We engineer excellence at the Bourns College of Engineering (BCOE) at UC Riverside. For the past quarter century, BCOE has delivered on an ambitious growth trajectory that has surpassed all other colleges of its size and resulted in it becoming respected, nationally ranked and internationally known.

Our success is rooted in two core values – performing world-class research and developing a diverse and talented professional engineering workforce. Not only are we internationally recognized for the quality of our research, but we also take great pride in the excellent engineering education that we provide to both undergraduate and graduate students. Our students are deeply engaged in research, and along with our dedicated faculty and researchers, benefit from state-of-the-art facilities and equipment, including the world’s largest known atmospheric chamber and a $10 million nanofabrication cleanroom.

The college’s collaborative and innovative culture prepares undergraduate and graduate students alike to transition to successful careers, be they in industry, government or academe. Our diverse student body – the majority of whom participate in the college’s more than 24 student professional organizations – are in-demand as employees and leaders throughout the world.
Bourns College of Engineering

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Quick Facts

FOUNDED 1989

US WORLD NEWS RANKING 71st (39th among public universities)

LEIDEN RANKING 8th among engineering

NATIONAL RESEARCH COUNCIL Top Quartile

FACULTY COUNT 118

UNDERGRADUATE ENROLLMENT 2,849*

GRADUATE ENROLLMENT 869*

RESEARCH EXPENDITURES $61 Million

IDC GENERATED $4.1 Million

ENDOWMENT SUPPORTS $36 Million

ENDOWED PROFESSORSHIPS 10

NAE MEMBER 2

FELLOWS OF PROFESSIONAL SOCIETIES 90

YOUNG INVESTIGATOR/NSF CAREER AWARDS 54

DIVERSITY 34% URM

*Fall 2016
Vision

The Vision of the College of Engineering is to become a nationally recognized leader in engineering research and education.

Mission

• Produce engineers with the educational foundation and adaptive skills to serve rapidly evolving technology industries;
• Conduct nationally recognized engineering Research Area: focused on providing a technical edge for the United States;
• Contribute to knowledge of 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;
• Enable our graduates to serve in a wide variety of other fields that require leadership, teamwork, decision-making and problem-solving abilities; and
• Be a catalyst for industrial growth in Inland Southern California.
Undergraduate Degrees Available

B.S. in Bioengineering
B.S. + M.S. in Bioengineering
B.S. in Environmental Engineering (two concentrations)
   Air Pollution Control Technology
   Water Pollution Control Technology
B.S.+ M.S. in Chemical and Environmental Engineering
B.S. in Chemical Engineering (three concentrations)
   Biochemical Engineering
   Chemical Engineering
   Nanotechnology
B.S. in Computer Science
B.S.+ M.S. in Computer Science
B.S. in Computer Engineering
B.S. in Electrical Engineering
B.S.+ M.S. in Electrical Engineering
B.S. in Business Informatics
B.S. in Materials Science and Engineering
B.S. in Mechanical Engineering (four concentrations)
   Mechanics of Materials and Structures
   Energy and Environment
   Design and Manufacturing
   General Mechanical Engineering
B.S.+ M.S. in Mechanical Engineering

*Concentrations are in italics
Graduate Degrees Available

M.S. in Bioengineering
M.S. in Chemical & Environmental Engineering
M.S. in Computer Science
M.S. in Computer Engineering
M.S. in Electrical Engineering
M.S. in Materials Science and Engineering
M.S. in Mechanical Engineering
M.S. Online in Engineering
Ph.D. in Bioengineering
Ph.D. in Chemical & Environmental Engineering
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Ph.D. in Computer Science
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Academic Advisors

Academic Advisors offer students guidance on academic, life, and career matters on behalf of the college and its departments. As such, the academic advising staff is the first line of contact on curriculum matters, any issue impacting a student’s ability to succeed, and referrals to other service providers on campus. Academic Advisors are also a great source for prospective students seeking freshmen or transfer admission, readmission, or special admission. They work closely with UCR Admissions in recruiting prospective students, and in the case of prospective transfers, evaluating applications for admission.

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William Grover

Computer Science & Computer Science with Business Applications  
Zizhong Chen

Computer Engineering  
Laxmi Bhuyan

Chemical Engineering & Environmental Engineering  
Kawai Tam

Electrical Engineering  
Ping Liang

Mechanical Engineering  
V. Sundararajan

Materials Science & Engineering  
David Kisailus
At Bourns College of Engineering one of our objectives is to nurture and grow our students into professional engineers of the future.

- Developing and maintaining relationships with premier industrial, academic, and government organizations
- Supervising the student chapters of 24 professional engineering organizations
- Facilitating student organizational events and conferences, budget controlling and strategic planning of activities that support the professional development of students
- Advising engineering students on professional career opportunities
- Recommending and assisting students in seeking information on career options and their career development processes
- Advising students on resume and cover letter preparation, interviewing techniques and job search methods
- Assisting with the marketing and outreach components of the Undergraduate Research Opportunities Program

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We understand it can be challenging and overwhelming to adjust to a new school environment. The Transfer Transition Program in BCOE is a year-long program exclusively designed to support a student’s successful move from a community college to UC Riverside.

As a participant in the Transfer Transition Program you have opportunities to:

- Learn how to access and use resources to facilitate academic success
- Attend workshops to help you refine your time management skills and study techniques
- Work closely with a faculty member in your program to receive mentoring and professional guidance
- Meet with your Academic Advisor on a quarterly basis to develop a personalized course schedule
- Work with the Professional Development Officer to discuss co-curricular opportunities
- Get involved in student engineering clubs, professional organizations, and peer mentoring

For further information and details about this program please contact

**Guadalupe Ruiz**
STEM Transfer Coordinator
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MESA Schools Program

The Mathematics, Engineering and Science Achievement (MESA) program is an academically based STEM outreach program of the UC Riverside Bourns College of Engineering. Since 1999, the program has addressed the needs of math/science education by providing opportunities for interest and growth in engineering to underrepresented and disadvantaged students throughout both Riverside and San Bernardino counties. Through academic contests and competitions, classroom guidance and advisement, and exploratory activities like visits to engineering colleges and industry locations, the program has succeeded in creating a college-going culture in the schools it serves, and a heightened awareness of engineering fields and careers.

