such as thermocouples, thermistors, and infrared, motion sensors, strain gauges, nonlinear servos, and computer analysis of nonlinear systems. (Corequisite: ECE 455 or equivalent.) One credit.

ECE 525L Communications Systems Laboratory
In this laboratory, students acquire hands-on experience with waveguides, transmission lines, and antennas. They learn how to characterize these structures at microwave frequencies and examine how they affect transmission. They set up prototype wireless transmission systems and transmit and receive analog and digital systems. They analyze the data for integrity and accuracy of transmission. Experiential learning includes measurement of characteristic impedance of transmission lines, simple antenna design (students construct simple antennas and determine the effect of the design on directionality and other parameters), and wireless concepts (students build a wireless communications system and send data back and forth, one-way and two-way; this can be a capstone project involving teams to design and analyze various aspects). (Prerequisite: ECE 476 or equivalent.) One credit.

ECE 530L Power Electronics Laboratory
This laboratory provides hands-on experience in analyzing and designing power electronics circuits and in analyzing and modeling power generation and distribution systems. Students design and construct voltage regulators, switching power supplies, and motor controllers. Students also develop circuit models for AC and DC motors and power transformers. Experiential learning includes developing circuit models for power distribution systems, measuring parameters of motors and transformers and using the data to develop electrical circuit models of these devices, and analyzing the properties of power distribution systems and developing computer models for them. (Corequisite: ECE 505 or equivalent.) One credit.

ECE 550, ECE 551, ECE 552 Thesis I, II, III
The master's thesis tests students' abilities to formulate a problem, solve it, and communicate the results. The thesis is supervised on an individual basis. A thesis involves the ability to gather information, examine it critically, think creatively, organize effectively, and write convincingly; it is a project that permits students to demonstrate skills that are basic to academic and industry work. The student must also submit a paper for possible inclusion in a refereed journal appropriate to the topic. (Prerequisite: ECE 420.) Six to nine credits.

MSME Course Descriptions

MC 400 Feedback and Control Systems
This course emphasizes analysis and synthesis of closed loop control systems using both classical and state-space approaches with an emphasis on electro-mechanical systems. The mathematical requirements include the Laplace transform methods of solving differential equations, matrix algebra and basic complex variables. The discussion of classical control system design includes the modeling of dynamic systems, block diagram representation, time and frequency domain methods, transient and steady state response, stability criteria, controller action [Proportional (P), proportional and integral (PI), Proportional, integral and derivative (PID) and pseudo-derivatives feedback], root locus methods, the methods of Nyquist and Bode and dynamics compensation techniques. The discussion of state-space methods includes formulation and solution (analytical and computer-based) of the state equations and pole-placement design. The course integrates the use of computer-aided analysis and design tools (MATLAB) so as to ensure relevance to the design of real world controlled electro-mechanical systems using case studies and applications to electrical and mechanical systems. Includes lab (hardware based) exercises. Prerequisites: MA 321 and ME 203 (see undergraduate catalog), or equivalent. Three credits.

ME 410 Vibration Analysis
This course covers fundamental laws of mechanics, free and forced vibration of discrete single and multi-degree- of-freedom systems, periodic and harmonic motion, viscous damping, and measures of energy dissipation. Modal analysis for linear systems, computational methods in vibration analysis, natural frequencies and mode shapes, analytical dynamics and Lagrange's equation, longitudinal, torsional, and flexural vibration of continuous elastic systems (strings, rods, beams) are discussed. Students learn energy methods, approximate methods for distributed parameter systems, and dynamic response by direct numerical integration methods. (Prerequisites: ME 203, MC 290, or equivalent.) Three credits.

ME 411 Advanced Kinematics
Topics in advanced kinematics include introduction to basic concepts and definitions related to kinematics, commonly used links and joints, kinematic anaylsis of mechanisms, introduction to robotic mechanisms, homogeneous transformations, Euler angles, Denavit-Hartenberg representation of forward kinematics of robots, inverse kinematics solution of robots, degeneracy and dexterity, and differential motion and velocity relations. Industrial application of kinematics will also be covered and the course will include a laboratory or project component. (Prerequisite: ME 203 or equivalent) Three credits.

