UNDERGRADUATE STUDENT AFFAIRS
Department of Structural Engineering
SME Building, Rooms 340A & 340E

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LOCATION

Structural Engineering faculty, staff, and laboratories primarily reside in the SME (Structural and Materials Engineering) building. The Jacobs School of Engineering Dean’s office and administration is primarily located in Engineering Building Unit I. A detailed campus map may be found online at the following web link: http://maps.ucsd.edu/mapping/viewer/default.htm.
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*Complete listing including adjunct faculty, staff and researchers is at: [http://www.structures.ucsd.edu/se_directory](http://www.structures.ucsd.edu/se_directory)
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Introduction to the Department

Department Mission and Goals
The curricula of the Department of Structural Engineering has been specifically developed to educate and train engineers using a holistic approach to structural systems engineering by emphasizing and building on the commonality of engineering structures in materials, mechanics, analysis and design across the engineering disciplines of aerospace, civil, marine and mechanical engineering.

The Structural Engineering program has strong components of laboratory experimentation, numerical computation, and engineering design. Design is emphasized throughout the curricula by open-ended homework problems, laboratory and computer courses which include student-initiated projects, through team assignments and exercises, and finally by senior design project courses which involve teams of students working to solve engineering design problems brought in from industry. The Structural Engineering program is designed to prepare students receiving bachelor’s degrees for professional careers or for graduate education in their intended area of specialization. In addition, the program is structured to provide a solid foundation for students who intend to use their undergraduate engineering education as preparation for postgraduate professional training in non-technological fields such as business administration, law or medicine.

WHAT DO STRUCTURAL ENGINEERS DO?
Design, analyze & create:
Buildings
Bridges
Dams
Automobiles
Airplanes
Rockets
Satellites
Ships
Off-shore facilities
Mechanical
Structures
Sporting Goods
THE FUTURE !!
**Program mission and objectives**

The B.S. Structural Engineering program is accredited by the ABET Inc. Engineering Accreditation Commission (Accreditation Board for Engineering and Technology). Accreditation is an assurance that the program meets established quality standards.

**B.S. Structural Engineering Mission**

To provide a comprehensive education and training to engineers using a holistic approach to structural systems engineering by emphasizing and building on the commonality of engineering structures at the levels of materials, mechanics, analysis and design.

**B.S. Structural Engineering Objectives**

Program Objectives represent graduates performance 3 to 5 years after completing the B.S. program:

1. **Take advantage** of a **strong technical education** at the undergraduate level to embark on successful professional careers in **industry** or to continue with a **graduate education** in their area of specialization.

2. Consistently and successfully **apply fundamental Structural Engineering principles** within their chosen engineering application area (such as Aerospace, Civil, Marine, and Mechanical).

3. **Apply** broad **multi-disciplinary skills** necessary to accomplish professional objectives in a **rapidly changing technological world**.

4. **Understand the ethical issues** pertaining to engineering, **adopt** industry **standards of ethical behavior**, and **apply** appropriate **communication and collaboration skills essential for professional practice**.

**B.S. Structural Engineering Outcomes**

Program Outcomes are the expected knowledge, skills, attitudes, and behaviors of students at the time of completing the B.S. program:

a. An ability to apply knowledge of mathematics, science, and engineering

b. An ability to design and conduct experiments, as well as being able to analyze and interpret data

c. An ability to design a system, component, or process to meet desired needs

d. An ability to function in multidisciplinary teams

e. An ability to identify, formulate, and solve engineering problems

f. An understanding of professional and ethical responsibility

g. An ability to communicate effectively with written, oral, and visual means

h. The broad education necessary to understand the impact of engineering solutions in a global and societal context

i. A recognition of the need for and an ability to engage in life-long learning

j. A knowledge of contemporary issues

k. An ability to use modern engineering techniques, skills, and computing tools necessary for engineering practice
**Department Background**

The Department of Structural Engineering (SE) was formally established on July 1, 1999 with Professor Frieder Seible as its first Chairman. Structural Engineering had its beginning in the Department of Aerospace and Mechanical Engineering Sciences (DAMES), instituted in March of 1964. In January of 1972, DAMES was renamed to the Department of Applied Mechanics and Engineering Sciences (AMES) to reflect its growth into other instructional and research areas. AMES offered instruction in mechanical engineering, structural engineering, chemical engineering, bioengineering and systems science. In 1989, the systems science group moved to the Department of Electrical and Computer Engineering (ECE). The first departmental spin-off in AMES came in 1994 with the formation of the Bioengineering Department (BE). In 1995 three separate departmental divisions were formed, namely, a Division of Mechanical Engineering, a Division of Chemical Engineering, and a Division of Structural Engineering. In July of 1999, AMES was divided into two new departments: Department of Mechanical and Aerospace Engineering (MAE) and Department of Structural Engineering.

The undergraduate degree programs offered by the Jacobs School of Engineering are listed by department in Table 1.

<table>
<thead>
<tr>
<th><strong>Departments</strong></th>
<th><strong>Degree Programs</strong></th>
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<tbody>
<tr>
<td>Structural Engineering (SE)</td>
<td>B.S. Structural Engineering*+</td>
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<tr>
<td>Mechanical and Aerospace Engineering (MAE)</td>
<td>B.S. Mechanical Engineering*+</td>
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<td></td>
<td>B.S. Aerospace Engineering*+</td>
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<td>B.S. Environmental Engineering+</td>
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<td>Nano Engineering</td>
<td>B.S. Chemical Engineering*+</td>
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<td>Bioengineering (BE)</td>
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<td>Computer Science and Engineering (CSE)</td>
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<td>B.S. Biotechnology*+</td>
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<td></td>
<td>B.S. Bioinformatics+</td>
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<td>B.S. Biosystems+</td>
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<tr>
<td>Electrical and Computer Engineering (ECE)</td>
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<td>B.S. Computer Engineering+</td>
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<td></td>
<td>B.S. Computer Science: Bioinformatics+</td>
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<td></td>
<td>B.A. Computer Science+</td>
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<td></td>
<td>Minor in Computer Science</td>
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*ABET Accredited; for more information on ABET and the process of accrediting academic programs, go online at [http://www.abet.org/about.html](http://www.abet.org/about.html).

+All engineering majors are currently impacted. Visit the appropriate majordepartmental website for additional information on that particular impacted major.
The Value of Integrity at UCSD in the Structural Engineering Department

The Structural Engineering department faculty, staff, and students together strive to uphold the value of integrity in all aspects of education and scholarship. This value is essential for the academic community to thrive and to protect the validity of intellectual work and discourse. In light of this goal, the Structural Engineering department refers to the UCSD Policy on Integrity of Scholarship: [http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/](http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/). The opening paragraph in this policy affirms the importance of integrity and clearly states the overall principles:

“Integrity of scholarship is essential for an academic community. The University expects that both faculty and students will honor this principle and in so doing protect the validity of University intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned, without unauthorized aid of any kind. Instructors, for their part, will exercise care in planning and supervising academic work, so that honest effort will be upheld.”

The Structural Engineering department will adhere to all of the tenets of this policy, which dictates the responsibilities and obligations of the members of the university community to uphold the value of integrity as well as the procedures and consequences for those who violate its tenets.

Defining Academic Misconduct

Academic misconduct is broadly defined as any prohibited and dishonest means to receive course credit, a higher grade, or avoid a lower grade.

Academic misconduct misrepresents your knowledge and abilities, which undermines the instructor’s ability to determine how well you’re doing in the course.

Instructors have the authority to define academic integrity in their classes, because the expectations for academic conduct are tied directly to the objectives of the class. So there will be different rules and expectations for every class, and maybe every assignment in the same class!

However, you can generally assume the following rules apply unless the instructor tells you otherwise:

- Complete all academic assignments by yourself.
- Don’t use aids during an exam.
- Acknowledge and cite source material in your papers or assignments.
- Don’t alter a graded exam and submit for regrade.
- Don’t copy another student’s assignment, in part or in total, and submit it as your own work.

If you’re unsure about how to complete an academic assignment with integrity, talk to your instructor or teaching assistant.

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Further resources for students on issues of academic integrity can be found on the following UCSD website: [https://students.ucsd.edu/academics/academic-integrity](https://students.ucsd.edu/academics/academic-integrity).

