

Engineering, Jacobs School of

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The Irwin and Joan Jacobs School of Engineering at UCSD comprises the Departments of Mechanical and Aerospace Engineering (MAE), Bioengineering (BE), Computer Science and Engineering (CSE), Electrical and Computer Engineering (ECE), and Structural Engineering (SE). The MAE Department oversees traditional programs in chemical, mechanical, and aerospace engineering. The Jacobs School is directed by the dean of engineering. The departments offer many undergraduate and graduate degree programs. Students interested in engineering should consult the individual department listings which follow this section of the catalog.

The general-education requirements of UCSD's six undergraduate colleges differ noticeably. In some cases, these requirements can extend the time required to obtain a B.S. degree in engineering. Prospective students should review the general-education requirements and take them into account when selecting a college.

Admission to the Jacobs School of Engineering

Student demand exceeds program capacity in several of the undergraduate majors. Impacted majors are majors to which, owing to limited departmental resources, more students apply than can be accepted. Admission into an impacted engineering major is based on academic excellence demonstrated at UCSD, in high school, or at a community college. Admission will be granted to the maximum number of students in each of these impacted major programs consistent with maintaining acceptable program quality and in compliance with admissions procedures and criteria approved by the Academic Senate's Committee on Educational Policy.

Remember that admission to the university and to a college does not guarantee admission to an impacted major.

FRESHMAN

(Transfer students see TRANSFERS section below).

Freshman are admitted to engineering majors in one of two ways, either directly into the major of their choice or into a preliminary pre-major of their choice. The only way to become a Computer Science (CS), Electrical Engineering (EE), Bioengineering (BE) or Bioengineering: Biotechnology (BT), or Computer Engineering (CE) major is to be directly admitted as an entering freshman. Effective fall 2001, this selection is based on the freshman review criteria (Comprehensive Review) administered by the UCSD Office of Admissions and Relations with Schools.

The pre-major, which does not apply to the impacted majors listed above, is a provisional status and acceptance to major status is dependent on performance in selected screening courses. Students are notified of their status when they are admitted to UCSD. Major and pre-major students both receive the same college and departmental advising and are expected to take the same courses. In addition to the science, math, and engineering courses required by the departments, it is expected that all students will also take twelve to eighteen units of general-education college requirements during their first year.

It is strongly suggested that both majors and pre-majors consult their department's academic adviser at an early stage to plan their lower-division engineering courses, and that they consult with a college academic counselor to arrange general-education courses around the required screening courses. Students admitted fall quarter should attend the engineering department's orientation meetings during Welcome Week.

Pre-major engineering students are expected to apply for admission to a major during the spring quarter of their freshman year. Selected introductory math, science, and engineering courses will be used as screening courses in order to determine which of the pre-major students will be accepted into a major and which will not be accommodated by the Jacobs School of Engineering. Admission to a major is based on the grade-point average in the screening courses only for those students who are able to apply by the end of their third quarter. The grade-point average required for admission

to the major by pre-majors is set individually by each engineering program and varies substantially according to the ability of the program to accommodate extra students. Pre-majors should consult their departments concerning the appropriate screening courses and the current grade-point average standards for admission. However, a B average in the screening courses will guarantee admission to any of the majors when application is made before the end of the third quarter of study at UCSD.

Pre-major engineering students who are not able to apply before the end of their third quarter, or who wish to reapply following an unsuccessful application, must apply before the end of their sixth quarter of study at UCSD. **No admission to an engineering major will be considered after six quarters of study.** The admission review after the third quarter will not be based only on the grade-point average in the screening courses alone. Admission review, after the third quarter, will also include consideration of the student's entire academic record, progress in science, math and engineering courses, and other factors such as course load and trends in performance.

TRANSFERS

Following California's Master Plan for Higher Education, The Jacobs School of Engineering gives high priority to students transferring from California community colleges. Transfer students are typically admitted as pre-majors and given three quarters to satisfy the departmental requirements for full admission to the major. The only way to enter the impacted Computer Science (CS) or Computer Engineering (CE) major is to be directly admitted as an entering transfer student. Effective fall 2004, the Electrical Engineering, Bioengineering and Bioengineering: Biotechnology majors will become impacted, and transfer students will be admitted directly into the major. Since admission of transfer students to an engineering major is quite competitive, applicants, especially in impacted majors, must demonstrate both completion of most of their lower-division courses at the community college and a high level of scholastic performance in these courses.