ME 412 Advanced Dynamics
The topics in the area of Dynamics include degrees of freedom, generalized coordinates, constraints, principle of virtual work and D'Alembert's principle. Energy and momentum, frames of reference, orbital motion, Lagrange's equation, moments and products of inertia, and dynamics of rigid bodies are also discussed, as well as variational principles: stationary value of a function, Hamilton's principle, principle of least action, Hamilton's equation, and phase space. (Prerequisites: ME 203, or equivalent.) Three credits.

ME 425 Engineering Applications of Numerical Methods
See ECE 415.

ME 427 Applications of Fracture Mechanics in Engineering Design
This course covers fracture mechanics concepts for design, materials selection, and failure analysis. The fundamental principles of fracture parameters and criteria, stress field at the tip of a crack, fracture toughness, thickness effect, plastic zone concept, and crack growth under cyclic loading and aggressive environment will be presented. Emphasis will be placed on the practical applications of fracture mechanics by incorporation of design problems and laboratory demonstrations in the course. (Prerequisite: the equivalent of ME 308 or equivalent.) Three credits.

ME 428 Computational Fluid Dynamics
Introduction to computational methods used for the solutions of advanced fluid dynamics problems. Emphasis on concepts in finite difference methods as applied to various ordinary and partial differential model. Equations in fluid mechanics, fundamentals of spatial discretization, numerical integration, and numerical linear algebra. A focus on the engineering and scientific computing environment. Other topics may include waves, advanced numerical methods (like spectral, finite element, finite volume), non-uniform grids, turbulence modeling, and methods complex boundary conditions. (Prerequisite ME 347 or equivalent) Three credits.

ME 444 Mechanics of Composite Material
While the use of man-made composites have existed for centuries for practical applications, engineered composite materials are finding increasing use in many high technology applications such as aerospace, electronics, sporting goods, and structural components for high stability systems. This course is designed to provide a comprehensive understanding of classification, processing, properties, selection and failure of polymer, metal and ceramic based composite materials. (Prerequisite: MF 207) Three credits.

ME 450 Gas Dynamics
This course reviews fundamental concepts and equations of fluid dynamics. One dimensional compressible flow solutions with and without friction are covered. Equations of conservation of mass, rate of strain tensor, Navier-Stokes equations, mechanical and thermal energy equations with derivations are discussed. Equations are presented in Cartesian and orthogonal curvilinear coordinate systems. Boundary layer theory is covered. Students will discuss laminar and turbulent viscous flow solutions, including boundary layers, Couette, & Poiseuille flows. In addition to analytical closed form solutions, an introduction to computational methods is presented. (Prerequisite: ME 347, or equivalent.) Three credits.

ME 451 Energy Conversion
This course covers the major topics in energy conversion, including fuels used in energy conversion; solar energy; gas turbine engines and applications; internal combustion engines; heat pumps; classic and novel power and refrigeration cycles; system analysis; system economics; and environmental considerations. The course includes computer simulation of power plant performance to optimize energy conversion efficiency. A research report on one of the emerging sources of energy is an essential part of this course. (Prerequisite: ME 349) Three credits.

ME 452 Heat and Mass Transfer
This course covers the basic concepts of conduction, convection, and radiation heat transfer. Boiling and condensation; design and performance of selected thermal systems (including heat exchangers); laminar and turbulent flows as related to forced and free convection are all studied. Mathematical modeling of engineering systems using modern analytical and computational solution methods are also covered. (Prerequisite: ME 349 or equivalent.) Three credits.