Job Offer Acceptance Guidelines
ADMISSION TO STRUCTURAL ENGINEERING

The university has declared the B.S. in Structural Engineering as “capped”. Effective Fall 2015, ALL engineering majors are capped for ALL students. Having capped status means that you will not automatically be admitted to the major even if you are admitted to UCSD. In other words there is a cap on the number of students who can declare the major. This is due to the fact that the number of students interested in structural engineering undergraduate programs exceeds the resources available to accommodate this demand. Providing a quality program is of the highest priority to the Department of Structural Engineering.

NEW FRESHMAN ADMISSION:
Students will be selected according to the UC San Diego Office of Undergraduate Admissions Holistic Review scores, taking into consideration the number of slots available in the Structural Engineering Department.

NEW TRANSFER ADMISSION:
Students will be selected by the UC San Diego Office of Undergraduate Admissions based on the students’ community college GPA, and taking into consideration the number of slots available in the Structural Engineering Department. Additionally, transfer students should have completed courses equivalent to UC San Diego’s Math 18 (formerly Math 20F), Math 20A-D; Physics 2A–C, 2BL, 2CL; and Chemistry 6A.

For more detailed information on UC San Diego’s application and admissions process, please visit http://admissions.ucsd.edu/freshmen/index.html.

CONTINUING STUDENT ADMISSION (CHANGE OF MAJOR):
The Structural Engineering Department will admit 10 continuing students into the capped Structural Engineering major each year. Continuing students are not eligible to apply after 6 quarters (2 years) for Freshman, and after 3 quarters (1 year) for Transfers, as time to graduation would be delayed. Continuing students who wish to be considered must meet the following minimum requirements:

Students who entered UCSD as a FRESHMAN:
Completion of all the following Lower Division Requirements for the requested major:
If applying after 1st year: Math 20A — Math 20C
Physics 2A, 2B, and 2BL
Chem 6A

If applying after 2nd year: Math 20A — 20E and Math 18
Physics 2A—2C, 2BL and 2CL
Chem 6A

Students who entered UCSD as a TRANSFER:
Completion of all the following Lower Division Requirements for the requested major:
Math 20A—20E and Math 18
Physics 2A—2C, 2BL and 2CL
Chem 6A

Upon completion of these courses, students can apply using the My JSOE Major Change Application which can be found on the Admissions page of the Structural Engineering website (http://www.structures.ucsd.edu/academics/undergraduate-program/undergraduate-admission). Applications will be accepted only once per year during Summer. Continuing students’ applications will be approved, starting with the student having the highest GPA in the required courses, until the target enrollment number is reached.
REGULATIONS AND REQUIREMENTS

Course requirements are the same for transfer students as they are for incoming freshmen and continuing students. Accordingly, when planning their program, transfer students should be mindful of lower-division prerequisite course requirements for their major, as well as for meeting college requirements. Students who have taken equivalent courses elsewhere may request to have transfer credits apply toward the department’s major requirements. This is accomplished by submitting a petition along with supporting documentation from the institution where the course(s) were taken. The Structural Engineering Undergraduate Affairs Committee reviews these documents for approval. No transfer credit will be given for SE 1, SE 3 and SE 9. The Undergraduate Student Petition forms are available on TritonLink.

Petition Process: Students may petition UCSD courses not listed as Structural Engineering approved courses, or courses taken at other universities, to count towards fulfilling requirements for the major. However, before petitioning:

- Students must check with the UCSD Admissions Office about the transfer of credits from other institutions, including institutions in other countries.
- Students who wish to study abroad should obtain tentative pre-approval of courses before enrolling to be sure courses taken abroad may count towards requirements for the major.

When submitting a petition to have courses accepted towards Structural Engineering requirements, students must:

- Attach a course outline from the proposed course or a catalog course description if an outline cannot be obtained.
- Attach a transcript (does not have to be official), showing the grade you received in the course.
- Complete a separate petition form for each course to be petitioned.
- Submit the completed petition(s) and required attachments to the Structural Engineering Undergraduate Advisors in SME 340A or SME 340E. The Undergraduate Affairs Committee will then review the petition.

Students wishing to petition for math, physics or chemistry taken outside of UCSD must submit their petitions directly to those departments. Students transferring in should check their TritonLink account to see if the Admissions Office has already given them credit.

Students are reminded that pre-requisites for courses have been carefully chosen and evaluated; if a pre-requisite for a course is listed, this means that the course inherently requires the student know the material from the pre-requisite thoroughly. Consequently, students are advised that petitioning to waive a pre-requisite or take a pre-requisite concurrently is strongly discouraged, as it will likely result in a denial of the petition.

Grading Requirements: All courses required for the major (lower-division and upper-division, including Math, Physics and Chemistry) must be taken for a letter grade. Pass/No Pass (P/NP) grades will only be accepted for independent study courses i.e. (SE 195-199).

Grade Point Average (GPA) Requirement: A minimum GPA of 2.0 is required to obtain the B.S. degree. Students are required to have a grade of C- or better in all course work required for the major. The grade D is not accepted for any major requirements, including Math, Physics and Chemistry.

Double Majors: Engineering students may not double major within any of the departments within the Jacobs School of Engineering.
ACADEMIC ADVISING

Orientation: Incoming freshman and transfer students are required to attend a scheduled orientation meeting with Structural Engineering faculty and members of the advising staff prior to the initiation of classes. This department orientation is typically held on the Tuesday before classes start (week zero). You will be notified of the exact date/time.

Structural Engineering Advising Staff: The Structural Engineering advising staff assists students with their program of study. The staff is most helpful in finding answers to questions of the type: “When will SE 131 be offered again? Can SE 160A be used as a technical elective? Can I petition courses taken at a community college?” etc. The undergraduate advisors are available in the SME Building, rooms 340A and 340E during walk-in advising hours, via the Virtual Advising Center (https://aventeur.ucsd.edu/students/vac) and by phone. Walk-in advising hours: M-F, 9:00am-11:30am and M-Th, 1:30-3:30pm.

The Structural Engineering advising program runs parallel to the function of college advisors who assist students with the general-education requirements for each college. The Structural Engineering advising staff assists students with Structural Engineering major requirements, and students should not rely upon their college advisors for Structural Engineering major requirements.

Faculty Advisor: Every incoming Structural Engineering student is assigned a faculty advisor who will continue in that role until the student graduates. The faculty advisors assist students in the planning of their professional career and academic opportunities, as well as serve as mentors through their academic career at UCSD. Assigned faculty advisors and their contact information may be found on the web at http://www.structures.ucsd.edu/academics/undergraduate-program/undergraduate-advising/advisor-information.

When to see your Faculty Advisor
1. Discuss problems which affect academic performance
2. Explore career options
3. Assess academic progress
4. Ask about research opportunities

When to see the SE Undergraduate Advisor
1. When filing a petition
2. Devising a course plan
3. Discuss any problems which affect academic progress
4. Finding out about internship/scholarship information

How you and your advisor should prepare

You need to:

Contact and keep in touch with your advisor.

Come with specific questions in mind and prepared (pen, class schedule, all necessary forms).

Ask about other sources of information.

Be open concerning school work, study habits, academic progress, etc.

Make decisions concerning careers, choice of major, and selection of courses.

Your SE advisor will:

Post office hours.

Listen and help provide solutions to any problems you are experiencing.

Provide accurate and specific information.

Have resource material on hand.

Suggest other sources of information.

Check your schedule for appropriate selection of courses.
STRUCTURAL ENGINEERING DEGREE
PROGRAMS AND REQUIREMENTS

The Department of Structural Engineering offers students a Bachelor of Science degree in Structural Engineering, which is ABET accredited. Specific course requirements for the program are outlined in this section. In addition to the required technical courses specifically indicated, a suggested scheduling of humanities and social science courses are distributed in the plan for students to use to meet college general-education requirements. To graduate, students must maintain an overall GPA of at least a 2.0, and the department requires at least a C- grade in each course required for the major. All courses required for the major (lower-division and upper-division, including Math, Physics and Chemistry) must be taken for a letter grade. The B.S. program requires a minimum of 145 units plus college requirements.

Students are strongly encouraged to follow the course plan appearing on pages 13. Deviations from the program of study must be approved by the Undergraduate Affairs Committee prior to taking alternative courses. In addition to specific courses that are required, a number of Technical Elective (TE) and Focus Sequence (FS) courses are required. Further information regarding Technical Electives and Focus Sequences can be found starting on page 14.