MESA services middle and high school students, their teachers and parents, including:

**Classroom/Section:** Supporting daily MESA classes that strengthen core mathematics and science concepts and principles, teach engineering thinking and problem solving skills and provide a venue for MESA projects to be conceived, tested, and evaluated. Our teachers receive year-round professional development opportunities to strengthen their delivery of MESA curriculum and services.

**Engineering Projects/Competitions:** Large engineering project competitions, usually contested at the UCR College of Engineering, where students compete against peers in academic contests. The competitions help drive curriculum, motivate and inspire students, while providing a stage for creativity, ingenuity and academic achievement.

**Mentoring/Academic Advisement:** Group and individual mentoring and academic advising sessions with students. These sessions and workshops help students connect classroom activities and project competitions to the real-world. They also inform MESA students on pre-college requirements needed to major in STEM fields and the breadth of careers in STEM fields.
Community/Parent Events: Hosting events throughout the year that benefit and impact our MESA families and the community at large. These events connect families with the college & engineering, while learning how STEM is put in practice at a major research university. Parents are also able to learn about the importance of their students’ participation in the program, and about the real demands and results of a STEM career path.

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Stephanie Cervin, Program Coordinator  
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BCOE offers M.S. and Ph.D. degrees that are designed to deepen student understanding of fundamental principles and applications in their chosen field of study. Graduate degrees are offered in the following programs:

- Bioengineering (M.S., Ph.D.)
- Chemical and Environmental Engineering (M.S., Ph.D.)
- Computer Engineering (M.S.)
- Computer Science and Engineering (M.S., Ph.D.)
- Electrical Engineering (M.S., Ph.D.)
- Material Science and Engineering (M.S., Ph.D.)
- Mechanical Engineering (M.S., Ph.D.)
- Masters of Science in Engineering Online (designed for employed professionals)
## Program Contacts

<table>
<thead>
<tr>
<th>Program</th>
<th>Staff Contact</th>
<th>Faculty Graduate Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioengineering</td>
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</tr>
<tr>
<td>Electrical and Computer Engineering</td>
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<tr>
<td>Materials Science and Engineering</td>
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</tr>
<tr>
<td>Mechanical Engineering</td>
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<tr>
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Bourns College of Engineering

Professional Student Organizations

ACM—Association for Computing Machinery

http://acm.cs.ucr.edu

ACM is devoted to bringing Computer Science students beyond the four walls of a classroom and into the real world.

ASME—American Society of Mechanical Engineers

http://www.engr.ucr.edu/~asme/

ASME at BCOE is focused on technical, educational and research issues of the engineering and technology community. ASME conducts one of the world's largest technical publishing operations, holds numerous technical conferences worldwide, and offers hundreds of professional development courses each year. ASME sets internationally recognized industrial and manufacturing codes and standards that enhance public safety.

AIChE—American Institute of Chemical Engineers

http://www.engr.ucr.edu/~aiche/

Assist Chemical & Environmental students to ease the transition "from college to career" by providing opportunities for students to visit various industrial plants and chemical engineering environments.
ASQ—American Society for Quality

As a global quality community, ASQ advances the professional development, credentials, knowledge and information services, membership community, and advocacy on behalf of millions of individual and organizational members in 140 countries.

AWMA—Air & Waste Management Association

An interdisciplinary club consisting of members from across the environmental fields - science, toxicology and engineering.

BMES—Biomedical Engineering Society

http://sites.google.com/site/bmesucr/
BMES integrates biology and engineering in all their practical applications.

COELC—College of Engineering Leadership Council

http://www.engr.ucr.edu/~coelc/
An organizing body that encourages an active relationship among all student organizations and BCOE.
ELECTROCHEMICAL SOCIETY

http://www.engr.ucr.edu/news/2011news.html#ecs

ECS’ objectives are: to advance the theory and practice of electrochemistry, solid-state science, and allied subjects; to encourage research and dissemination of knowledge in these fields; and to assure the availability of adequate training and education of fundamental and applied scientists and engineers in these fields.

EWB—Engineers without Borders

http://www.engr.ucr.edu/~ewb/

An organization established to help develop areas worldwide with their engineering needs, while involving and training a new kind of internationally responsible engineering student.

IEEE—Institute of Electrical & Electronic Engineers

http://ieee.ece.ucr.edu/

IEEE provides students with professional development and academic achievement opportunities.
IEEE-EDS – Institute of Electrical & Electronic Engineers – Electric Devices Society

http://www.engr.ucr.edu/~eds/

The field of interest for EDS is all aspects of engineering, physics, theory, experiment and simulation of electron and ion devices involving insulators, metals, organic materials, plasmas, semiconductors, quantum-effect materials, vacuum, and emerging materials. Specific applications of these devices include bioelectronics, biomedical, computation, communications, displays, electro and micro mechanics, imaging, micro actuators, optical, photovoltaics, power, sensors and signal processing.

IOM3 – Institute of Materials, Minerals and Mining

IOM3 is a major engineering institution whose activities encompass the whole materials cycle, from exploration and extraction, through characterization, processing, forming, finishing and application, to product recycling and land reuse.

ION – Institute of Navigation

ION is the world's premier non-profit professional society dedicated to the advancement of the art and science of positioning, navigation and timing (PNT). It serves a diverse community including those interested in air, space, marine, land navigation, and position determination. Its membership is worldwide, and it is affiliated with the International Association of Institutes of Navigation.
LUG – Linux Users Group

http://lug.cs.ucr.edu/

LUG at UCR is a student-run organization comprised of hobbyists. We are dedicated to helping anyone who is interested in Linux. We offer Install-fests to help get Linux running on your computer, as well as info-sessions to further knowledge of computers.

