California Teach-Science/Mathematics Initiative (CaTEACH-SMI) Students with a talent for science, math or engineering can translate that ability into preparing for a teaching career in California through the California Teach-Science/Mathematics Initiative (CaTEACH-SMI). Students who partner with CaTEACH-SMI at UCR can complete a science, engineering, or mathematics degree and become eligible for an intern teaching credential in just four years. Beginning with the freshman year, students intern in a local primary or secondary classroom with a mentor teacher. At UCR, they can meet other CaTEACH-SMI students and their UCR peer mentor at the program’s Resource Center, where students can receive credential advising. The program’s director is specially chosen from the mathematics and science faculty at UCR. SMI undergraduate interns may qualify for a stipend. For more information contact smi@ucr.edu or visit the Resource Center at 1104 Pierce Hall or smi.ucr.edu.

The Prepare to Teach Program is a preprofessional program open to undergraduates from all majors who are interested in teaching in California elementary schools. Through this program, prospective elementary school teachers gain early field experience in the schools and learn more about the profession. Advising includes information on state requirements that are best met before graduation. For more information, contact the Office of Interdisciplinary Programs; 2417 Humanities and Social Sciences; or call (951) 827-2743.

Veterinary Medicine The course work at UCR is designed to prepare students to meet the requirements for admission to California’s veterinary programs, the School of Veterinary Medicine at UC Davis, and the Western University of Health Sciences in Pomona. Students should consult the Medical and Health Careers Program (visit mhcp.ucr.edu), the UC Davis General Catalog, or the Western University Web site www.westernu.edu/veterinary/home.xml for additional details.

The Marlan and Rosemary Bourns College of Engineering

Office of Student Academic Affairs
A159C Bourns Hall
University of California, Riverside
Riverside, CA 92521-0144
(951) 827-ENGR (3647); www.engr.ucr.edu/studentaffairs

The Marlan and Rosemary Bourns College of Engineering emphasizes fundamental disciplines of engineering and computer science, introducing students to the new technologies necessary for today’s highly technical environments.

The vision of the Bourns College of Engineering is to become a nationally recognized leader in engineering research and education. Its mission is to

- Produce engineers with the educational foundation and the adaptive skills necessary to serve rapidly evolving technology industries
- Conduct nationally recognized engineering research focused on providing a technical edge for the United States
- Contribute to knowledge in both fundamental and applied areas of engineering
- Provide diverse curricula that will instill in our students the imagination, talents, creativity, and skills necessary for the varied and rapidly changing requirements of modern life and to enable them to serve in a wide variety of other fields that require leadership, teamwork, decision making, and problem-solving capabilities
- Be a catalyst for industrial growth in the Inland Empire region of Southern California

The majors offered by the college are based on the needs of the practicing professional and are founded on a solid core of mathematics and the sciences. Breadth in the educational experience is represented by requirements in arts, humanities, and social sciences and by emphasis on oral and written communication skills. The principles and practice of engineering and computer science are provided in lecture and related laboratory courses. All students must choose a set of technical electives, emphasizing synthesis and design, to complete their undergraduate programs.

Majors

<table>
<thead>
<tr>
<th>Major Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioengineering</td>
</tr>
<tr>
<td>Business Informatics¹</td>
</tr>
<tr>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Biochemical Engineering</td>
</tr>
<tr>
<td>Bioengineering</td>
</tr>
<tr>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Nanotechnology</td>
</tr>
<tr>
<td>Computer Engineering</td>
</tr>
<tr>
<td>Computer Science</td>
</tr>
<tr>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>Environmental Engineering</td>
</tr>
<tr>
<td>Materials Science and Engineering</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>Design and Manufacturing</td>
</tr>
<tr>
<td>Energy and Environment</td>
</tr>
<tr>
<td>General Mechanical Engineering</td>
</tr>
<tr>
<td>Mechanics of Materials and Structures</td>
</tr>
</tbody>
</table>

¹Joint with the Anderson Graduate School of Management

The Marlan and Rosemary Bourns College of Engineering, with five academic departments and a new major, Materials Science and Engineering, continues to grow in stature, students, and structures.
A major is a coordinated group of upper-division courses (courses numbered 100–199) in a field of specialization. The major may be a group of upper-division courses within a single department or program, or a group of related courses from several departments or programs. Before enrolling in upper-division courses, students may be required to gain appropriate knowledge by completing specific prerequisite courses. With the assistance of a departmental advisor, students are expected to select lower-division courses which prepare them for the advanced studies they propose to follow.