Students with different academic preparation may vary the scheduling of lower-division courses such as math, physics and chemistry, but should consult the department prior to doing so. Deviations in scheduling lower-division Structural Engineering courses are discouraged due to scheduling constraints. A tentative schedule of course offerings is available from the SE Department each spring for the following academic year. This schedule is posted on the SE Department website at http://www.structures.ucsd.edu/academics/undergraduate-program/undergraduate-course-offerings.

4-Year ABET Accredited Program in Structural Engineering

Structural Engineering is concerned with the design and analysis of aerospace, civil, marine, mechanical, electromechanical, and offshore structures. Examples include bridges, dams, buildings, aircraft, spacecraft, ships, oil platforms, automobiles, other transportation vehicles, and even microchips and biological tissue. This field requires a thorough knowledge of the behavior of solids (metals, plastics, concrete, soils, and composite materials), fluid mechanics as it relates to structural loads, dynamics as it relates to structural response, mathematics for the generation of theoretical structural models and numerical analysis, and computer science for simulation purposes associated with computer-aided design, response analyses, and data acquisition. The basic understanding of materials behavior and structural performance is enhanced by laboratory courses involving static and dynamic testing of structural models, and the investigation of response of structural systems. Within this area, students can specialize in the Focus Sequences: (a) civil structures (b) aerospace structures, (c) structural health monitoring/non-destructive evaluation, or (d) geotechnical engineering.
### 4-Year ABET Accredited Program in Structural Engineering

#### Four-Year Course Schedule for Structural Engineering Degree Program

<table>
<thead>
<tr>
<th>FALL</th>
<th>WINTER</th>
<th>SPRING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Freshman Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 20A</td>
<td>Math 20B</td>
<td>Math 20C</td>
</tr>
<tr>
<td>GE</td>
<td>SE 1</td>
<td>SE 3</td>
</tr>
<tr>
<td>Chem 6A</td>
<td>Phys 2A</td>
<td>Phys 2B/2BL</td>
</tr>
<tr>
<td>GE</td>
<td>GE</td>
<td>GE</td>
</tr>
</tbody>
</table>

| **Sophomore Year** | | |
| Math 20D | Math 18 | Math 20E |
| SE 101A | SE 101B | SE 9 |
| Phys 2C/2CL | SE 110A | SE 110B |
| GE | GE | SE 104/104L |

| **Junior Year** | | |
| SE 101C | SE 115 | SE 130B |
| SE 121A | SE 121B | SE 131 |
| SE 130A | FS² | FS |
| GE | GE | GE |

| **Senior Year** | | |
| SE 125 | SE 140A/143A * | SE 140B/143B |
| FS | TE³ | TE |
| FS | TE | GE |
| GE | GE | GE |

¹GE is a general education/college requirement.
²FS is a focus sequence course.
³TE is a technical elective course.

*Students take SE 140A/B or SE 143A/B depending on their FS.*
### Three-Year (Transfer) Course Schedule for Structural Engineering Degree Program

<table>
<thead>
<tr>
<th></th>
<th>FALL</th>
<th>WINTER</th>
<th>SPRING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Freshman Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 20E</td>
<td>SE 1</td>
<td>SE 3</td>
<td></td>
</tr>
<tr>
<td>SE 101A</td>
<td>SE 101B</td>
<td>SE 9</td>
<td></td>
</tr>
<tr>
<td>GE(^1)</td>
<td>SE 110A</td>
<td>SE 110B</td>
<td>SE 104/104L</td>
</tr>
</tbody>
</table>

| **Sophomore Year** |                        |                          |                          |
| SE 101C       | SE 115                   | SE 130B                  |                          |
| SE 121A       | SE 121B                  | SE 131                   |                          |
| SE 130A       | FS\(^2\)                 | FS                       |                          |

| **Junior Year**  |                        |                          |                          |
| SE 125         | SE 140A/143A\(^*\)      | SE 140B/143B             |                          |
| FS             | TE\(^3\)                 | TE                       | GE                       |
| FS             | TE                       | GE                       |                          |

\(^1\)GE is a general education/college requirement.

\(^2\)FS is a focus sequence course.

\(^3\)TE is a technical elective course.

\(^*\)Students take SE 140A/B or SE 143A/B depending on their FS.
Focus Sequences

Students should note that four course slots must be filled by focus sequence (FS) courses. The department currently offers four focus sequences, as listed below, and students must complete one of the focus sequences of their choice. Students should note that not all focus sequence courses will be offered every year. Students should consult the department Undergraduate Affairs Office in the spring quarter of the year before they begin taking focus sequence classes to ensure that the appropriate courses will be offered.

<table>
<thead>
<tr>
<th>Sequence Name</th>
<th>Courses in Sequence</th>
<th>Capstone Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Structures (CS)</td>
<td>SE 103 Conceptual Structural Design&lt;br&gt;SE 150 Design of Steel Structures&lt;br&gt;SE 151A Design of Reinforced Concrete&lt;br&gt;SE 181 Geotechnical Engineering</td>
<td>SE 140A &amp; SE 140B&lt;br&gt;(Professional Issues and Design for Civil Structures I &amp; II)</td>
</tr>
<tr>
<td>Geotechnical Engineering (GE)</td>
<td>SE 151A Design of Reinforced Concrete&lt;br&gt;SE 181 Geotechnical Engineering&lt;br&gt;SE 182 Foundation Engineering&lt;br&gt;SE 184 Ground Improvement</td>
<td>SE 140A &amp; SE 140B&lt;br&gt;(Professional Issues and Design for Civil Structures I &amp; II)</td>
</tr>
</tbody>
</table>

Technical Electives

Students are required to pick three technical electives from courses outside their focus area. These courses can be selected from other focus sequences or from a list of pre-approved upper division or graduate courses. The rationale behind technical electives is to enable students to either learn more about specific topics or to gain specialized knowledge in subject areas outside the selected focus sequence. A course cannot be taken both as part of a focus sequence and as a TE. Courses such as SE 195, SE 197 and SE 198 are not allowed as technical electives in meeting the upper-division major requirements. SE 199 can be used as a technical elective only under restrictive conditions. Policies regarding these conditions are listed on page 17 of this handbook. Students are discouraged from deviating from the pre-approved list, but students who wish to do so are required to submit a petition to the Undergraduate Affairs Committee before taking the course. Students taking courses other than those in the list or petitioning for changes after taking an unapproved course cannot be guaranteed that the course is acceptable. Students wishing to take graduate courses (200 level) must have a minimum 3.0 overall GPA, instructor approval and department stamp to enroll.
### Pre-approved Technical Elective (TE) Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 100D/100L*</td>
<td>TIES program (6 units)</td>
</tr>
<tr>
<td>SE 103</td>
<td>Conceptual Structural Design</td>
</tr>
<tr>
<td>SE 142</td>
<td>Design of Composites Structures</td>
</tr>
<tr>
<td>SE 150</td>
<td>Design of Steel Structures</td>
</tr>
<tr>
<td>SE 151A</td>
<td>Design of Reinforced Concrete</td>
</tr>
<tr>
<td>SE 151B</td>
<td>Design of Pre-stressed Concrete</td>
</tr>
<tr>
<td>SE 154</td>
<td>Design of Timber</td>
</tr>
<tr>
<td>SE 160A-B</td>
<td>Aerospace Structural Design</td>
</tr>
<tr>
<td>SE 163</td>
<td>Nondestructive Evaluation and Design</td>
</tr>
<tr>
<td>SE 165</td>
<td>Structural Health Monitoring</td>
</tr>
<tr>
<td>SE 168</td>
<td>Structural System Testing and Model Correlation</td>
</tr>
<tr>
<td>SE 171</td>
<td>Aerospace Structures Repair</td>
</tr>
<tr>
<td>SE 180</td>
<td>Earthquake Engineering</td>
</tr>
<tr>
<td>SE 181</td>
<td>Geotechnical Engineering</td>
</tr>
<tr>
<td>SE 182</td>
<td>Foundation Engineering</td>
</tr>
<tr>
<td>SE 184</td>
<td>Ground Improvement</td>
</tr>
<tr>
<td>SE 200-289**</td>
<td>graduate courses</td>
</tr>
<tr>
<td>MAE 101B</td>
<td>Advanced Fluid Mechanics</td>
</tr>
<tr>
<td>MAE 101C</td>
<td>Heat Transfer</td>
</tr>
<tr>
<td>MAE 104</td>
<td>Aerodynamics</td>
</tr>
<tr>
<td>MAE 105</td>
<td>Introduction of Mathematical Physics</td>
</tr>
<tr>
<td>MAE 110A-B</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>MAE 118</td>
<td>Introduction to Energy Systems</td>
</tr>
<tr>
<td>MAE 119</td>
<td>Introduction to Renewable Energy</td>
</tr>
<tr>
<td>MAE 120</td>
<td>Introduction to Nuclear Energy</td>
</tr>
<tr>
<td>MAE 122</td>
<td>Flow and Transport in the Environment</td>
</tr>
<tr>
<td>MAE 131C</td>
<td>Solid Mechanics III: Small Deflection Theory of Plates</td>
</tr>
<tr>
<td>MAE 140</td>
<td>Linear Circuits</td>
</tr>
<tr>
<td>MAE 145</td>
<td>Introduction to Robotic Planning and Estimation</td>
</tr>
<tr>
<td>MAE 143A</td>
<td>Signals and Systems</td>
</tr>
<tr>
<td>MAE 143B</td>
<td>Linear Control</td>
</tr>
<tr>
<td>MAE 143C</td>
<td>Digital Control Systems</td>
</tr>
<tr>
<td>MAE 149</td>
<td>Sensor Networks</td>
</tr>
<tr>
<td>MAE 160</td>
<td>Mechanical Behavior of Materials</td>
</tr>
<tr>
<td>MAE 165</td>
<td>Fatigue and Failure Analysis of Engineering Components</td>
</tr>
<tr>
<td>MAE 166</td>
<td>Nanomaterials</td>
</tr>
<tr>
<td>MAE 167</td>
<td>Wave Dynamics of Materials</td>
</tr>
<tr>
<td>MAE 180A</td>
<td>Spacecraft Guidance I</td>
</tr>
<tr>
<td>MAE 181</td>
<td>Space Mission Analysis and Design</td>
</tr>
</tbody>
</table>