MEGSA—Mechanical Engineering Graduate Student Association

http://www.engr.ucr.edu/megsa/

MEGSA promotes social and academic aspects of the Mechanical Engineering graduate student life at UCR and increases student involvement in the local community.

MRS—Materials Research Society

http://www.engr.ucr.edu/~mrs

MRS will build a dynamic, interactive, global community of materials researchers to advance technical excellence by providing a framework in which the materials disciplines can convene, collaborate, integrate and advocate.

NSBE—National Society of Black Engineers

http://www.engr.ucr.edu/~nsbe/

An organization that truly fulfills its mission statement: excelling academically, succeeding professionally, and positively impacting the community.
OSA—Optical Society of America


The mission of OSA is to promote the generation, application and archiving of knowledge in optics and photonics and to disseminate this knowledge worldwide. The purposes of the Society are scientific, technical and educational.

SACNAS — Society for Advancement of Chicanos and Native Americans in Science

http://www.sacnasatucr.org/

SACNAS is a society of scientists dedicated to fostering the success of Hispanic/Chicano and Native American scientists—from college students to professionals—to attain advanced degrees, careers, and positions of leadership in science.

SAE—Society of Automotive Engineers

http://www.engr.ucr.edu/sae

Members design, fabricate and assemble vehicles using state-of-the-art software and equipment and participates in national competitions annually.
SHPE—Society of Hispanic Professional Engineers

http://www.shpeatucr.org/
Professional and leadership development of a Hispanic Engineer is a major objective of this organization.

SWE—Society of Women Engineers

http://www.engr.ucr.edu/~swe/
SWE encourages young girls and undergraduate women to pursue careers in engineering through the development of programs that enhance their leadership, communication, and problem-solving skills.

Tau Beta Pi Engineering Honor Society

http://www.engr.ucr.edu/~tbp/
Tau Beta Pi is the only national engineering honor society that aspires to honor both character and academics representing all disciplines of engineering.

Theta Tau Professional Engineering Fraternity

http://www.engr.ucr.edu/~thetatau/
The purpose of Theta Tau is to develop and maintain a high standard of professional interest among its members, and to unite them in a strong bond of fraternal fellowship.
The Executive Committee of the College of Engineering helps guide the college in the development of curriculum and policy as well as the review and approval of new courses.

Members

**Tom Stahovich**
Chair (2016-2019)
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**Xin Ge**, CEE Representative (2015-18)
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Interim Dean
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Marko Princevac
Associate Dean
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Associate Dean
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Administrative Liaisons

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Undergraduate Student Affairs Manager
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Eilene J. Montoya
BCOE Executive Committee Liaison
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EN¹Membership

EN1.1 The Faculty of the College of Engineering consists of (a) the president of the University; (b) the Chancellor; (c) the Executive Vice Chancellor; (d) the Dean of the College of Engineering; (e) all members of the Academic Senate who are assigned to the College of Engineering; (f) designated Senate members from other colleges and schools, the number and departmental affiliation of such members to be specified by the Faculty of the College at a regular meeting in each case; and (g) such other Senate members as may be specified by the bylaws of the Riverside Division.

EN1.2 Only voting members of the Academic Senate are eligible to vote in the Faculty of the College of Engineering.

EN²Officers

EN2.1 The Officers of the Faculty consist of a Chair, a vice Chair, a secretary, and a parliamentarian.

EN2.1.1 The Chair of the Faculty is elected for a three-year term and is not eligible to succeed himself/herself immediately. The election is conducted in accordance with the procedure prescribed in these bylaws. If the Chair is unable to complete the term of office for which he/she has been elected, the Secretary-Parliamentarian of the Division shall, within two months, conduct an election in accordance with the procedure prescribed in these bylaws for the unexpired term, provided that the unexpired term is longer than six months. In the interim, or in the event that the vacated term is less than six months, the Vice Chair of the Faculty will serve as Chair. (Am 20 Nov 07)

EN2.1.2 The Vice Chair of the Faculty is chosen by the Executive Committee from among its membership. The term of office expires at the end of committee membership. (Am 20 Nov 07)

EN2.1.3 The secretary of the Faculty is chosen by the Executive Committee from among its membership. The term of office expires at the end of committee membership. (Am 20 Nov 07)

EN2.1.4 The parliamentarian of the Faculty is chosen by the Executive Committee from among its membership. The term of office expires at the end of committee membership. (Am 20 Nov 07)

EN2.1.5 The election of the Chair of the Faculty is conducted as provided in Chapter 7 of the bylaws of the Division.

EN2.1.6 The Chair assumes office on the first day of September following his/her election at a regular election, or immediately upon completion of the ballot count at a special election. The vice Chair, secretary, and parliamentarian take office immediately upon appointment.
EN³Meetings

EN3.1 Meetings may be called by the Chair of the Faculty or by the Executive Committee. At the written request of ten percent of voting members of the Faculty, the Chair must call a meeting. The Chair must call at least one meeting in each academic year.

EN3.1.1 A quorum consists of thirty percent of the members of the Faculty.

EN3.1.2 A motion to submit a measure to mail ballot has precedence over a motion for a vote in a meeting.

EN3.1.3 The Chair must send, at least five days before each meeting, copies of the call for a meeting together with all pertinent documents to each member of the Faculty. The Faculty shall not change curricular requirements or regulations of the college or its departments or change these bylaws at the meetings at which such proposals for change are first made, unless notice is previously given to all members of the Faculty in a call to the meeting.

EN3.1.4 These bylaws constitute primary rules of order for meetings of the Faculty and of the committees of the Faculty. The order of business is that prescribed in Chapter 4 of the bylaws of the Division. Questions of order not covered by these bylaws or those of the Division are covered by Robert's Rules of Order, Newly Revised.

EN3.1.5 The minutes of every meeting of the Faculty shall be sent to every member of the Faculty within ten days after the meeting.

