Description of Curriculum

Traditionally, computer engineering involves the understanding and design of hardware and software components of modern day computing systems. Different levels of abstraction of a computing environment from VLSI (very large scale integrated circuits) design, to hardware description language design, to assembly instructions, and high-level computing languages are all part of the computer engineering discipline. Additional areas of computer engineering include, but are not limited to artificial intelligence, image processing, and robotics. A computer engineer may specialize in any aspect of levels of abstraction and different computing environments, but should be familiar with all. Computer engineers work in areas from chip design and layout, circuit board design, as well as the design, implementation and deployment of embedded software.

The 30-semester hour curriculum is designed to educate individuals with the requisite skills and knowledge to meet these needs and includes both a thesis and a non-thesis option. All students will complete a 9 semester-hour core of 3 courses chosen from the following six courses: (1) Contemporary Digital Design, (2) Operating Systems, (3) Computer Design, (4) Systems Analysis, (5) Data Communications, and (6) Embedded Systems. Students will have the flexibility to choose three of these six courses. Of the 6 core courses, 3 are housed within the ECE department, and 3 are within CPS. Each student must complete 3 semester-hours of CPS courses and 6 semester-hours of ECE courses of the available core.

Students completing a thesis will enroll in 3 specialization courses for 9 semester hours. Of these 3 courses, one must be a CPS course, and two must be ECE courses. Students will also be allowed 6 semester hours of technical electives. Each student will, in addition, enroll in 6 thesis semester hours. Students who are not completing a thesis will complete 12 specialization semester hours, and 9 technical electives semester hours. All students, particularly those who express a desire to pursue doctoral training, will be encouraged to complete a thesis. If a student is a research assistant employed by the university, then they will be required to write a thesis. Thesis advisory committees will be interdisciplinary and include three faculty members chosen from the School of Engineering and the College of Arts and Sciences. Choice of appropriate electives that build on areas represented in the core may be used to develop a specialization. Upon entry into the program, each student, in consultation with her/his advisor will develop a program of study that will be used annually to evaluate progress toward the degree.

Applicants must hold a baccalaureate degree in an appropriate area of study (e.g., electrical engineering, computer engineering, or computer science) and must show promise for pursuing graduate coursework satisfactorily. Previous course work in the areas of, computer programming, circuit theory, computer architecture, and operating systems is desirable. A minimum undergraduate grade point average of 3.0 will normally be required for admission to the program. Students without an adequate background in either Electrical or Computer Engineering, or Computer Science will be required to complete prerequisite coursework in computer engineering in addition to the 30 credit hours required for the MSCPE degree. These background courses will carry undergraduate credit, and are designed to provide knowledge of appropriate fundamental concepts in the respective disciplinary areas and improve communication between students of different academic backgrounds. The Graduate Program Director for the MSCPE program on a per-student basis will determine the necessary coursework. The Program Director will coordinate with ECE and CPS department chairs to determine the proper recommendations for the student.