* ENG 100D and one ENG 100L course must be taken together for a total of 6 units to count as one technical elective. TIES can only be used for a total of one TE.

** Students wishing to take graduate courses must have a minimum 3.0 overall GPA and obtain instructor approval prior to enrolling. Graduate students will have priority enrollment. You may not count a graduate course as a TE if you took the undergraduate equivalent and vice versa (i.e. – SE 160A/SE 260A, SE 160B/SE 260B, SE 165/SE 265, SE 168/SE 268, SE 171/SE 262).

All Technical Elective courses must be taken for letter grade and you must earn a C- or better for it to be counted for the major.
SE 199 as a Technical Elective
SE students may take SE 199, Independent Study for Undergraduates, under the guidance of an SE faculty member. Taking SE 199s may not replace ABET approved courses. This course is taken as an elective on a P/NP basis. Under the following restrictive conditions, however, it may be petitioned to satisfy upper-division technical course requirements for the major. Minimum qualifications are the student must be in the SE major and the course must be taken for at least 4 units (can also be over 2 quarters for 2 units each).

Students interested in taking an SE 199 course must identify a faculty member with whom they wish to work and propose a research or study topic. After obtaining the faculty member’s concurrence on the topic and scope of the study, the student must submit a Special Studies Course form to the Structural Engineering Undergraduate Affairs Committee. To seek technical elective credit students must also submit an undergraduate student petition form. The forms must be completed, approved, and processed prior to the beginning of the quarter in which the course is to be taken. Please keep in mind that registration into a 199 does not take place until the Special Studies form is received by the Registrars Office.

Structural Engineering Course Prerequisites:

<table>
<thead>
<tr>
<th>Required courses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 6A</td>
<td></td>
</tr>
<tr>
<td>Math 20A</td>
<td>See UCSD General Catalog</td>
</tr>
<tr>
<td>Math 20B</td>
<td>See UCSD General Catalog</td>
</tr>
<tr>
<td>Math 20C</td>
<td>See UCSD General Catalog</td>
</tr>
<tr>
<td>Math 20D</td>
<td>Math 20C</td>
</tr>
<tr>
<td>Math 20E</td>
<td>Math 20C</td>
</tr>
<tr>
<td>Math 18 (formerly Math 20F)</td>
<td>Math 3C or Math 4C or Math 10A or Math 20A</td>
</tr>
<tr>
<td>Phys 2A</td>
<td>Math 20A concurrent with Math 20B</td>
</tr>
<tr>
<td>Phys 2B</td>
<td>Phys 2A, Math 20B, concurrent with Math 20C</td>
</tr>
<tr>
<td>Phys 2BL</td>
<td>Phys 2A, concurrent with Phys 2B</td>
</tr>
<tr>
<td>Phys 2C</td>
<td>Phys 2A, 2B, Math 20C, concurrent with Math 20D</td>
</tr>
<tr>
<td>Phys 2CL</td>
<td>Phys 2A and Phys 2B, concurrent with Phys 2C</td>
</tr>
<tr>
<td>SE 1 Introduction to Structures and Design</td>
<td>Engineering Major</td>
</tr>
<tr>
<td>SE 3 Graphical Communication for Eng. Design</td>
<td>SE 1</td>
</tr>
<tr>
<td>SE 9 Algorithms and Programming</td>
<td>Math 20D and Math 18 (formerly Math 20F)</td>
</tr>
<tr>
<td>SE 101A Mechanics I: Statics</td>
<td>Math 20C, Phys 2A</td>
</tr>
<tr>
<td>SE 101B Mechanics II: Dynamics</td>
<td>SE 101A (or MAE 130A)</td>
</tr>
<tr>
<td>SE 101C Mechanics III: Structural Dynamics</td>
<td>Math 18 (formerly Math 20F) and SE 101B (or MAE 130B)</td>
</tr>
</tbody>
</table>
**Required Courses continued……**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 104</td>
<td>Structural Materials</td>
<td>SE 1 and SE 101A (or MAE 130A)</td>
</tr>
<tr>
<td>SE 104L</td>
<td>Structural Materials Lab</td>
<td>SE 104</td>
</tr>
<tr>
<td>SE 110A</td>
<td>Solid Mechanics I</td>
<td>Math 20D, SE 101A (or MAE 130A)</td>
</tr>
<tr>
<td>SE 110B</td>
<td>Solid Mechanics II</td>
<td>SE 110A</td>
</tr>
<tr>
<td>SE 115</td>
<td>Fluid Mechanics</td>
<td>Phys 2A, Math 20D</td>
</tr>
<tr>
<td>SE 121A</td>
<td>Intro. to Computing for Engineers</td>
<td>SE 9 and SE 101A (or MAE 130A)</td>
</tr>
<tr>
<td>SE 121B</td>
<td>Computing Projects in SE</td>
<td>SE 121A and SE 101C (or MAE 130C)</td>
</tr>
<tr>
<td>SE 125</td>
<td>Statistics, Probability and Reliability</td>
<td>Engineering Major</td>
</tr>
<tr>
<td>SE 130A</td>
<td>Structural Analysis I</td>
<td>SE 110A</td>
</tr>
<tr>
<td>SE 130B</td>
<td>Structural Analysis II</td>
<td>SE 130A</td>
</tr>
<tr>
<td>SE 131</td>
<td>Finite Element Analysis</td>
<td>SE 101C (or MAE 130C), SE 121B and SE 130B (co-requisite)</td>
</tr>
<tr>
<td>SE 140A</td>
<td>Prof. Issues &amp; Design for Civil I</td>
<td>SE 130B and SE 150</td>
</tr>
<tr>
<td>SE 140B</td>
<td>Prof. Issues &amp; Design for Civil II</td>
<td>SE 140A, SE 151A and SE 181</td>
</tr>
<tr>
<td>SE 143A</td>
<td>Aerospace Structural Design I</td>
<td>SE 3, SE 142 and SE 160B</td>
</tr>
<tr>
<td>SE 143B</td>
<td>Aerospace Structural Design II</td>
<td>SE 143A</td>
</tr>
</tbody>
</table>