ME 453 Turbomachinery
Theory and fundamentals of modern turbomachinery for aerospace (helicopter, aircraft) and power generation (marine, industrial) applications. Brayton engine cycle analysis and performance improvement are examined. Applications of the principles of fluid mechanics and thermodynamics to the design of turbines and compressors are discussed; analysis and velocity diagram for axial compressors, centrifugal compressors and axial turbines. Discussion of combustion and environmental emissions is included. (Prerequisite: ME 347 or equivalent) Three credits.

ME 470 Applications of Finite Element Analysis
This course examines applications of finite element analysis in modern engineering including structural analysis, fluid flow, heat transfer, and dynamics. Finite element formulations covering two and three dimensional elements as well as energy methods are developed. Students develop techniques for application of finite element method in structural design, dynamic system response, fluid and thermal analyses. Application of methodology to fluid flow is presented. Students solve example and design problems manually and using modern finite-element analysis software, ANSYS and FLUENT. (Prerequisites: ME 318 or equivalent.) Three credits.

ME 495 Independent Study
A well-planned program of individual study under the supervision of the faculty member. Three credits.

ME 496 Special Projects
An in depth study of selected topics of particular interest to the student and instructor. Three credits.

ME 550, ME 551 Thesis I, II
The master's thesis is intended to be a test of the student's ability to formulate a problem, solve it, and communicate the results. The thesis is supervised on an individual basis by a faculty member. A thesis involves the ability to gather information, examine it critically, think creatively, organize effectively, and write convincingly; it is a project that permits the student to demonstrate skills that are basic to both academic and work in industry. The student must also submit a paper for possible inclusion in a refereed journal appropriate to the topic. Three credits each.

Graduate Certificate in Automated Manufacturing
Courses DM 405 and DM 430 are described under MOT.

MF 440 Computer Aided Manufacturing (CAM)II
The course balances CAD and CAM with up-to-date information on rapid prototyping, solid modeling systems, and Web-related issues. Management of an effective product design from a business perspective is introduced: reducing material, tolling, setup and waste costs. An integration in a factory automation environments is also explored. Mathematical terminology and the concepts are explained in as intuitive a way as possible. The course also covers components of CAD/CAM/CAE Systems and CAD/CAM postprocessor development manufacturing systems. Students are required to have a background in programming, calculus, and matrix and vector algebra. The course consists of lectures, group discussions, case studies, a term project, computer simulation, and laboratory. (Prerequisite: N/A) Three credits.

MF 450 Advanced Programmable Logic Control Systems (PLC)
In this course, students are introduced to the design and implementation of programmable logic controllers for use in industry in the areas of automation, manufacturing, and other related uses. Students examine Programmable Logic Controllers while concentrating on relay ladder logic techniques and how the PLC is connected to external components in an operating control system. State-of-the-art software is used, including MultiSim, LabView, Cosivis,Veep, and RS Logix 500. Course covers: input/output ports, continuous process control, timing and counting functions, chaining sequences, and digital gate logic Computer Aided Analysis and Design. Three credits.

MF 454 Product and Process Design for Manufacturing
Students learn the principles of product design for optimizing product manufacture and assembly - an essential part of the concurrent engineering process. The course examines materials and processes used in part manufacture and designing for manual and automated assembly processes. A course project applies these principles. (Prerequisite: ME 311 or equivalent) Three credits.

MF 461 Automation and Robotics I
This course introduces the basic elements of automation, industrial robotics, automated work cells, common information model systems, and the automated factory. Topics include kinematics, dynamics, the classification of robots, automation sensors, work cells, import systems and programming, robot/system integration, economic justification, and applications. (Prerequisite: ME 203 or equivalent) Three credits.

MF 462 Automation and Robotics II
This course introduces components of the automated factory. Topics include design of parts and processes for automation, hard and flexible automation, blocks of automation, automatic production and assembly, numeric controllers, computer-aided design/computer-aided manufacturing, industrial logic control systems, programmable logic controllers, and computer applications in automation. (Prerequisite: MF 361 or equivalent) Three credits.