EN⁴Committees

EN4.1 There is an Executive Committee consisting of the Chair of the Faculty, ex officio; the Dean of the college, ex officio; the associate Dean(s) of the college, ex officio; the elected members of the Faculty as provided in EN4.01.01. An elected member is not eligible for immediate reelection unless he/she has completed a term of fewer than 18 months. Eligibility is reestablished after one year of non-service. The Chair, vice Chair, secretary, and parliamentarian of the Faculty occupy corresponding offices in the Executive Committee. The Vice Chair, Secretary, and Parliamentarian are elected by the Executive Committee from the existing elected Faculty members of the Executive Committee whenever a vacancy arises. (Am 20 Feb 07) (Am 20 Nov 07)

EN4.1.1 The elected membership of the committee shall include one member chosen from each of the departments in the College, elected by the faculty of that department, and one member-at large elected by the Faculty at large of the College. The election is conducted as provided in Chapter 7 of the bylaws of the Division. The first order of business of the Executive Committee, after the election of the Chair of the Faculty, will be to determine whether the representation formula needs change and to recommend appropriately to the Faculty. (Am 28 May 98) (Am 20 Feb 07) (Am 20 Nov 07) (Am 25 May 2010)

EN4.1.1.1 The term of office of members of the Executive Committee is three years. (Am 20 Feb 07) (Am 25 May 2010)

EN4.1.1.2 The election is held by mail ballot as provided in Chapter 7 of the bylaws of the Division. For purposes of these elections, members of the Executive Committee are considered Officers of the Faculty of the College. Members of the
Executive Committee take office on the first day of September following their election at a regular election, or immediately upon completion of the ballot count at a special election.

**EN4.1.1.3** Whenever the Executive Committee determines that a vacancy exists in its membership, the secretary of the Division conducts an election in accordance with the procedure prescribed within these bylaws provided the vacancy is to last more than seven months. A vacancy will be declared to exist and a committee member considered to have resigned if he/she anticipates an absence from the committee of more than seven months. Vacancies of seven months or less are filled temporarily by appointment by the Chair of the Faculty with the advice and consent of the Executive Committee.

**EN4.1.1.4** A quorum consists of fifty percent of the elected faculty members of the Executive Committee. For the purposes of quorum the Chair is considered an elected faculty members.(En 20 Nov 07) (Am 25 May 2010)

**EN4.1.1.5** At the beginning of each academic year, to provide input on the student point-of-view, the Executive Committee shall appoint a non-voting undergraduate student representative, who shall be majoring in an Engineering program, to a one-year term.(En 25 May 2010)

**EN4.1.2** The Executive Committee has the following functions:

**EN4.1.2.1** The Executive Committee has general oversight of the academic welfare and discipline of students in the college and has the power to bring before the Faculty any matters that the committee deems advisable.

**EN4.1.2.2** The Executive Committee appoints all other standing committees and all special committees of the Faculty unless otherwise directed at a meeting of the Faculty.

**EN4.1.2.3** The Executive Committee acts finally for the Faculty (a) in the awarding of all degrees to students of the college, and (b) in the awarding of honors at graduation. The committee is likewise empowered to act on petitions of students for graduation under suspension of the regulations. The committee will report all degrees approved to the Division.

**EN4.1.2.4** The Executive Committee acts for the Faculty in the establishment, modification, and discontinuation of majors and minors within the college.

**EN4.1.2.5** The Executive Committee acts for the Faculty in making recommendations to the Division regarding courses.

**EN4.1.2.6** The Executive Committee reviews and makes recommendations to the Dean of the college on proposals for the establishment of new departments or modifications of existing departments and reviews the status of all interdisciplinary programs.

**EN4.1.2.7** The Executive Committee establishes and maintains liaison with the Executive Committees of the other colleges and schools in the Division.

**EN4.1.2.8** The Executive Committee assists the Dean on his/her request in matters relating to the administration of the College of Engineering.

**EN4.2** There is a standing undergraduate education committee consisting of the undergraduate advisors from each of the programs in the college and chaired by the associate dean. The duties of the committee are the judging of the awarding of honors at graduation and evaluation of applications for fellowships and
scholarships judged and/or awarded through this college. The committee is also charged with the duty to provide an on-going review of college undergraduate programs and policies. Its advice and recommendations are to be presented to the dean and the departmental chairs, and reported quarterly to the executive committee. (EN 31 May 01) (Am 20 Nov 07)

**EN^5 Ammendments/Suspensions**

*These bylaws and regulations can be amended or suspended only as provided in Chapter 6 of the bylaws of the Division and EN 3.01.03*
**Please note that some courses including those from GSME, SoBA, SoM, SPP, and the Honors Program have different course proposal processes. For detailed course proposal processes for all courses please see the Office of the Registrar's webpage ([http://registrar.ucr.edu/crams/course-proposal/index.html](http://registrar.ucr.edu/crams/course-proposal/index.html)).**
ENR\textsuperscript{1} STATUS OF STUDENTS

ENR1.1 CATEGORIES OF STUDENTS

ENR1.1.1 The categories of students are: (1) regular students, (2) special students, (3) limited status students as defined in the Manual of the Academic Senate, Regulations 310, 312, 314, 650.

