The Engineering and Management Systems Program

The Certificate Program in Engineering and Management Systems provides students with tools for the complex decision-making problems which arise in engineering and in management. It is aimed at three types of students:

1. those who seek an engineering background as a foundation for a career in business, law, government, or medicine,
2. those who wish to prepare for the management phase of an engineering career, and
3. those who wish to pursue careers in statistics and/or operations research.

It offers a coherent, integrated set of core courses which are based upon analytical methods and organizational concepts, and which have application in the planning and control of complex systems required by modern technological society. Emphasis is placed on the problem-solving capabilities of the computer for improving decision making. Interactive computer graphics is employed in many courses.

Students are urged to participate in summer internships available at various companies and government agencies; these experiences often provide the groundwork for a senior thesis.

Admission to the Program

B.S.E. students are eligible for admission to the program once they have completed the engineering school core program (or its equivalent):

1. mathematics through MAT 202,
2. physics through PHY 104,
3. CHM 201, and
4. one course in computing at the level of CIV 201 or COS 126.

The program is also open to A.B. students who have completed

1. the two course Area I (Science) distribution requirement,\(^1\)
2. mathematics through MAT 202, and
3. one course in computing at the level of CIV 201 or COS 126.

To be admitted, interested students should contact the director of the program.

Program of Study

A concentrator in this program must satisfy both program and departmental requirements.

\(^1\) Beginning with the class of 2000, two science and technology with laboratory courses.
The program for each student is worked out by the student and his or her departmental adviser. In some cases, a course can fulfill both a certificate program requirement and a regular departmental requirement. The program requirements are as follows:

1. All students must take the following sequence of six courses relating to decision sciences:
   - ECO 102 Description and Analysis of Price Systems
   - CIV 245 Fundamentals of Engineering Statistics (or ECO 303)
   - CIV 307 Deterministic Systems Analysis (or MAT 305)
   - CIV 309 Probability and Stochastic Systems
   - CIV 311 Optimization under Uncertainty (or CIV 360)
   - CIV 411 Operations Planning

2. A senior project/thesis (depending on the students home department) must be completed and presented to the program committee on a topic relevant to the program and acceptable to the program committee.