SW 407 Introduction to Computer Programming
This course is a study of object oriented software component design. This course introduces object oriented programming and its use in problem solving with abstract data types such as lists, linked lists, stacks, queues, graphs, and trees. This course serves as one of the bridge courses to the MSSE program. Three credits.

SW 480 Health Information Systems
This course introduces the information systems and their applications in healthcare. The topics include the fundamentals of information systems, medical terminology, electronic health record, health care information regulations and standards, assessing health information systems for managerial and clinical support, project management, information security and Health IT Leadership. (Prerequisite: SW 131 or permission of the instructor) Three credits.

SW 481 Human Computer Interface
This course examines human computer interaction and evaluates various user interfaces, especially as they apply to the healthcare environment. Topics inlcude data visualization, evidence-based systems and tools (such as PubMed, UpToDate), and data warehouse design with an emphasis on healthcare. (Prerequisite: SW 480 or permission of the instructor) Three credits.

ECE 434 Introduction to Biomedical Engineering
This course is an introduction to the instrumentation methods used to measure, store and analyze the signals produced by biomedical phenomena. The goal of this course is to familiarize students with the basic design and implementation of techniques for measuring a broad scope of signal types for molecular, cellular and physiological research. Students will get an introduction to the origins and characteristics of the electric and electromagnetic signals that arise in biological tissues. Sensors used for acquiring electrical, magnetic, optical/spectral and chemical signals will be covered. Topics include the underlying physics and chemistry of biomedical signals, biosensor types and usage, amplification and signal conditioning, data acquisition methods, basic signal processing methods, the origins of artifact and noise, and programming methods. Three credits.

ME 472 Applications of Theory of Elasticity
This course covers theory of elasticity (stress, strain, and generalized Hooke's law), strain energy methods (Castigliano's theorem), thin shells of revolution (equilibrium equations, pressure vessels), thin plates (rectangular and circular plates, moment-curvature relations), beams of elastic foundations and buckling. (Prerequisite: ME 308) Three credits.

MF 430 Computer Aided Manufacturing (CAM) I
An in-depth introduction to the science, math and engineering of computer aided manufacturing methods. The course provides a comprehensive view of manufacturing planning, design, automation, flexible automation, and computers in manufacturing using a strong science-based and analytical approach. CNC and tooling for CNC application will be discussed. The course will consist of : lectures, group discussions, case studies, a term project, computer simulation and laboratory. Three credits.

RD 515 Independent Study
This course is intended to broaden the student's knowledge in a specific area of interest. Students may pursue topics or projects under the supervision of a faculty member. Permission of the department is required to enroll in this course. Three credits

School of Engineering Administration

Bruce W. Berdanier, Ph.D.
Dean

Harry W. (Bill) Taylor, Ph.D.
Associate Dean

Paul Botosani, Ph.D.
Director of Laboratories

Department Chairs

Douglas Lyon, Ph.D.
Computer Engineering

Shahrokh Etemad, Ph.D.
Mechanical Engineering

Wook-Sung Yoo, Ph.D.
Software Engineering

Jeffrey Denenberg, Ph.D.,
Electrical Engineering

School of Engineering Graduate Faculty 2013-14

Jack W. Beal
Professor of Physics and Computer Engineering
Ph.D., Michigan State University

Bruce W. Berdanier
Dean, School of Engineering
Professor of Engineering
Ph.D., The Ohio State University

Jeffrey Denenberg
Visiting Professor, Electrical Engineering
Ph.D., Illinois Institute of Technology

Shahrokh Etemad
Chair, Mechanical Engineering Department
Associate Professor of Mechanical Engineering
Ph.D., University of Washington

Evangelos Hadjimichael
Professor of Physics and Engineering
Ph.D., University of California, Berkeley

Harvey Hoffman
Director of Management of Technology
Professor of the Practice
Ed.D., Fordham University