Change of Major or Double Majors
A student in good standing may request transfer from one major to another by filing a Major Change Petition with the Office of Student Academic Affairs. Major Change criteria can be found at www.engr.ucr.edu/studentaffairs/policies/major_change.shtml.

A student in good standing may elect to take a second major within the college. The student must file a declaration of a second major with the Office of Student Affairs. A course used to satisfy the requirements for one major may be used to fulfill the requirements of a second major as well. However, of the required upper-division units, a minimum of 24 must be unique to each major, and both majors must be completed within the maximum unit cap of the primary Engineering major.

A student in good standing may elect to take a second major in another college. A declaration of such a second major must be signed by the deans of both colleges and filed by the student with the primary college. A student will meet requirements of both primary and secondary majors and the college requirements of the primary major, if they are both in the same baccalaureate class. If the two majors lead to different degree designations (B.S. and B.A.), that fact will be noted on the transcript, but only one diploma indicating both degree designations will be issued upon successful completion of such a double major program. Furthermore, if the double major is a mixed B.S./B.A., the college requirements of both majors must be met. A course used to satisfy the requirements for one major may be used to fulfill the requirements for a second major as well. However, of the required upper-division units, a minimum of 24 must be unique to each major, and both majors must be completed within the maximum unit cap of the primary Engineering major.

A student who has declared a double major may graduate in one major upon the completion of all requirements for that major but may not continue in the university for completion of the second major. For details, see www.engr.ucr.edu/studentaffairs/policies/double_mjrs.shtml.

Minors
The Bourns College of Engineering currently has a minor in Computer Science. Minors in the college shall consist of no fewer than 20 nor more than 28 units of organized upper-division courses. No more than 4 units of 190–199 courses may be used in fulfilling the upper-division unit requirement for a minor. A student must meet the UC requirements for admission as described in the Undergraduate Admission section of this catalog. The Bourns College of Engineering awards several opportunities section in the section Introducing UC Riverside. For a listing of requirements and courses, refer to University Honors Program in the Programs and Courses section of this catalog.

University Honors Program
For a description of the University Honors Program, see Educational

Freshman Discovery Seminars
Freshman Discovery Seminars are designed to introduce students to a wide variety of topics and current issues that UCR faculty explore. For engineering and computer science, each quarter’s offerings are listed at classes.ucr.edu under ENGR 092. Topics vary from quarter to quarter. The current quarter’s offerings may be found at discoveryseminars.ucr.edu.

The seminars have no prerequisites, and freshmen are given enrollment priority, although sophomores may enroll with instructor’s consent, if space is available.

Each seminar is limited to 20 students, to encourage discussion. Students may enroll in a seminar offered by any of the UCR colleges (ENGR 092, NASC 092, or HASS 092), regardless of their major. Each seminar carries 1 unit of academic credit, although units are not applied toward major requirements. The seminars are graded on a Satisfactory/No Credit basis.

Admission to Majors

Prospective Bourns College of Engineering students must complete high school programs that meet UC requirements as described in the Undergraduate Admission section of this catalog. In addition, appropriate high school mathematics and science course work should include the following:

<table>
<thead>
<tr>
<th>Course Work</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra</td>
<td>2</td>
</tr>
<tr>
<td>Plane Geometry</td>
<td>1</td>
</tr>
<tr>
<td>Trigonometry (often contained in Precalculus or Algebra II, strongly suggested)</td>
<td>1/2</td>
</tr>
<tr>
<td>Chemistry or Physics, with laboratory (preferably both)</td>
<td>1</td>
</tr>
</tbody>
</table>

A supplemental screening process for majors in the Bourns College of Engineering places emphasis on the GPA earned in college preparatory course work, especially mathematics and science, and on aptitude test scores. Qualification for first-year calculus is also expected. UC-eligible students not qualifying for the preferred major are considered for admission to their alternate major.

Application should be made during the priority filing period (November 1–30).