**Focus Sequence and “SE” Technical Elective courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 103</td>
<td>Conceptual Structural Design</td>
<td>SE 9, SE 101A (or MAE 130A), SE 104, and SE 104L</td>
</tr>
<tr>
<td>SE 142</td>
<td>Design of Composite Structures</td>
<td>SE 110A, SE 110B, and SE 160A</td>
</tr>
<tr>
<td>SE 150</td>
<td>Design of Steel Structures</td>
<td>SE 130A</td>
</tr>
<tr>
<td>SE 151A</td>
<td>Design of Structural Concrete</td>
<td>SE 103, SE 130A</td>
</tr>
<tr>
<td>SE 151B</td>
<td>Design of Structural Concrete</td>
<td>SE 151A</td>
</tr>
<tr>
<td>SE 154</td>
<td>Timber Design</td>
<td>SE 103, SE 130A</td>
</tr>
<tr>
<td>SE 160A</td>
<td>Aerospace Structural Design</td>
<td>SE 2, SE 2L, SE 101B (or MAE 130B), SE 110A</td>
</tr>
<tr>
<td>SE 160B</td>
<td>Aerospace Structural Design</td>
<td>SE 101C (or MAE 130C) and SE 160A</td>
</tr>
<tr>
<td>SE 163</td>
<td>Nondestructive Evaluation and Design</td>
<td>SE 110A, SE 110B</td>
</tr>
<tr>
<td>SE 165</td>
<td>Structural Health Monitoring</td>
<td>SE 101C (or MAE 130C)</td>
</tr>
<tr>
<td>SE 168</td>
<td>Struct. System Testing and Model Correlation</td>
<td>SE 101C (or MAE 130C), SE 131</td>
</tr>
<tr>
<td>SE 171</td>
<td>Aerospace Structures Repair</td>
<td>SE 160A</td>
</tr>
<tr>
<td>SE 180</td>
<td>Earthquake Engineering</td>
<td>SE 110A, SE 130A</td>
</tr>
<tr>
<td>SE 181</td>
<td>Geotechnical Engineering</td>
<td>SE 110A</td>
</tr>
<tr>
<td>SE 182</td>
<td>Foundation Engineering</td>
<td>SE 181</td>
</tr>
<tr>
<td>SE 184</td>
<td>Ground Improvement</td>
<td>SE 181</td>
</tr>
</tbody>
</table>

*all courses must be taken for a letter grade*
Transfer Students

Students transferring into Structural Engineering from outside UCSD have unique circumstances that do not always fit neatly into the course plans provided. Nonetheless, all of the same course requirements apply equally to all transfer students. Even though students may enter UCSD with junior-level standing, most transfer students should expect to take up to three years to complete all department requirements. Students transferring from California community colleges have typically planned for their transfer by using the ASSIST program (http://www.assist.org) that shows how various community college courses translate into UCSD courses. Transfer students are strongly encouraged, as soon as possible upon their arrival on campus, to make an appointment with the Undergraduate Affairs Staff Advisor to plan out their academic careers to facilitate their successful completion of the major.

Some common transfer student frequently-asked questions are:

Do I have to take SE 1 and SE 3 since I am a transfer student?
Yes, SE 1 and SE 3 are required for ALL students and serve as an important introduction to the program of study at UCSD.

Is there an equivalent course to SE 1, SE 3, or SE 9 at the community colleges?
Not for SE 1 and SE 3. These courses are designed to be unique to the UCSD Structural Engineering major.
There may be an equivalent course for SE 9 available at the community colleges. Check assist.org. If there is not a course at your community college articulated with SE 9 but you took a MATLAB programming course, you may submit a petition to have the course reviewed for major credit.

Do I have to take SE 1 my first year at UCSD?
YES. It is critical to follow the course plan listed on page 14 or that the . Courses in the curriculum are designed to support the knowledge from the previous course. Consult with the SE undergraduate advisors if you have any concerns/questions.

Can I take my lower division courses for Pass/No Pass?
No, ALL courses for the major must be taken for letter grade.

If I receive a D grade, is that considered passing?
No, you must receive a C- or better for the major.

Can I receive credit for Statics and Dynamics if I took it at a community college?
You may submit a petition to have the course reviewed for credit, and the Undergraduate Affairs Committee will review the petition.

Will my grades transfer from my community college?
No, only the units.

I got AP credit for Physics 2A and 2B. Do I have to take the 2BL lab?
Yes, lab experience is critical to experiential learning.
GENERAL EDUCATION/COLLEGE REQUIREMENTS

UCSD undergraduate students enroll in one of six colleges: Revelle, John Muir, Thurgood Marshall, Earl Warren, Eleanor Roosevelt, and Sixth. The colleges are distinguished by their particular educational philosophy and environment. The choice of college is independent of the choice of major; all colleges are open to all majors.

Each student must satisfy general-education course requirements determined by the college, as well as the major requirements determined by the department. The six colleges have widely different general-education course requirements. Please visit the college websites listed below to view the general education requirements for each college. Consult your college advisor if you have any questions about these requirements.

MARSHALL—http://marshall.ucsd.edu/academics/general-education-requirements.html

MUIR—http://muir.ucsd.edu/academics/degree_reqs.html

REVELLE—http://revelle.ucsd.edu/academics/general-education/index.html


SIXTH—http://sixth.ucsd.edu/academics/requirements/index.html

WARREN—http://warren.ucsd.edu/academics/ge-reqs.html

The Structural Engineering program allows for a maximum of 13 general education courses if a full schedule is taken. Depending on the number of Advanced Placement credits, students from certain colleges may not be able to graduate in the four-year schedule presented in the Structural Engineering curriculum table. In the Structural Engineering program, ABET accreditation requires students to take a total of at least twenty-four units in the arts, humanities, and social sciences, not including subjects such as accounting, industrial management, finance, or personnel administration. This requirement is typically satisfied by the general education requirements of all colleges.
INTEGRATED BACHELOR’S/MASTER’S DEGREE PROGRAM

An integrated program leading to a Bachelor of Science and a Master of Science Degree in Structural Engineering is offered to UCSD undergraduate students seeking to obtain the Master’s degree within one year of completion of the baccalaureate degree.

The Structural Engineering Department accepts applications at the end of the spring quarter of the student’s junior year (The deadline is in May, usually the end of the 2nd week. You should receive an e-mail in your junior year from the Graduate Affairs office notifying you of the exact date). The applicant must have completed at least 145 quarter units with a cumulative 3.5 GPA. Applicant must also be in the major.

Students accepted into the program by the department must follow the department and college requirements for the remainder of their undergraduate work in addition to the requirements of the integrated program.

Formal application to graduate study is made during the student’s senior year of undergraduate study. At that time the graduate application, the non-refundable application fee, original transcripts, and statement of purpose, are submitted to the graduate coordinator/department via the online application. GREs and letters of recommendation are not required for the BS/MS program. For more information, including the link to the online application, please visit: http://www.structures.ucsd.edu/academics/graduate-program/prospective-graduate-student-resources.

For students interested in pursuing graduate study in engineering after graduating from UCSD, information may be found at the Career Services Center special web page: http://career.ucsd.edu/undergrads/interest-areas/deciding-finding-programs.html.

IDEA STUDENT CENTER
(ENGINEERING STUDENT SERVICES)

The Jacobs School of Engineering supports several programs and services that promote academic and professional development for undergraduate students across all engineering departments. Students are encouraged to contact the IDEA (Inclusion, Diversity, Excellence and Advancement) Student Center about these programs by e-mail (idea@soe.ucsd.edu), by phone (858) 534-6105, or by person in Room 1400, Jacobs Hall (formerly Engineering Building Unit I). Some of these programs and services are discussed briefly below. Students may access the web at http://www.jacobsschool.ucsd.edu/student for a complete listing of opportunities and services provided by the IDEA Student Center.

Triton Engineering Student Council (TESC). The Jacobs School of Engineering currently recognizes and supports twenty-four student chapters of various professional and honorary engineering societies. These organizations and other interested undergraduate engineering students form TESC, which helps to identify and address engineering student needs and concerns. TESC is a critical component of the School and it is supported through the Dean’s Office. TESC coordinates school-wide student events such as E-Week, DECaF, and the Ring Ceremony for graduating seniors. TESC also hosts engineering K-12 outreach events and supports other undergraduate student organizations. TESC may be found on the web at http://tesc.ucsd.edu or they can be contacted by electronic mail at tesc@ucsd.edu.

Engineering Student Employment Opportunities. In a coordinated effort, Engineering Student Services assists Career Services, the Academic Internship Program, interested companies, faculty and staff in disseminating information about job opportunities for engineering students. These opportunities include permanent employment, part-time employment during the academic year, summer employment and contract work. This information can be found on the web at http://jacobsschool.ucsd.edu/idea/resources/careers.shtml. If you have additional questions about this service, you may contact the coordinator through e-mail (idea@soe.ucsd.edu), or by phone (858) 534-6105.

