SCHOOL OF ENGINEERING AND COMPUTING

A Message from the Dean

The seven graduate programs in the School of Engineering and Computing – Master of Science degrees in Cybersecurity, Data Science, Electrical and Computer Engineering, Management of Technology, Mechanical Engineering, Software Engineering and Biomedical Engineering – 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 Management of Technology program includes courses from the MBA program in the Dolan School of Business. In further response to workplace needs, the School has also instituted pathways to five-year accelerated degree BS/MS programs in Software Engineering, Mechanical Engineering, Electrical and Computer Engineering, Data Science, Biomedical Engineering and Management of Technology. 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 Data Science and Big Data Technologies, Cyber Security, Network Technology, or Web and Mobile Application Development.

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 and Computing who are leading-edge professionals in their areas of expertise, applied research, and in instruction and mentoring. It is also facilitated through on-going close contact and open lines of communication with the industry and business sectors that are the main beneficiaries of the School's Master degree graduates. An increasing number of our programs and courses are offered in the on-line space to better serve our various stakeholders.

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 am pleased to extend a warm welcome to all who choose to undertake the exciting adventure of graduate education in the School of Engineering and Computing at Fairfield University.

Andres Leonardo Carrano, PhD
Dean, School of Engineering and Computing

School Overview

The School of Engineering and Computing has laboratories, classrooms, administrative offices, and faculty offices in the Rudolph F. Bannow Science Center. The school's laboratories and classrooms are served by the Fairfield University computer network.

The School continuously assesses evaluates and improves its academic programs and facilities. 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.

The School of Engineering and Computing 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, applied research, and professional advancement. The School also maintains a close working relationship with industry through its Executive 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.

Vision

The School of Engineering and Computing will be a recognized leader in modern, experiential-based engineering education and known for innovative, applied research that, together, fosters a student-centered and research-focused educational experience that prepares graduates for successful and rewarding careers in service to others.

Mission

The School of Engineering and Computing is dedicated to: (1) Providing transformative educational experiences that prepare our graduates for successful careers; (2) advancing engineering knowledge through applied research; and, (3) supporting the University's mission of whole-person development (cura personalis) by inculcating into our students the service-to-humanity character of the engineering profession.

Purpose

We believe a strong, experientially based curriculum, supported by faculty with an applied research focus leads to:

- Enhanced academic reputation.
- Increased scholarship of students and faculty.
- Students, imbued with the service-to-humanity character of the engineering profession, prepared to meet the future challenges of a rapidly evolving, technology-based society.

Values

"Our Ethics in Action"
Excellence in all we do

Engagement at every level

Innovation across all disciplines

Diversity and *Inclusion* in all things

Service to Humanity as a lifelong goal

Character as a foundation of *Leadership*

Degrees

- Master of Science in Biomedical Engineering
- Master of Science in Cybersecurity
- Master of Science in Data Science
- Master of Science in Electrical and Computer Engineering

- Master of Science in Management of Technology
- Master of Science in Mechanical Engineering
- Master of Science in Software Engineering

- Graduate Certificate Programs
  - Data Science and Big Data Technologies
  - Cyber Security
  - Network Technology
  - Web and Mobile Application Development

Independent Study

Graduate independent studies are designed to allow students to pursue topics not offered through a traditional course. Independent studies may involve laboratory or research-based work in which the student investigates a research problem with a supervising professor.

A student wishing to pursue an independent study must prepare the Independent Study Request containing the information shown below and have it approved by the supervising professor, department chair and the dean's office

1. All graduate independent study courses require the approval of the department and the Dean's office.
2. A maximum of one Independent Study course (3 credits) may substitute for an elective course.
3. A student may take an Independent Study only from a supervising professor. A supervising professor must be a School of Engineering faculty member.
4. Before a student may register for an Independent Study course, the student must submit a written course proposal to the supervising professor. The course proposal must state the student's goals for the course. The supervising professor must approve the course proposal.
5. Each supervising professor sets his or her standards and expectations that each student must satisfy for course credit. A supervising professor may not award credit for an Independent Study unless the student produces a written final paper or poster paper that reflects learning and achievement that merit the award of course credit.

Independent Study Course Proposal Contents

1. Description of the proposed course - Describe the general theme and scope of the independent study. This may be stated as a problem to be investigated, an issue to be explored, or an argument to be defended. The description might indicate where the student is starting out and where the student would like to get in terms of answering a question, exploring a phenomenon, understanding a theory, building a skill or other goal
2. Clearly state the number of credits for this course. As a basis of comparison, one college credit represents approximately one hour spent in a classroom and 2 to 3 hours spent on homework or laboratory activities each week.
3. Together with the supervising professor, the student should identify the course Student Learning Outcomes.
4. The supervising professor and the student should prepare a syllabus identifying the expected topics to be covered. Include the schedule that the supervising professor will meet with the student
5. Articulate the work to be completed by the student and evaluated by the instructor. Identify the major assignments, which may include the following
   a. Literature search
   b. Readings
   c. Written work
   d. Lab work
   e. A final paper which includes a problem statement, a possible solution to the problem, describes why the work is significant, and how the student will use this learning.
6. Evaluation – The supervising professor will create a grading rubric to evaluate the student's submittals based on the following:
   a. What was learned? What skills did the student gain from this course (e.g., problem solving, critical thinking, tools, etc.)?
   b. How the information was learned. For example, homework, lab assignments, quizzes, exams, reports, essays, research projects, presentations, case study analysis.
   c. The supervising professor will identify the criteria for assessing oral and other performances.