ENR\textsuperscript{2} REGISTRATION AND COURSE WORK

ENR2.1 FACULTY ADVISORS

ENR2.1.1 Each academic department in the College of Engineering will assign one faculty member to be the Undergraduate Faculty Advisor. This faculty member will serve as a contact point in the student's area of interest. In addition, this faculty member will participate on the Undergraduate Education Committee, and will be responsible for communicating to continuing students in an annual forum. (En 21 Nov 02)

ENR2.2 STUDENT RESPONSIBILITY (EN 21 NOV 02)

ENR2.2.1 Students should plan their program of studies carefully in consultation with an academic advisor. It is the student's responsibility to make sure that all of the requirements for graduation are met and to attend the Undergraduate Faculty Advisor's annual forum. (Am 21 Nov 02)

ENR2.2.2 Students are responsible for obtaining their grades, for selecting an appropriate collection of courses, and for confirming their enrollment by relevant deadlines. (En 21 Nov 02)

ENR2.2.3 Students are required to attend class meetings. Students who do not attend in accordance with any published requirement in the Schedule of Classes or a course syllabus may be dropped from the course. (En 21 Nov 02)
ENR2.3 ENROLLMENT REGULATIONS (AM 21 NOV 02)

ENR2.3.1 Each quarter, students will secure enrollment in each of their courses by the deadlines and methods published in the Schedule of Classes. Changes in enrollment after the published deadlines require the approval of the Associate Dean of the college. Course schedules of fewer than 12 units must have the approval of the Associate Dean of the college. (Am 21 Nov 02)

ENR2.3.2 Students on Probation or Subject to Dismissal status are required to consult with an academic advisor prior to the third week of each quarter in which they are in academic difficulty. A student on Probation or Subject to Dismissal may not enroll in more than 13 units without the approval of the Associate Dean of the college. (En 21 Nov 02)

ENR2.3.3 Students who have not met the Subject A requirement are required to enroll in a basic writing or qualifier course, as determined by their placement, during their first quarter of residency. (AM 21 Nov 02) (AM 21 Nov 02)

ENR2.3.4 With the approval of the Associate Dean, students may withdraw from the University at any time prior to the end of instruction. (AM 21 Nov 02)

ENR2.3.5 Any changes in a student's course schedule not covered by the above regulations must have the approval of the Associate Dean. (Am 21 Nov 02)

ENR2.4 MAJOR REQUIREMENTS

ENR2.4.1 The College of Engineering has approved majors in Bioengineering, Business Informatics, Chemical Engineering (Biochemical, Bioengineering, Chemical and Nanotechnology options), Computer Engineering, Computer Science, Electrical Engineering, Environmental Engineering (Air Pollution Control Technology and Water pollution Control Technology options), Mechanical Engineering (Design and Manufacturing, Energy and Environment, General Mechanical Engineering, and Mechanical of Materials and Structures concentrations), and Material Sciences and Engineering. (Am 11 Nov 93) (Am 25 May 00) (Am 25 May 2010)
ENR2.4.2 A major shall consist of not fewer than 50 upper division units.

ENR2.4.3 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. (Am 11 Nov 93)

ENR2.4.4 The College of Engineering will not allow simultaneous enrollment in more than one degree program. A student may be considered for a second Baccalaureate only upon completion of degree requirements in his/her first degree, providing he/she meets the spirit of Regulation 650 of the Academic Senate, Candidacy for a Second Bachelor's Degree. (Am 25 May 00)

ENR2.4.5 A student in good standing may elect to take a second major within the College of Engineering. A declaration of a second major must be signed by the Dean of the college and filed by the student with the Dean's office. 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. (Am 25 May 00)

ENR2.4.6 A student registered in the College of Engineering, and in good standing, may elect a second major in another college. A declaration of such 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 for 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. (Am 25 May 00)
ENR2.4.7 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. (En 25 May 00)

ENR2.4.8 A student in good standing may request transfer from one major to another by filing a petition of change with the Dean's office. (Am 25 May 00)

ENR2.4.9 A grade point average of at least 2.00 in upper division courses taken in the field of the major is a graduation requirement. (Ed 25 May 00)

ENR2.5 CREDIT BY EXAMINATION

ENR2.5.1 A student who wishes to have the privilege of examination for degree credit must be in residence and not on academic probation.

ENR2.5.2 Arrangements for examination for degree credit must be made in advance with the student's Faculty adviser. The approval of the Faculty adviser, the Dean of the college, and that of the instructor who is appointed to give the examination, are necessary before the examination can be given.

ENR2.5.3 The results of all examinations for degree credit are entered on the student's record in the same manner as for regular courses of instruction.

ENR2.6 UNDERGRADUATE CREDIT FOR GRADUATE COURSES

ENR2.6.1 An upper division student who has a grade point average of at least 3.00 in all courses taken in the University may take a graduate course for undergraduate credit with the permission of the Faculty advisor and the instructor concerned.

ENR2.7 ENROLLMENT ON A SATISFACTORY/NO CREDIT (S/NC) BASIS

ENR2.7.1 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 eight units of courses in the Humanities and Social Sciences. Exceptions to this policy may be
granted, upon petition, by the student's adviser and the Dean. (Am 25 May 95) (Am 28 May 98)

**ENR2.7.2** A student may change from letter grading in a course to (S/NC), or vice versa, until the end of the eighth week of instruction.

**ENR2.8 ENROLLMENT IN HONORS SECTION (EN 31 MAY 01)**

**ENR2.8.1** An Honors section offering of any course will be granted credit equal to that of a regular offering of the course.

### ENR3 DEGREE REQUIREMENTS

**ENR3.1 GENERAL REQUIREMENTS**

**ENR3.1.1** A minimum of 180 units of academic work is required for graduation. No more than 6 units physical education activity may be counted toward the requirement. After having credit for 216 units, a student will not be permitted to continue, except in cases approved by the Dean, in which specific academic or professional reasons are involved. (Am 25 May 00)

**ENR3.1.2** A grade point average of at least 2.00 in all courses taken in the University of California is required for graduation.

**ENR3.1.3** Concurrent enrollment in any course offered by University Extension or at any other institution is permitted only with prior approval of the Dean of the college.

**ENR3.1.4** Thirty-five of the final 45 units completed by each student prior to receiving the Baccalaureate Degree must be earned in residence. The minimum residence at the University of California required for a degree is three quarters. One of these may be completed in summer session on the Riverside campus provided the student carries at least 8 units in a summer session, unless a reduced load is approved by the Dean of the college. Courses completed through the concurrent enrollment program of University Extension are not considered work in residence. (Am 25 May 00)

**ENR3.1.5** Each student must declare candidacy for the Bachelor's Degree with the Dean's office at the beginning of the senior year and again at the beginning of the final quarter.
ENR3.1.6 Honors with the Bachelor’s Degree are awarded to students who complete with distinction the work of the junior and senior years. Policies are determined by the college committee on honors and scholarships.