Team Internship Program (TIP). Summer Team Internships are part of the Jacobs School’s effort to enhance students’ education through real-world engineering experiences in a team setting. Students work on-site with industry partners
as a multi-disciplinary team focused on a clearly defined and significant project. This is a paid internship program which will last 10-12 weeks over the summer and requires 40 hours per week. Additional information can be found on the web at [http://jacobsschool.ucsd.edu/external/external_cap/cap_team_intern](http://jacobsschool.ucsd.edu/external/external_cap/cap_team_intern). Students who are interested in participating in TIP can contact the program coordinator via email at JacobsStudentTeams@soe.ucsd.edu or by phone (858) 534-6105.

_Teams In Engineering Service (TIES)._ TIES is an innovative service-learning academic program putting UCSD undergraduates and their technical and creative skills to work for San Diego non-profit organizations. Multi-disciplinary teams of UCSD students design, build and deploy projects that solve technology-based problems for community partners. TIES projects can range from working with orthopedists and physical therapists to develop and build mechanical tools or prosthetics for the developmentally disabled, to working with agriculture to develop new irrigation solutions for local farming communities. Information on current TIES projects, how to apply, and the course structure, can be found on the web at [http://globalties.ucsd.edu](http://globalties.ucsd.edu).

_Orientation to Engineering (formerly Access to Careers in Engineering ACE)._ The Orientation to Engineering course series focuses on the successful transition and orientation of both new freshmen and transfer students to engineering studies at UCSD, with particular emphasis on those students coming from economically or educationally disadvantaged backgrounds. Each course is worth 1 unit. Course descriptions and additional information can be found on the web at [http://jacobsschool.ucsd.edu/idea/programs/ote.shtml](http://jacobsschool.ucsd.edu/idea/programs/ote.shtml).

All engineering students are encouraged to work with his or her college advisor and engineering program representative in developing a plan of study and selecting the appropriate courses.

_IDEA Study Lab._ Tau Beta Pi and Eta Kappa Nu, Engineering Honor Societies, offer **FREE** tutoring sessions at the IDEA Study Lab for undergraduate engineering students. The IDEA Study Lab is located at Jacobs Hall 4600. To view the weekly tutoring schedule or to request an individual session for a specific class, visit the following website: [http://jacobsschool.ucsd.edu/idea/resources/idea studylab.shtml](http://jacobsschool.ucsd.edu/idea/resources/idea studylab.shtml).

### COMPUTER RESOURCES FOR UNDERGRADUATES

**ETS Accounts Available to Students**

Educational Technology Services (ETS, formerly ACMS) provides computer and media resources for UCSD faculty, staff, and students. If you are enrolled (not just accepted) as a regular UCSD student you may register yourself with ETS for basic computing services. Registering someone else or registering if you are not a qualified UCSD student is prohibited. New students have accounts created automatically when they accept admission. Go to the following page on the ETS website to see how to activate and access your account: [https://acms.ucsd.edu/students/index.html](https://acms.ucsd.edu/students/index.html).

**Open Computing Environment Account:** OCE accounts are designed to provide students with on-going access to computers labs and servers that are dedicated to supporting their major or division. OCE accounts support both personal computing and coursework. They receive additional resource allocations depending on the student’s enrollment in corresponding courses. It is important to be aware that disk space allocations are reduced again when courses end.

Structural Engineering students automatically qualify to upgrade to an OCE account. This will allow you access to the PFBH 161 Linux Lab as well as all ETS general purpose computer labs.

*For instructions on how to upgrade to an OCE account, please see the ETS student webpage at: [https://acms.ucsd.edu/students/orce-intro.html](https://acms.ucsd.edu/students/orce-intro.html).
ACADEMIC ENRICHMENT

A number of additional educational opportunities, not formally required in the curriculum, are available to undergraduates interested in exploring facets of engineering in more detail. These opportunities include participation in research, industrial internships, student societies, course instruction, and seminars. More on academic enrichment may be found online at [http://aep.ucsd.edu/](http://aep.ucsd.edu/).

Undergraduate Research and Independent Study

Undergraduates may participate in engineering research at UCSD through a number of informal and formal mechanisms. Many students first become familiar with research by participating 5-10 hours per week during the academic year or 10-20 hours per week in the summer on a volunteer basis. Other students are involved in research through the more formal programs described below.

**Independent Study for Undergraduates:**
SE199 courses offer qualified and motivated students the opportunity to work closely with faculty and graduate students and gain first hand experience in conducting research. Structural Engineering students may take SE 199, Independent Study for Undergraduates, under the guidance of a Structural Engineering faculty member. This course can only be taken as an elective on a P/NP basis under restricted conditions (see page 17).

**The Faculty Mentor Program:**
The Faculty Mentor Program (FMP) offers research experience to any junior or senior with at least a 2.7 GPA who wants to prepare for graduate school. Participants work as research assistants to UCSD faculty members for at least 10 hours per week for two quarters. Students receive 4 units of SE 199 (Independent Study) credit for each quarter, learn how to write a research proposal and paper, receive graduate school and fellowship information, and present their research at the annual Faculty Mentor Program Research Symposium at the end of the academic year. For further information please call 534-5791 or visit the FMP website at [http://students.ucsd.edu/academics/research/fmp/index.html](http://students.ucsd.edu/academics/research/fmp/index.html).

**Pacific Rim Undergraduate Experiences:**
The Pacific Rim Undergraduate Experiences (PRIME) program provides undergraduates with hands-on, full-time research experience in internationally collaborative settings. Against the backdrop of living abroad in another culture, students work as full-time researchers in scientific institutions located in countries such as Australia, China, India, Japan, Malaysia, New Zealand, or Taiwan. The students will collaborate with mentors at both their host institution and back at UC San Diego. Further information is available at [http://prime.ucsd.edu](http://prime.ucsd.edu).

ACADEMIC INTERNSHIPS

**UCSD Academic Internship Program (AIP)**
The Academic Internship Program is an academic course that offers students of all majors the opportunity to intern and conduct research in diverse corporate and community settings while earning 4, 8 or 12 units of P/NP academic credit over the course of the quarter. Through the academic internship experience students enhance their research, critical thinking, problem-solving, and writing skills by bringing an academic lens to a question or issue related to the internship experience. Students are required to intern a minimum number of hours based on the number of elected AIP 197 units. Students receive guidance from AIP counselors in identifying appropriate internships; résumé, cover letter and interview preparation; securing an internship; and identifying a faculty advisor for the research paper/project.

In order to participate in AIP 197, students must have completed 90 units and have a minimum GPA of 2.5 at the time of application. Transfer students must have completed one quarter of course work prior to the time of application. Further information is available at [http://aip.ucsd.edu](http://aip.ucsd.edu).
Opportunities Abroad
Engineering is already a global field offering jobs throughout the world. You can prepare yourself for these opportunities with an exciting study or internship experience abroad. Through the Programs Abroad Office, students may receive credit for international study through a variety of programs. Two categories of programs, both of which offer transferable credit pending approval by UCSD are offered: Education Abroad Program - EAP (UC sponsored exchanges with over 100 universities abroad) and Opportunities Abroad Program - OAP (all other study, internship, and work abroad programs sponsored by other universities, of which thousands exist). Financial Aid can be used with EAP and OAP academic programs, and scholarships are also available for study abroad.

For information on EAP and OAP programs, first contact the Programs Abroad Office (858-534-1123, abroad@ucsd.edu, or http://icenter.ucsd.edu/pao/index.html; or visit the International Center on Library Walk).

After meeting with an advisor at the Programs Abroad Office, you will be sent with an Academic Planning Form to the SE Dept., where the Undergraduate Coordinator and the Undergraduate Faculty Chair will advise you on major-credit courses. Upon receiving approval from the Undergraduate Faculty Chair, you must file a general petition. Final approval of petitions will be considered only after the courses have been completed and posted on your UCSD transcript. Students are advised to keep all of their coursework and a copy of the course syllabi for review. Students interested in studying abroad are strongly encouraged to plan their academic careers well in advance to ensure that coursework abroad is approved and to understand how credits will transfer in order to keep themselves on track for graduation in Structural Engineering.

UCSD's Undergraduate Research Conference
Undergraduates who have written outstanding papers have the opportunity to present their findings in a formal setting at the annual UCSD Undergraduate Research Conference. Such students are invited to participate in the conference after being nominated by a faculty member. The conference is typically held in May. https://students.ucsd.edu/sponsor/urc.