Douglas Lyon
Professor of Computer Engineering
Ph.D., Rensselaer Polytechnic Institute

Ryan Munden
Assistant Professor of Electrical Engineering
Ph.D., Yale University

Shanon Reckinger
Assistant Professor, Mechanical Engineering
Ph.D., University of Colorado, Boulder

Amalia Rusu
Associate Professor, Software Engineering
Ph.D., The State University of New York, Buffalo

Harry Taylor
Associate Dean Professor of Electrical Engineering
Ph.D., University of California, Davis

Wook-Sung Yoo
Associate Professor of Software Engineering
Ph.D., Florida Institute of Technology

Lecturers

Clement Anekwe
Mechanical Engineering
Ph.D., West Virginia University

Ray Angelo
Software Engineering
Ph.D., Nova Southeastern University

Michael Blake
Management of Technology
JD, Univ of Texas School of Law

Paul Botosani
Automated Manufacturing
Ph.D., Polytechnic Institute of Bucharest

Bruce Bradford
Accounting Charles F. Dolan School of Business
Ph.D., Virginia Polytechnic Institute and State University

Yew-Tsung Chen
Mechanical Engineering
Ph.D., University of Minnesota

Joseph Corcoran
Software Engineering
M.A., Rensselaer Polytechnic Institute

James Curry
Management of Technology
M.S., Baruch College

William Dornfield
Mechanical Engineering
Ph.D., University of Wisconsin-Madison

Thomas Galasso
Software Engineering
M.S., Polytechnic University

Kostas Georgakopoulos
Software Engineering
M.S., Tufts University

Pradeep Govil
Electrical Engineering
M.S., Carnegie Mellon University

William Guelakis
Software Engineering
M.S., University of New Haven

Philip LaMastra
Software Engineering
M.S., Sacred Heart University

Mark LeClair
Economics College of Arts and Sciences
Ph.D., Rutgers University

Patrick Lee
Information Systems and Operations Management
Charles F. Dolan School of Business
Ph.D., Carnegie Mellon University

Maynard Marquis
Software Engineering
M.S., Yale University

Frederick Mis
Software Engineering
Ph.D., University of Massachusetts, Amherst

Rino Nori
Management of Technology
M.S., City College Graduate School of Engineering
MBA, Fordham University

Mark Ramsey
Management of Technology
B.S. Eastern Connecticut State University

Steve Roux
Mechanical Engineering
M.S., Rensselaer Polytechnic Institute

Cheryl Tromley
Management, Charles F. Dolan School of Business
Ph.D., Yale University

Advisory Board for the Graduate School of Engineering

Joseph M. Carbone
President & CEO, Workplace, Inc.
Bridgeport, Conn.

Gerald V. Cavallo
President, James Ippolito & Co
Bridgeport, Conn.

Anthony N. Fischetti
Director, Engr/Exec. Program Manager
Northrop Grumman Corp
Norwalk, Conn.

Dr. Michael J. Hartnett
President & CEO
RBC Bearings
Oxford, Conn.

Joseph Ianniello
Bridgeport, Conn.

Paul M. Kelley
Corporate Vice President
Alinabal, Inc.
Milford, Conn.

John LaViola
Vice President Engineering
Hologic Inc.
Danbury, Conn.

Mark F. Miller
Vice President, Research & Engineering
Sikorsky Aircraft
Stratford, Conn.

Patrick F. O'Keefe
Vice President, Engineering & Mfg
O'Keefe Controls Co
Monroe, Conn.

Timothy K. O'Neil
Vice President, Program Management
ASML, Inc.
New Milford, Conn.

Jeffrey M. Post
Managing Partner
Trillian Capital Management LLC
Shelton, Conn.

Manny Ratafia
CEO
Ratafia Ventures
Woodbridge, Conn.

Richard J. Reed
Vice President, Engr & Project Excellence
United Illuminating Co,
Shelton, Conn.

Dr. Mitchell D. Smooke
Strathcona Professor of Mechanical Engineering
Yale University
New Haven, Conn.