Transfer Students
All transfer students must meet the UC requirements for admission as described in the Undergraduate Admission section of this catalog. The Bourns College of Engineering accepts completion of IGETC as satisfying the majority of the college’s breadth requirements for transfer students. Some additional breadth coursework may be required after enrollment at Bourns. For more information on BCOE breadth requirements, go to www.engr.ucr.edu/studentaffairs/policies/breadth.shtml.

However, prospective applicants are strongly encouraged to focus instead on preparatory course work for their desired major, such as mathematics, science, and other technical preparatory course work, rather than on IGETC completion. Strong technical preparation is essential for success in the admissions process, and subsequently, in all coursework at Bourns.

Students intending to transfer to engineering majors are expected to complete the equivalent of UCR course work required in the first two years of the programs and to apply for transfer starting with their junior year. Specific information on transfer requirements may be obtained from the Office of Student Academic Affairs, (951) 827-ENGR (3647) or at www.engr.ucr.edu/studentaffairs/transfer.shtml.

Financial Assistance
The Bourns College of Engineering awards several scholarships to its students each year from funds provided by corporate and private sponsors. Other scholarships are available. Further information may be obtained by calling the Office of Student Academic Affairs, (951) 827-ENGR (3647).
Special Facilities See Research Opportunities in the section About UC Riverside in this catalog for a detailed description of the following centers:

- Center for Environmental Research and Technology
- Center for Nanoscale Science and Engineering
- Center for Research in Intelligent Systems (including the Visualization and Intelligent Systems Laboratory)

Degree Requirements
Students in the Bourns College of Engineering must meet three levels of requirements for the Bachelor of Science degree: general university requirements, college requirements, and major requirements.

General University Requirements
General university requirements are listed at the beginning of the Undergraduate Studies section. For other UCR regulations including repetition of courses, concurrent enrollment, scholarship regulations, and incomplete (I) grades, see the Policies and Regulations section of this catalog.

In addition to the above general university requirements, the Bourns College of Engineering has the following unit requirement.

Unit Requirement
Most of the majors in this college require more than the nominal university requirement of 180 units for graduation. No more than 6 units of physical education activity may be counted toward this requirement. However, after having credit for 216 units or 120 percent of the units required for the major, a student is not permitted to continue except by approval of the dean when specific academic or professional reasons are involved.

College Breadth Requirements

<table>
<thead>
<tr>
<th>Bourns College of Engineering</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Breadth Requirement Unit Summary</td>
<td></td>
</tr>
<tr>
<td>For the B.S.</td>
<td></td>
</tr>
<tr>
<td>English Composition</td>
<td>Varies</td>
</tr>
<tr>
<td>Humanities</td>
<td>12</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>12</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>(4 units)</td>
</tr>
<tr>
<td>Natural Sciences and Mathematics</td>
<td>20</td>
</tr>
<tr>
<td>Total Units</td>
<td>44 plus English Composition</td>
</tr>
</tbody>
</table>

The Executive Committee of Bourns College of Engineering, in consultation with the faculty, is responsible for determining which courses may be used to satisfy these requirements. Detailed requirements are available in the Office of Student Academic Affairs or at www.engr.ucr.edu/studentaffairs/policies/breadth.shtml.

Internships and independent study courses may not be used to satisfy breadth requirements.

For the following requirements, a course is defined as a block of instruction that carries credit of 4 or more units.

To provide depth in satisfying breadth in the humanities and social sciences, courses must meet the following criteria:

1. At least two of the humanities and/or social science courses must be upper division.
2. At least two courses must be from the same subject area (for example, two courses in History), with at least one of the two being an upper-division course.

English Composition
Students must demonstrate adequate proficiency in English Composition by completing a one-year sequence of college-level instruction in English Composition with no grade lower than “C.” UCR’s sequence is ENGL 001A, ENGL 001B, and either ENGL 001C or ENGL 01SC. Transfer students who have credit for one semester of English Composition from another institution must take two additional quarters (i.e., ENGL 001B and either ENGL 001C or ENGL 01SC). Students have the option of using a score of 3 on the College Board Advanced Placement Test in English to satisfy ENGL 001A; they must complete ENGL 001B and either ENGL 001C or ENGL 01SC. Students with a score of 4 or 5 on the College Board Advanced Placement Test in English have satisfied ENGL 001A and ENGL 001B; they must complete ENGL 001C or ENGL 01SC.