ENR3.2 SUBJECT REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE

ENR3.2.1 English Composition: Students must demonstrate adequate proficiency in English Composition by completing a one-year sequence of college-level instruction in English Composition with an average grade of C or better and no grade lower than C-minus. UCR's sequence is ENGL 001A, ENGL 001B, and either ENGL 001C or ENGLS 001SC. Transfer students who have credit for one semester of English Composition from another institution are required to take two additional quarters, i.e., ENGL 001B and either ENGL001C 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 ENGLS 001C or ENGL 001SC. 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. (Am 31 May 01)(Am 22 Nov 05)

ENR3.2.2 Humanities: three courses, as specified by \{bylaw|r|6.3|R6.03\} for the B.S. degree. (Am 11 Nov 93)(Am 25 May 95) (Am 25 May 00)

ENR3.2.3 Social Sciences: three courses as specified by \{bylaw|r|6.4|R6.04\} for the B.S. degree. (Am 25 May 95) (Am 25 May 00)

ENR3.2.4 In order 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 which is upper division, must be from the same subject area. (En 11 Nov 93)

ENR3.2.5 Natural Sciences and Mathematics: five courses, as specified in \{bylaw|r|6.2|R6.02\}. (Renumbered & Am 11 Nov 93)(Am 25 May 95) (Renumbered & Am 25 May 00)
ENR3.2.6 Ethnicity: One course as specified in R6.05, R6.05.01, and R6.05. (En 25 May 95)(Renumbered & Am 25 May 00)

ENR3.2.7 The executive committee, in consultation with the faculty, is responsible for the determining which courses may be used to satisfy the requirements of ENR03.02.02, 3.02.03, 3.02.04, 3.02.05, and 3.02.06. (Renumbered & Am 25 May 00)

ENR3.2.8 Internships and independent study courses may not be used to satisfy College subject requirements. (En 25 May 95) (Renumbered & Am 25 May 00)

ENR3.2.9 In accordance with Division Regulation 6.08, any one course in ENR3.02.02, 3.02.03, 3.02.04, 3.02.05, and 3.02.06 is defined to be a block of instruction that carries four or more units of credit. (En 25 May 95) (Am 25 May 00)

ENR3.3 ACADEMIC MINORS (EN 28 MAY 98)

ENR3.3.1 A disciplinary minor is a set of courses focused on an academic discipline proposed by a department or program and approved by the Executive Committee, the Faculty, the Committee on Educational Policy and the Academic Senate. (En 28 May 98)

ENR3.3.2 An interdisciplinary minor is a set of courses focused on an interdisciplinary thematic area, proposed by more than one department or program and approved by the Executive Committee, the Faculty, the Committee on Educational Policy and the Academic Senate. Each interdisciplinary minor is to be supervised by a representative committee of at least three Faculty members, one designated as Chair. (En 28 May 98)

ENR3.3.3 A minor shall consist of not fewer than 20 nor more than 28 units of organized upper division courses. No more than 4 (four) units of 190-199 courses may be used in fulfilling the upper division unit requirement for a minor. Overlap may occur between the upper-division course requirements of the major and the minor only to the extent permitted by the department, program, or interdisciplinary committee offering the minor, or the college of the minor. (En 28 May 98)(Am 31 May 01)
ENR3.3.4 Courses used, or prerequisite to those used, in fulfilling the minor may be taken on an S/NC basis only on approval of the Dean. (En 28 May 98)

ENR3.3.5 The department, program, or interdisciplinary committee offering the minor is responsible for student and administrative issues pertaining to the minor. (En 28 May 98)

ENR3.3.6 Students must file a declaration of a minor at least two quarters before graduation and must be in good academic standing at the time of filing. A minor requires the signature of the department Chair or Chair of the Faculty committee which supervises the minor and the signature of the Dean of the college. (En 28 May 98)

ENR3.3.7 A grade point average of at least 2.00 in upper division courses in the field of the minor is a graduation requirement. When all other requirements for graduation have been met, the student will be graduated without the minor if the minimum GPA in the minor field has not been met. (En 28 May 98)
Bourns College of Engineering