Pre-major and major status in impacted majors such as Computer Science, Computer Engineering (and effective fall 2004, Electrical Engineering,

Bioengineering, and Bioengineering: Biotechnology) may be limited to the best transfer applicants, e.g., those who have been admitted to UCSD with the most complete lower-division preparation and the highest college GPAs. Since admission is restricted to these majors, **transfer students are encouraged to apply to more than one major degree program.**

Students seeking admission to Computer Science in CSE or Computer Engineering in either the CSE or ECE departments must apply for admission to the major at the time of application to UCSD. Effective fall 2004, applicants seeking admission as transfer students to the Electrical Engineering, Bioengineering and Bioengineering: Biotechnology majors will only be considered for direct admission into those majors. Transfer students in pre-majors should seek a preliminary appraisal by the department as soon as possible after they arrive on campus.

For specific program requirements for transfer students, please refer to the appropriate department's section in this catalog.

Access of Non-Engineering Majors to the Jacobs School of Engineering Courses

The number of students enrolled in some courses offered by the Jacobs School of Engineering must be restricted to meet the resources available. Students who have successfully completed all prerequisite courses will be enrolled in these restricted courses in the following order:

1. Students admitted by the department to a major curriculum
2. Students admitted by the department to a minor curriculum
3. Students fulfilling a requirement for another major
4. All others, with permission of the department and instructor

Students should check with the departments concerning the limitations on specific courses and the requirements needed prior to attempting to enroll.

Double Majors and Minors

It is the Jacobs School of Engineering policy not to approve double majors within engineering. Students who qualify for admission to graduate school and who have the extra time are encouraged to consider co-terminal B.S./M.S. degrees in one or two engineering disciplines. Engineering minors may be taken only by non-engineering majors.

Engineering Student Services (ESS)

The Jacobs School of Engineering supports several programs that promote academic and professional development for undergraduate students across all engineering departments.

ESS programs are coordinated with the faculty and departments and include the undergraduate Triton Engineering Student Council (TESC) and engineering student professional organizations, Career Connections, the Internship Assistance Program, Pre-College Outreach, and the **MESA** Engineering Program (**MEP**).

MESA, the Mathematics, Engineering and Science Achievement Program, is a statewide effort to prepare more students from historically underrepresented backgrounds for careers in mathematics and science-based professions. MEP has been established to attract and retain qualified underrepresented students in engineering. MEP programs include academic advising and workshops, scholarships, opportunities for summer employment, and a variety of social events throughout the year. Strong support from local industry provides students the opportunity to explore career possibilities as early as their freshman year.

All engineering students are encouraged to become involved with ESS programs. Further information can be obtained at the ESS office in Room 1400, Engineering Building Unit I or via email at ess@soe.ucsd.edu.

COURSES

101. Team Engineering (4)

Fundamental principles of team engineering practice. Team formation and leadership, project creation and management, statistical tools for quality improvement, engineering business economics, law, and ethics. Interdisciplinary student teams will research, refine, and propose the design, manufacture, and marketing of a novel engineering product. Four hours of lecture. Prerequisite: a course in probability of statistics.

201. Venture Mechanics (4)

Examines the engineering/entrepreneurism interface. Discovery, development, and implementation of new product ideas. Understanding markets, competitors, and selling innovations. Cultivating effective working relationships between research, engineering, manufacturing, and marketing elements of an organization. Priority enrollment given to engineering majors.

202. Enterprise Dynamics (4)

Case studies of start-ups, strategic technology management, practice in use of industrial decision-making tools, and speakers from successful firms combined with experience in making management decisions dynamically in a competitive computer-simulated enterprise. Field study of ongoing processes in a local high technology company. Priority enrollment given to engineering majors.

203. Applied Innovations (4)

Course includes the examination of business plans developed by early stage technology businesses. Students expected to work on the development of business plans for real, innovative business organizations. Will explore all of the business research and analysis that needs to be undertaken in order to develop a complete business plan. Completion of ENG 201 or ENG 202 preferred.

204. Theory and Practice of University Teaching (2)

Teaching and learning at the college/university level. Readings in engineering and cognitive science, plus opportunities for teaching and evaluating college level students. Covers theoretical underpinnings and the practice of teaching. Participation in some practicum teaching experience will be required.