Reader/Grader Positions
Undergraduate students may work as graders or readers for courses that they have completed and in which they have received a grade of B or better. Other qualifications include being a full-time student (12 units or more), having at least junior standing, and a minimum GPA of 3.0. Readers generally work 10 hrs/week and receive $13.46/hr. Students interested in applying for a reader position should visit the employment page on the Structural Engineering website: http://www.structures.ucsd.edu/people/employment/teaching-assistant-and-reader-positions.

Engineering Aide Positions
Throughout the year, Structural Engineering employs undergraduate students as Engineering Aides who assist faculty members with their research. These positions give students a hands-on opportunity to apply the concepts and methods taught in class. Many of our Engineering Aides assist with the construction and testing of large-scale structures in the Powell Labs while others provide computer analysis. Engineering Aide positions are available during the academic year as well as during summer. Available positions are posted on Port Triton at the following link: http://career.ucsd.edu/pt-portal-info.html.

Gordon Scholars Program
The Gordon Engineering Leadership Center was established by the Jacobs School of Engineering with generous support from the Bernard and Sophia Gordon Foundation. The center provides leadership and training curricula for students at the high school, undergraduate and graduate levels, as well as for professionals working in the technology fields. Each year, the Gordon Center selects a total of about 30 students at the undergraduate, graduate, and professional levels to become Gordon Scholars. The students learn the principles, theory, attitudes and skill sets required to be an engineering leader through a progressive education, training and practice program. For additional information on the program, including how to apply, visit the following page on the JSOE website: http://jacobsschool.ucsd.edu/GordonCenter/g_scholars.
STUDENT SOCIETIES AND ORGANIZATIONS

The Student Organization and Leadership Opportunities (SOLO) office coordinates the formation of student clubs that are run by and for students. All of these groups are represented at the Fall Festival on the Green (FOG), usually held in mid-October.

The Department of Structural Engineering students participate in student chapters of the American Institute of Aeronautics and Astronautics (AIAA), the Society of Civil and Structural Engineers (SCSE) a student chapter of the American Society of Civil Engineers (ASCE) and Earthquake Engineering Research Institute (EERI). These student chapters invite external speakers, organize trips to local companies, visit local projects and participate in regional and national design competitions. A number of other engineering societies are active at UCSD. The Society of Women Engineers (SWE) encourages and supports women in engineering and the Society for Hispanic Engineers (SHPE), a national organization of professional engineers that serve as role models in the Hispanic community. They sponsor talks, provide workshops, and distribute information about opportunities in engineering.

Tau Beta Pi (TBP) at UCSD is a member of the National TBP engineering honor society. Engineering students who rank in the top 1/8 of juniors and the top 1/5 of seniors are contacted by TBP for possible membership. These students are eligible for membership in TBP if they complete an interview process as well as pass the exemplary character criteria. Throughout the year, TBP invites speakers to club meetings, organizes tours of companies, and provides a tutoring service. See: http://tbp.ucsd.edu.

American Institute of Aeronautics and Astronautics (AIAA): For over 70 years, the American Institute of Aeronautics and Astronautics has served as the principal society of the aerospace engineer and scientist. Formed in 1963 through a merger of the American Rocket Society (ARS) and the Institute of Aerospace Sciences (IAS), the purpose was, and still is, "to address the professional needs and interests of the past, current, and future aerospace workforce and to advance the state of aerospace science, engineering, technology, operations, and policy to benefit our global society." Both ARS and IAS brought to the relationship a long and eventful history -- stretching back to 1930 and 1932, respectively -- and each left its mark on the Institute. The merger combined the imagination, opportunistic, and risk-taking desire of those rocket, missile, and space professionals with the more established, well-recognized achievers from the aviation community.

Today, AIAA has more than 35,000 professional members and more than 5,000 student members in over 190 branches. (including 12 foreign student branches). The Institute’s membership roster is also enhanced by its nearly 100 domestic and international corporate members. In short, AIAA offers a broad and diversified menu of programs to meet the ever-changing needs of the aerospace professional. See: http://aiaa.ucsd.edu.

Society of Civil and Structural Engineers (SCSE): Society of Civil and Structural Engineers, formerly American Society of Civil Engineers, formed in 1852, is the oldest engineering society in the United States. Boasting a national membership of over 140,000 professional members, SCSE seeks to enhance the quality of living throughout the world by advancing professional knowledge and improving the civil engineering (CE) practice. These aspirations are best expressed in the Engineering Code of Ethics. The student chapter of SCSE provides students studying civil engineering with activities to further their practical knowledge of the field through activities such as field trips, guest speakers, and annual conferences. Through these activities, future CE professionals are given the opportunity to experience the practical application of their studies and meet practicing professional engineers. See: http://scse.ucsd.edu.
*The Earthquake Engineering Research Institute (EERI):* The Earthquake Engineering Research Institute, founded in 1949, is the principal U.S. society for engineers, geoscientists, architects, planners, public officials, and social scientists concerned about earthquakes and their effects. The objective of the Earthquake Engineering Research Institute is to reduce earthquake risk by advancing the science and practice of earthquake engineering by improving understanding of the impact of earthquakes on the physical, social, economic, political and cultural environment, and by advocating comprehensive and realistic measures for reducing the harmful effects of earthquakes.

The Institute is best known for its field investigation and reconnaissance reports detailing the effects of destructive earthquakes. Often EERI serves as coordinator for the investigative efforts of several organizations. EERI members include the leading earthquake professionals throughout the world. Information on the effects of destructive events is published in the Newsletter and in the Earthquake Spectra, EERI’s quarterly professional journal. The newsletter and the journal are provided to all members.

EERI sponsors and co-sponsors major conferences in the USA and abroad, and organizes technical seminars and workshops, all of which provide forums for the exchange of information between researchers and practitioners in all the earthquake-related disciplines. EERI membership is open to all individuals interested in earthquake hazard reduction. See: [https://www.eeri.org/](https://www.eeri.org/).

*Society of Women Engineers (SWE):* The Society of Women Engineers is a not-for-profit educational and service organization that empowers women to succeed and advance in the field of engineering, and to be recognized for their life-changing contributions as engineers and leaders. Founded in 1950, SWE is the driving force that establishes engineering as a highly desirable career for women through an exciting array of training and development programs, networking opportunities, scholarships, outreach and advocacy activities, and much more. See: [http://swe.ucsd.edu/](http://swe.ucsd.edu/).

*Society of Hispanic Professional Engineers (SHPE):* The Society of Hispanic Professional Engineers (SHPE) was founded in Los Angeles, California, in 1974 by a group of engineers employed by the city of Los Angeles. Their objective was to form a national organization of professional engineers to serve as role models in the Hispanic community.

The concept of Networking was the key basis for the organization. SHPE quickly established two student chapters to begin the network that would grow to encompass the nation as well as reach countries outside the United States. Today, SHPE enjoys a strong but independent network of professional and student chapters throughout the nation. See: [http://shpe.ucsd.edu](http://shpe.ucsd.edu).

*Construction Management Association of America (CMAA):*

*The Mission of CMAA is to promote the profession of Construction Management and the use of qualified Construction Managers on capital projects and programs.*

*The Vision of CMAA is that all owners will realize capital project and program success by using professionally qualified Construction Managers.*

CMAA is leading the growth and acceptance of construction management as a professional discipline that can add significant value to the entire construction process, from conception to ongoing operation

*Membership* in CMAA includes more than 14,000 firms and individuals. Owners, engineers, architects, contractors, educators, students...everyone with a stake in the construction industry’s success.

All parties to a project are vitally interested in *excellence* of execution--including rapid completion, high fidelity to specifications, conscientious cost control, and optimum use of all resources. Professional construction management delivers these values.

OFFICE OF ACADEMIC SUPPORT AND INSTRUCTIONAL SERVICES (OASIS)

OASIS provides a variety of services to maximize student performance and retention at the University of California, San Diego. OASIS provides activities that support and contribute to the improvement of teaching and learning. Programs range from services to help students overcome past academic deficiencies to program to help them excel in a subject matter or skill.

*Tutorial Programs:* All UCSD students are eligible for free, course-specific tutoring programs in math and science through OASIS. OASIS offers two types of math and science tutoring each quarter: Via appointment and via workshops.

*Workshops* are structured group study sessions led by a tutor. Most are course-specific and relate to a particular instructor. You must register in advance for these workshops. Workshops are offered for all of the lower division Math, Chemistry and Physics courses that are required for the Structural Engineering major.