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(951) 827-3419
<table>
<thead>
<tr>
<th></th>
<th>FALL 2016</th>
<th>WINTER 2017</th>
<th>SPRING 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>First day of the quarter</td>
<td>19-Sep-16</td>
<td>4-Jan-17</td>
<td>29-Mar-17</td>
</tr>
<tr>
<td>First day of instruction</td>
<td>22-Sep-16</td>
<td>9-Jan-17</td>
<td>3-Apr-17</td>
</tr>
<tr>
<td>SCHEDULE OF CLASSES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schedule of Classes is online</td>
<td>5-May-16</td>
<td>20-Oct-16</td>
<td>2-Feb-17</td>
</tr>
<tr>
<td>INITIAL ENROLLMENT</td>
<td></td>
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<tr>
<td>Enrollment appointments</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>viewable in Growl</td>
<td>10-May-16</td>
<td>25-Oct-16</td>
<td>7-Feb-17</td>
</tr>
<tr>
<td>Continuing students register</td>
<td>May 16, 2016 - June 3, 2016</td>
<td>Oct. 31 - Nov. 28, 2016</td>
<td>Feb. 13 - March 9, 2017</td>
</tr>
<tr>
<td>New and readmitted students</td>
<td>August 22-26, 2016</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>register</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer students register</td>
<td>August 29 - September 1, 2016</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>CONTINUING ENROLLMENT</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Enrollment appointments for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd pass viewable in Growl</td>
<td>6-Sep-16</td>
<td>29-Nov-16</td>
<td>10-Mar-17</td>
</tr>
<tr>
<td>Undergraduate 16 unit maximum</td>
<td>September 7 - 15, 2016</td>
<td>Nov. 30 - Dec. 15, 2016</td>
<td>March 10- April 14, 2017</td>
</tr>
<tr>
<td>load lifted</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Makeup enrollment and add/drop</td>
<td>June 6-17, 2016 (Continuing Students) and Sept. 19-Oct. 7, 2016 (All Students)</td>
<td>Dec. 19, 2016 - Jan. 15, 2017</td>
<td>N/A</td>
</tr>
<tr>
<td>For registration deadlines, see</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;LAST DAY&quot; tab.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statement of Account (shows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fees, tuition and projected</td>
<td>mid-August, 2016</td>
<td>mid-November, 2016</td>
<td>mid-February 2017</td>
</tr>
<tr>
<td>student aid) available in Growl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Aid Refunds dispersed</td>
<td>19-Sep-16</td>
<td>4-Jan-17</td>
<td>22-Mar-17</td>
</tr>
<tr>
<td>(by direct deposit or mail) by</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Business Services Office</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event</td>
<td>FALL 2016</td>
<td>WINTER 2017</td>
<td>SPRING 2017</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>-----------------</td>
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</tr>
<tr>
<td>Last day to pay fees without $50 penalty. Cashier's Office payments are due by 3 p.m. Growl and Drop Box payments due at 4 p.m.</td>
<td>15-Sep-16</td>
<td>15-Dec-16</td>
<td>15-Mar-17</td>
</tr>
<tr>
<td>Last day to enroll in classes and pay fees (with penalties). If you do not enroll/pay, your student status lapses. Cashier's Office payments are due by 3 p.m. Growl and Drop Box payments due at 4 p.m. Enrollment for Financial Aid Qualification must be completed by 4 p.m.</td>
<td>21-Sep-16</td>
<td>27-Jan-17</td>
<td>21-Apr-17</td>
</tr>
<tr>
<td>Last day to apply for readmission if you have been absent one or more quarters</td>
<td>20-Jun-16</td>
<td>22-Sep-16</td>
<td>9-Jan-17</td>
</tr>
<tr>
<td>Last day to mail payment for tuition/fees to allow for processing time. Postmarks not considered.</td>
<td>1-Sep-16</td>
<td>1-Dec-16</td>
<td>1-Mar-17</td>
</tr>
<tr>
<td>Last day to add/drop courses in Growl (no fee) without a &quot;W&quot; appearing on your transcript. Enrollment closes when the Student Information System is closed for nightly processing. To ensure your request is processed we recommend you complete your enrollment activity prior to 6 p.m. See When To Register for Growl availability</td>
<td>7-Oct-16</td>
<td>20-Jan-17</td>
<td>14-Apr-17</td>
</tr>
<tr>
<td>Last day to add a course without dean approval (no fee). Enrollment Adjustment Forms are due at NOON.</td>
<td>14-Oct-16</td>
<td>27-Jan-17</td>
<td>21-Apr-17</td>
</tr>
<tr>
<td>Last day to withdraw from a course (no fee)</td>
<td>14-Oct-16</td>
<td>27-Jan-17</td>
<td>21-Apr-17</td>
</tr>
<tr>
<td>Last day to change grading basis (no fee)</td>
<td>14-Oct-16</td>
<td>27-Jan-17</td>
<td>21-Apr-17</td>
</tr>
<tr>
<td>Event Description</td>
<td>FALL 2016</td>
<td>WINTER 2017</td>
<td>SPRING 2017</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
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<td>--------------</td>
</tr>
<tr>
<td>Last day for undergraduates to get dean approval to enroll in 10 or fewer units</td>
<td>14-Oct-16</td>
<td>27-Jan-17</td>
<td>21-Apr-17</td>
</tr>
<tr>
<td>(and reduced tuition). Part-Time Fee Waivers are due at NOON.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last day to withdraw from a course ($4 fee). Enrollment Adjustment Forms are due</td>
<td>4-Nov-16</td>
<td>17-Feb-17</td>
<td>12-May-17</td>
</tr>
<tr>
<td>at NOON.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last day to change grading basis or variable units ($4 fee). Enrollment Adjustment</td>
<td>18-Nov-16</td>
<td>3-Mar-17</td>
<td>26-May-17</td>
</tr>
<tr>
<td>Forms are due at NOON.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last day of instruction</td>
<td>2-Dec-16</td>
<td>17-Mar-17</td>
<td>9-Jun-17</td>
</tr>
<tr>
<td>Last day to withdraw from UCR for the full term</td>
<td>2-Dec-16</td>
<td>17-Mar-17</td>
<td>9-Jun-17</td>
</tr>
<tr>
<td>Last day to complete work in order to remove an incomplete grade from the prior</td>
<td>9-Dec-16</td>
<td>24-Mar-17</td>
<td>16-Jun-17</td>
</tr>
<tr>
<td>quarter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last day of the quarter</td>
<td>9-Dec-16</td>
<td>24-Mar-17</td>
<td>16-Jun-17</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>December 3-9,</td>
<td>March 18-24,</td>
<td>June 10-16,</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>2017</td>
<td>2017</td>
</tr>
<tr>
<td>Grades available on Growl</td>
<td>3-Jan-17</td>
<td>3-Apr-17</td>
<td>26-Jun-17</td>
</tr>
</tbody>
</table>
Welcome to the Department of Bioengineering in the Bourns College of Engineering at the University of California, Riverside. Established in 2006 by National Academy of Engineering member Jerome S. Schultz, our department is home to a cutting-edge research program and a nationally recognized, unique student training and educational enterprise.