Students should enroll in an English composition course each quarter they are registered at UCR until the sequence of preliminary Entry Level Writing courses, if needed, and ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC is completed with a satisfactory GPA. A student may not receive baccalaureate credit for any work in English Composition taken prior to completing the Entry Level Writing requirement.

Humanities: 12 units
Courses used to fulfill the Humanities requirements must be selected from an approved list available in the Office of Student Academic Affairs.

1. One course in World History
2. One course in one of the areas of Fine Arts, Literature, Philosophy, or Religious Studies
3. One additional course chosen from
   a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 3 or above
   c) Humanities courses offered by Ethnic Studies, Creative Writing (courses in journalism), Humanities and Social Sciences, Latin American Studies, Linguistics, or Women’s Studies

No course used to satisfy the English Composition requirement can be applied toward Humanities credit. A list of approved courses is available in the Office of Student Academic Affairs.

Social Sciences: 12 units
Courses used to fulfill the Social Sciences requirements must be selected from an approved list available in the Office of Student Academic Affairs.

1. One course from Economics or Political Science
2. One course from Anthropology, Psychology, or Sociology
3. One additional social science course offered by Ethnic Studies, Geography (cultural geography courses), Human Development, or Women’s Studies, or one of the disciplines in 1. or 2. above.

To provide depth in satisfying breadth in the humanities and social sciences, at least two of the courses must be upper division, and at least two courses, one of them upper division, must be from the same subject area. The list of approved courses is available in the Office of Student Academic Affairs.

Ethnicity: 4 units
Courses used to fulfill the Ethnic Studies requirement must be selected from an approved list available in the Office of Student Academic Affairs.

One course dealing with general concepts and issues in the study of race and ethnicity in California and the United States. Courses that satisfy this requirement must concentrate on one or more of four principal minority groups (African American, Asian American, Chicano/Latino, and Native American). These courses must be comparative in nature, analyzing the minority group experience within the present and historical context of other racial and ethnic groups, such as European-American minorities. The courses are to be offered by or cross-listed with the Department of Ethnic Studies. The list of approved courses is available in the Office of Student Academic Affairs.
Natural Sciences and Mathematics: 20 units
Courses used to fulfill the Natural Sciences and Mathematics requirements must be selected from an approved list available in the college Student Academic Affairs office.
1. One course in Biological Sciences
2. One course in Physical Sciences. No course in cultural geography may be used.
3. One course in Mathematics or Computer Science or Statistics
4. Two additional courses in the Biological or Physical Sciences
Check with the Office of Student Academic Affairs for the courses that fulfill the biological sciences, physical sciences, and additional sciences. In some cases, these are satisfied by requirements of the major. The mathematics/computer science/statistics requirement is always satisfied by a major requirement.

Major Requirements
Detailed requirements for each major are found under the department listings in the Programs and Courses section of this catalog, and are available from the Office of Student Academic Affairs, (951) 827-ENGR (3647). A GPA of at least 2.00 ("C") in upper-division courses taken in the major field is required for graduation. Not more than 9 units of courses in the 190-199 series may be counted in fulfilling the upper-division units needed for the major.

College Policies and Procedures
For detailed information on UCR policies and regulations see the Policies and Regulations section of this catalog.

College Regulations
Detailed information and specifics with regard to the college regulations governing undergraduate student status as approved by the faculty and contained in the Manual of the Riverside Division of the Academic Senate can be obtained from the Dean's Office.

Student Responsibility
Students are responsible for meeting deadline dates regarding enrollment, add/drop, change of grading basis, credit by examination, withdrawal, declaration of candidacy, and other procedures. The dates are at classes.ucr.edu and must be observed. Students are responsible for ensuring that they meet all requirements for graduation and that they attend the undergraduate faculty advisor's annual forum. Students are also responsible for obtaining their grades, selecting an appropriate collection of courses, and confirming their enrollment by relevant deadlines. Academic advising can be obtained in the Office of Student Academic Affairs.