Robert Sobolewski
President
ebm-papst Inc.
Farmington, Conn.

Fairfield University Administration 2013-14

Jeffrey P. von Arx, S.J., Ph.D.
President

Charles H. Allen, S.J., M.A.
University Chaplain and Special Assistant to the President

Lynn Babington, Ph.D.
Dean, School of Nursing

Bruce W. Berdanier, Ph.D.
Dean, School of Engineering

Robbin D. Crabtree, Ph.D.
Dean, College of Arts and Sciences

Faith-Anne Dohm, Ph.D.
Dean, Graduate School of Education and Allied Professions

Karen Donoghue, M.A.
Dean of Students

Eugene P. Doris, M.A.T.
Director of Athletics

Paul J. Fitzgerald, S.J., D. ès L., S.T.D.
Senior Vice President for Academic Affairs

Paige Francis, M.S.
Chief Information Officer

David W. Frassinelli, M.S. '92
Associate Vice President of Facilities Management

Donald E. Gibson, Ph.D.
Dean, Charles F. Dolan School of Business

Paul D. Holland, S.J., M.A.
Director of Campus Ministry

Kevin P. Lawlor '79, MBA, C.P.A.
Executive Vice President
Interim Vice President for Marketing and Communications

Mary Frances A.H. Malone, Ph.D.
Associate Vice President for Academic Affairs

Karen A. Pellegrino, M.A.
Dean of Enrollment

Thomas C. Pellegrino '90, Ph.D., J.D.
Vice President for Student Affairs

Mark C. Reed '96, Ed.D., MBA
Senior Vice President for Administration and Chief of Staff
Interim Vice President for University Advancement

David A. Sapp, Ph.D.
Associate Vice President for Academic Affairs

Christine Siegel, Ph.D.
Associate Vice President for Academic Affairs

TBD
Vice President for Finance and Treasurer

Administrators Emeriti

Aloysius P. Kelley, S.J., Ph.D.
1979-2004
President Emeritus

Jeanne M. Novotny, Ph.D.
2002-2011
Dean, School of Nursing, Emerita

Phyllis E. Porter, MSN
1970-1989
Associate Professor of Nursing, Emerita
Dean, School of Nursing, Emerita

António Simões, Ed.D.
1991-2006
Dean, Graduate School of Education and Allied Professions, Emeritus

Fairfield University Trustees 2013-14

Nancy A. Altobello ’80
William L. Atwell, P’08, Chair
John F. Baldovin, S.J.
Terrence A. Baum, S.J.
Thomas G. Benz, S.J.
Joseph R. Bronson ’70
Frank J. Carroll III ’89, Vice Chair
Kevin M. Conlisk ’66, P’91
Timothy J. Conway ’76
William C. Crager ’86
Sheila K. Davidson, ’83
William P. Egan ’67, P’99
Thomas A. Franko ’69
Peter J. Gillen ’68
Patricia E. Glassford ’85
Brian P. Hull ’80, P’13
Paul J. Huston ’82
Jack L. Kelly ’67, P’96
Susan Robinson King, M.A. ’73
Katherine N. Lapp ’78
William A. McIntosh, P’92, ’86
Andrew J. McMahon ’89, P’13
John C. Meditz ’70
Elner L. Morrell ’81, P’03
Most Reverend George V. Murry, S.J.
Gavin G. O’Connor ’88
Biff J. O’Reilly ’80, P’11
Stephen A. Privett, S.J.
Christopher C. Quick ’79
Rosellen W. Schnurr ’74
Kelly A. Simon ’01
Jeffrey P. von Arx, S.J., President
Marianne Dolan Weber, P’16
James D. Wehr ’79

Trustees Emeriti

Dr. E. Gerald Corrigan ’63
Charles F. Dolan, P’86, ’85
Aloysius P. Kelley, S.J.
Roger M. Lynch ’63, P’95