For more information on the OASIS Tutorial Program, including schedules and information on how to enroll, please call (858) 822-2077 or visit [http://students.ucsd.edu/academics/_organizations/oasis/math-science/index.html](http://students.ucsd.edu/academics/_organizations/oasis/math-science/index.html).

*Language and Writing Program (LWP):* Through individual tutoring sessions and workshops, LWPs enhance ESL students’ English writing and composition strategies, knowledge and usage of grammar, and verbal skills. The program also helps students taking beginning or advanced classes in Spanish and French. ESL undergraduate students can request LWP services if they are taking SDCC 4 or SDCC 1 classes, college writing courses, or any class that requires term papers, essays, or laboratory reports. There are no eligibility requirements for students taking Spanish or French. For information on how to apply, visit [http://oasis.ucsd.edu/lang/lang.asp](http://oasis.ucsd.edu/lang/lang.asp).

*OASIS Transition Programs:* OASIS offers opportunities for academic enrichment and growth for selected freshmen and first-year transfer students. Students are selected by the University to participate in one of the following 2 OASIS programs:

- **Summer Bridge:** A year-long transition program for incoming freshman students that begins with an intensive 4 or 5 week residential & academic component in August. Summer Bridge continues throughout the academic year, providing academic & personal support throughout your first year at UC San Diego.

- **TRiO Student Support Services Program & Summer Experience:** (freshmen and transfers): This program designed for freshmen and transfer students offers tutoring, workshops, mentoring, and extracurricular activities throughout your career at UC San Diego.

Any incoming undergraduate UC San Diego freshman or transfer can apply to the OASIS Transition Programs. For more information, including how and when to apply, visit [https://students.ucsd.edu/sponsor/oasis/transition-programs/how-to-apply.html](https://students.ucsd.edu/sponsor/oasis/transition-programs/how-to-apply.html).
OTHER IMPORTANT RESOURCES FOR STUDENTS

Counseling and Psychological Services (CAPS)
CAPS is committed to promoting student mental health and well-being at an individual and organizational level, as well as the preservation and sustainability of an environment conducive to growth and lifelong learning.

CAPS provides individual, group, couples, and family psychotherapy to registered undergraduate and graduate students. Services are free of charge to currently enrolled students who have paid their registration fees. During the summer, students who were enrolled the previous Spring quarter and are intending to return in the Fall quarter are eligible for services.

In keeping with ethical standards of the mental health profession and the law, all services provided by the staff of CAPS are kept confidential. They do, however, consult as needed within the staff of CAPS (and Student Health Service if they are collaborating in your care) about the best way to provide the assistance based on client need. No information is released to outside parties without the client’s prior, written consent. Neither the fact that you seek counseling nor any information about the counseling sessions will appear in your student academic record unless you direct CAPS to communicate with other staff and faculty at the university.

If you notice that you have certain patterns of thinking and behavior that interfere with your success with and the enjoyment of certain endeavors then you should consider making an appointment. Students also consult with CAPS about a variety of more specific personal, academic and relationship problems such as:

- Poor academic performance and study skills
- Roommate conflicts
- Homesickness and difficulty adjusting to the university
- Disappointing social relationships
- Alcohol and other substance use and abuse
- Difficulty in love relationships
- Loneliness and isolation
- Eating and body image problems
- Depression and suicidal thoughts
- Anxiety
- Sexuality and sexual identity
- Family conflict
- Grief and loss

For more information about CAPS and the services they provide, please see the CAPS webpage:
http://caps.ucsd.edu/#students

For appointments and after-hours assistance: (858) 534-3755
STEPS TO A PROFESSIONAL ENGINEERING LICENSE

Whether you design power plants, consumer goods, buildings, or aerospace vehicles, whether you work in private industry, for the U.S. government, or for the public and whether your efforts are theoretical or practical, you (as an engineer) have a significant responsibility.

Engineers of all types perform exciting and rewarding work, often stretching new technologies to their limits. But those limits are often incomprehensible to non-engineers. As the ambient level of technological sophistication increases, the public depends increasingly and unhesitatingly on engineers. That is where professional licensing and the National Society of Professional Engineers (NSPE) become important.

NSPE, the leading organization for licensed engineering professionals, is dedicated to serving the engineering profession by supporting such activities as continuing educational programs for its members, lobbying and legislative efforts on local and national levels and promoting guidelines for ethical service. From local, community-based projects that encourage top-scoring high school students to choose engineering as a career, to hard-hitting lobbying efforts in the nation’s capital to satisfy the needs of all engineers, NSPE is committed to you and your profession.

Engineering licensing is a two-way street: it benefits you personally while it also benefits the public and the profession. For you licensing offers a variety of advantages, ranging from peer recognition to greater advancement and career opportunities. If you wish to become an independent engineering consultant, it is required by law that you are registered. Some states require registration as a Professional Engineer if you wish to use the title engineer. A court of law generally will not recognize an individual as an engineer unless one is registered. For the profession, licensing establishes a common credential by which engineers can be compared. For the public, a professional engineering license is an assurance of a recognizable standard of competence.

The requirements for professional engineering registration prevailing in most of the states are as follows:

1) Graduation from an ABET accredited school, plus passage of the 8-hour EIT exam, plus two years of engineering experience acceptable to the board, plus passage of the 8-hour PE exam, or

2) Passage of the 8-hour EIT exam, plus four years of engineering experience acceptable to the board, plus passage of the 8-hour PE exam.

The first exam is generally known as the “Fundamental Examination” (sometimes referred to as the “Engineering-in-Training” exam or the EIT) and the second exam, as the “Professional Examination,” (sometimes referred to as the PE exam or the “Principles and Practices” exam). Persons who successfully pass these examinations are entitled to use the title “Professional Engineer” and to place the initials “P.E.” after their names. It is illegal for unregistered persons to use the title. Nearly all states have made provisions for an EIT status and will allow persons to take the first eight-hour (EIT or “Fundamentals”) portion of the written examination as early as the end of your junior (third) year of an ABET accredited program. EIT status conveys no legal privileges and is offered primarily as a convenience to new graduates so that they can take the examination in fundamentals at a time when the material is still fresh in their minds. Almost all of the states use a uniform national EIT examination, administered through the National Council Engineering Examination (NCEE) and a great majority uses a uniform national examination for the “Professional” portion.

The 8-hour EIT exam is offered multiple times per year. The Structural Engineering department is not affiliated with administering the exam.

For EIT registration and exam information visit the National Society of Professional Engineers at [http://www.nspe.org/Licensure/HowtoGetLicensed/index.html](http://www.nspe.org/Licensure/HowtoGetLicensed/index.html). Students may also go online to the California Board for Professional Engineers and Land Surveyors website at [http://www.pels.ca.gov](http://www.pels.ca.gov) to find further information regarding the California PE exam.
DIRECTORY OF IMPORTANT PROGRAMS AND OFFICES

Educational Technology Services (formerly ACMS): Accounts/Passwords/E-mail/Software
http://acms.ucsd.edu/students/index.html
Help Desk:  858-534-2267 or acms-help@ucsd.edu

Academic Internship Program
Literature Building, Room 210
http://aip.ucsd.edu/
(858) 534-4355

California Society of Professional Engineers
http://www.cspe.com/

Career Services Center: Undergraduates
858-534-3750  http://career.ucsd.edu/undergraduates/index.html

Career Services Center: Professional and Graduate School Advising
858-534-3750  http://career.ucsd.edu/phd-and-masters-students/index.html

Counseling and Psychological Services (CAPS)
Galbraith Hall 190
858-534-3755  http://caps.ucsd.edu/#students

Financial Aid Office
Student Services Center, 3rd floor north

IDEA Student Center (Engineering Student Services)
Jacobs Hall (EBU-1), Room 1400
http://www.jacobsschool.ucsd.edu/student

National Society of Professional Engineers

Office for Students with Disabilities (OSD)
University Center 202
858-534-4382  http://disabilities.ucsd.edu/students/index.html

Programs Abroad Office
International Center, 2nd Floor
(858) 534-1123  http://icenter.ucsd.edu/pao/index.html

Society of Civil and Structural Engineers (SCSE)
http://scese.weebly.com

Structural Engineering Undergraduate Advising Offices
SME 340A & SME 340E
858-822-2273 & 858-534-4185 or vac.ucsd.edu

Structural Engineers Association of San Diego (SEAOSD)
619-212-5210  http://www.seaosd.org