Faculty Advisors
All Bourns College of Engineering students are advised on a regular basis. In addition, each department designates a faculty undergraduate advisor who is the primary contact in the student's areas of academic interest. Faculty advisors assist students in their undergraduate careers, as appropriate, and are also mentors in the student's areas of interest.

Course Enrollment
Students should plan their program of study carefully, in consultation with an academic advisor. Class schedules of fewer than 12 units must have the approval of the associate dean of the college.
Students who have not met the Entry Level Writing Requirement must enroll in an Entry Level Writing or qualifier course, as determined by their placement, during their first quarter of residency.
Students must attend class meetings. Students who do not attend in accordance with any published requirement listed at classes.ucr.edu or on a course syllabus may be dropped from the course.
Students may add or drop a course via GROWL through the second week of instruction. Beginning the third week of instruction, students must file an Enrollment Adjustment Form to make changes and obtain required approvals. During the third week of classes, students may, with the consent of the instructor and the approval of their academic advisor, add a course. Students may drop a course until the end of the sixth week of instruction, but courses dropped after the second week of instruction require an academic advisor's signature and result in a “W” (for withdrawal) noted on the transcript. Changes in enrollment after deadlines published at classes.ucr.edu require the approval of the associate dean of the college.
A student on probation may enroll for more than 13 quarter units only with the consent of the associate dean of the college.
With the approval of the associate dean, students may withdraw from the university at any time prior to the end of instruction.
Any changes in a student's class schedule not covered by the above regulations must have the approval of the associate dean.

Enrollment on a Satisfactory/No Credit Basis
A student in good standing may enroll and receive credit for courses graded “S.” However, the “S/NC” grading system cannot be used for any course that is used to fulfill major or breadth requirements, except for any required course which is restricted to “S/NC” grading and up to 8 units of courses in the humanities and social sciences. Exceptions to this policy may be granted, upon petition, by the student's advisor and the Executive Committee.
Students may change their grading basis in a course from letter grading to “S/NC” (or vice versa) up to the end of the eighth week of instruction.
Regulations governing the “S/NC” option are described under Credit and Grades in the Policies and Regulations section of this catalog.

Credit by Examination
A student may petition for the privilege of examination for degree credit without formal enrollment in a particular course, but must be in residence and not on academic probation. Arrangements for examination for degree credit must be made with the student's advisor. Approvals of the advisor, the dean of the college, and the instructor who is agreeing to give the examination are necessary before the examination may be given. The results of all examinations for degree credit are entered on the student's record as if the student had actually taken the courses of instruction.

Expected Progress for Undergraduate Students
At the close of each quarter, the courses, units, grades, and grade points earned are added to the student's cumulative university record. This record summarizes progress toward a degree. Lack of adequate progress may jeopardize continued registration. Students can access their advisory degree check at growl.ucr.edu.

Declaration of Candidacy
Applications for graduation are available in the Office of Student Academic Affairs and must be filed by the deadline established for the quarter in which graduation is intended. The deadline for filing applications for graduation is listed at classes.ucr.edu each quarter. Applications are not accepted after the deadline established for the quarter. If for any reason a student does not meet the requirements for graduation after announcing candidacy, or if a student fails to meet the deadline for filing, an application must be filed for a subsequent quarter.

California Teach Science/Mathematics Initiative (CaTEACH-SMI)
California Teach-Science Mathematics Initiative (CaTEACH-SMI) has a goal of addressing the critical need of highly qualified K-12 science and mathematics teachers in California. With an economy increasingly reliant on science, technology, engineering, and mathematics (STEM) and the anticipated large scale retirement of qualified teachers, this is an essential time to explore and prepare for a career in teaching science or mathematics.
CaTEACH-SMI at UCR offers undergraduate students paid/unpaid opportunities to explore STEM teaching as a career option. Through CaTEACH-SMI, students receive advising and mentoring to prepare for entrance into an intern teaching credential program while diligently coordinating with academic advisors to ensure completion of STEM degree requirements.
The CaTEACH-SMI Resource Center provides future STEM teachers with material and financial resources to promote planning and professional development towards a science/mathematics education career.
For more information about the CaTEACH-SMI program, please visit http://smi.ucr.edu or at the Resource Center at 1104 Pierce Hall.