MASTER OF SCIENCE IN ENGINEERING: CONCENTRATION IN EMBEDDED ELECTRICAL AND COMPUTER SYSTEMS

Admission to the Program

Applicants must hold a bachelor's degree in engineering, or a closely related discipline, with a minimum GPA of 3.0 in upper-division major classes in addition to meeting general university requirements for graduate standing. The School of Engineering also requires two letters of recommendation from persons familiar with the student's previous academic work or professional accomplishments. Graduate Record Exam (GRE) scores within the last three years are also required. A minimum score of 550 on the paper exam or 213 on the computer-based TOEFL is required for graduate applicants whose preparatory education was principally in a language other than English.

Advancement to Candidacy

The applicant is advanced to candidacy when the Advancement to Candidacy (ATC) has been signed and approved by the Dean of the Graduate Division.

Written English Proficiency Requirements

Level One

As a preadmission requirement, applicants must have satisfied number (1) AND (2) OR (3) of the three following conditions:

1. a score of at least 4.0/6.0 on the GRE or GMAT Analytic Writing Assessment;
2. a score of at least 4.5/6.0 on the essay test of the paper-based [PBT] TOEFL (a minimum score of 24/30 on the Writing section of the Internet-based test [iBT] TOEFL);
3. a score of at least 6.5/9.0 on the IELTS writing test, or a concordant score on the Pearson Test of English.

An applicant that does not meet the above requirement may be conditionally accepted to the program but must complete SCI 614 within the first year of attendance at SF State to meet the Level One requirement. SCI 614 does not count toward the 30 unit MS coursework requirement.

Level Two

is satisfied by the completion of a written thesis (ENGR 898) or research project (ENGR 895).

Curriculum

The Master of Science in Engineering is based on 30-semester units of which at least 21 units must be earned from graduate level courses. We expect that the graduate coordinator will work closely with individual students to develop a curriculum plan that ensures academic rigor while at the same time meeting the needs of the student. The curriculum includes 12 units of required engineering courses and a minimum of 6 units of elective engineering courses. A maximum of 6 units of elective non-engineering courses may be applied to the degree requirements with the consent of the graduate coordinator if they are consistent with the student's overall career objectives as provided in the program of study. There are two options for the culminating experience. One option is to first take a 3-unit research course (ENGR 897), and then a 3-unit thesis course (ENGR 898). The other option is to take a 3-unit applied research project course (ENGR 895).

Engineering (M.S.): Concentration in Embedded Electrical and Computer Systems — Minimum 30 units

Required Courses (12 units)

Code	Title	Units
ENGR 800	Engineering Communications	3
ENGR 801	Engineering Management	3
ENGR 844	Embedded Systems	3
ENGR 852	Advanced Digital Design	3

The aggregate of courses that comprise the core of this concentration is designed to give students a broad foundation in general areas of engineering project management and engineering communications, and in embedded systems. These courses are aimed to provide our students opportunities for career advancement in their profession.

Elective Engineering Courses (6 - 15 units)

Elective technical engineering courses are selected from the following list upon approval of the graduate coordinator.

Code	Title	Units
ENGR 447 & ENGR 446	Control Systems and Control Systems Laboratory	4
ENGR 449	Communication Systems	3
ENGR 451	Digital Signal Processing	4
ENGR 456	Computer Systems	3
ENGR 476	Computer Communications Networks	3
ENGR 478	Design with Microprocessors	4
ENGR 848	Digital VLSI Design	3
ENGR 849	Advanced Analog IC Design	3
ENGR 850	Digital Design Verification	3
ENGR 851	Advanced Microprocessor Architectures	3
ENGR 853	Advanced Topics in Computer Communication and Networks	3
ENGR 854	Wireless Data Communication Standards	3
ENGR 856	Nanoscale Circuits and Systems	3
ENGR 868	Advanced Control Systems	3
ENGR 869	Robotics	3

A program cannot contain more than 9 units of courses with a course number below 700. Some upper division engineering courses may also be used as electives if not used in the undergraduate degree program and approved by the graduate coordinator.

Non-Engineering Electives (0 - 6 units)

Courses, either graduate or upper-division, selected primarily from science, mathematics, social science, or business, upon approval of the graduate coordinator.

Culminating Experience (3 - 6 units)

Units selected from one of the options below

Option A

Code	Title	Units
ENGR 897 & ENGR 898	Research and Master's Thesis (thesis may not be started until completion of 12 units of graduate course work and ENGR 897)	6

Option B

Code	Title	Units
ENGR 895	Applied Research Project (project may not be started until completion of 12 units of graduate course work)	3