**Innovative Interdisciplinary Research**

Bioengineering is an interdisciplinary field where engineering/physical sciences and biology/medicine synergistically meet, work together, cross-fertilize, mutually benefit, lead to discoveries, and define and usher in new fronts of interdisciplinary research. Our core faculty is comprised of internationally acclaimed bioengineers with multidisciplinary expertise. Together we carry out cutting edge, collaborative research as well as provide enriched, in-depth training for our students in the following focus areas:

- Biomaterials and Regenerative Medicine
- Biomedical Imaging
- Computational Bioengineering
- Medical Devices
- Molecular and Cellular Engineering

Other bioengineering areas are covered by faculty in the bioengineering interdisciplinary graduate (BIG) program, which includes 49 additional faculty members with biomedical engineering or bioengineering interest, across the campus in departments ranging from Mechanical Engineering to the Biomedical Sciences Division in the School of Medicine. Together we positioned to achieve translational bioengineering research excellence.

**Rigorous Student Preparation in a Welcoming Environment**

The educational program, at both undergraduate and graduate levels, in our department is heavily integrated with our research activities and is intended for well-qualified individuals who wish to become future leaders in academia or industry. At the undergraduate level, an emphasis is placed on fundamental preparation and undergraduate research. Consequently, many of our B.S. graduates are highly successful in gaining admission into renowned graduate programs all around the world, with a number of them...
receiving prestigious awards such as the NSF Graduate Research Fellowship. For those who opt for industrial positions, our training prepares them with engineering and biomedical fundamentals and the ability to apply their knowledge to solve real world problems and to translate creative ideas quickly to practical outcomes.

At the graduate level, our education effort is equally excellent. BIG is designed to not only prepare the entering graduate student with a well-rounded academic preparation in engineering and the biosciences for research, but also to help them hone their skills in communicating advanced technical information to an academically diverse audience. This rigorous but welcoming attention helps our students release their potential in expressive productivity. As a consequence, despite our relative youth, 24% of our eligible doctoral students are NSF Graduate Research Fellows.

One of the Most Diverse Educational Programs in the Nation

Finally, the Department of Bioengineering and BIG are beyond merely committed to diversity. Just as an educationally diverse faculty is needed to provide the most advanced preparation for our graduates, a diverse community provides a wealth of insight in formulating new ideas and solutions to problems. Our graduate program is a gender-balanced blend of U.S. and international students with 68% domestic Ph.D. students. Among the domestic Ph.D. students, 24% are currently underrepresented minorities.

If you are interested in an exciting research-focused educational program that will prepare you to be a leader in the field of biomedical engineering or bioengineering, UCR is the right place for you. Please feel free to contact us for more information.

With warmest regards,

Xiaoping Hu, Ph.D.
Provost Fellow
Professor and Chair
Bourns College of Engineering

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Research Area: Biophotonics, cell membrane electromechanics

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Ph.D., Biomedical Engineering, University of New York, Stony Brook, 2006
Research Area: Cellular Mechanobiology, Vascular Physiology, Nanomedicine

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Ph.D., Chemistry, UC Berkeley, 2006
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Research Area: Magnetic resonance imaging and spectroscopy, functional MRI, image reconstruction and processing, molecular imaging
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Ph.D., Biological Chemistry, UC Los Angeles, 1999  
**Research Area:** Quantitative FRET assay, Quantitative system biology, High-throughput screening assay development and drug discovery, SUMOylation and Ubiquitin-like pathways, Bioconjugation on solid surfaces

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**Research Area:** Biomaterials guided tissue regeneration, nanotechnology, ceramic nanoparticles, degradable polymers, nanocomposites, resorbable metals, surface treatment for medical implants and devices, controlled drug delivery, and stem cell therapy

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Ph.D., Materials Science and Engineering, The Ohio State University, 2006
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Ph.D., Biomedical Engineering, National Yang-Ming University, Taiwan, 2002
We have one of the more truly unique engineering programs with the combination of chemical and environmental engineering that focuses on six key research areas including: Biotechnology, Advanced Materials and Nanotechnology, Air Quality Systems, Water Quality Systems, Energy Systems, and Theory and Molecular Modeling. Our undergraduate program began in 1990-1991 and a graduate program in 1999, which is ranked 21st overall in the NRC lexicographic s-rankings.

We are an interdisciplinary department by nature as evidenced by our ties to the UCR Center for Nanoscale Science and Engineering (CNSE), The College of Engineering Center for Environmental Research and Technology (CE-CERT), and the Winston Chung Global Energy Center.

Our faculty are both productive and well respected within the engineering community. I truly believe the possibilities are endless with the strong core faculty within CEE.

Our students, the lifeblood of our department, have been well-recognized for their outstanding work and achievement. We have a truly diverse student population which was reflected by ABET awarding BCOE the prestigious Claire Felbinger Award for Diversity in 2009.
Graduates of our undergraduate and graduate programs go on to rewarding careers in industry (ClearEdge Power, Ford Motor Company, General Electric, Intel, Nanomix), academia (Chonbuk National University, United Arab Emirates University, University of Connecticut, University of Waterloo) and government (California Air Resources Board, EPA, Pacific Air and Environment).

We look forward to continuing innovative research and fostering our students to become future leaders within the CEE field.

Cheers,
Nosang Myung
Department Chair
Bourns College of Engineering

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Ph.D., Chemical Engineering, Georgia Tech, 2008
Research Area: Understanding and predicting aerosol-cloud climate interactions, impact of warm cumulus clouds that may counteract the warming effects of greenhouse gases and models of cloud microphysical processes are investigated

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kbarsanti@engr.ucr.edu
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Research Area: Development of mechanistic models for the prediction of atmospheric particulate matter, Improving speciation of organic compounds in emissions inventories for biomass burning and other combustion sources, Improving model representation of secondary organic aerosol in biomass burning plumes, developing models of new particle formation

Harvey Blanch, Professor
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Ph.D., University of New South Wales, Sydney, Australia, 1971
Research Area: Protein interactions, DNA electrophoresis and mammalian cell metabolism
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Ph.D., Chemical Engineering, University of Michigan, Ann Arbor, 2011
Research Area: Heterogeneous catalysis, photocatalysis, electrocatalysis, nanomaterials synthesis, solar energy conversion, molecular modeling

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Ph.D., Environmental Science, Caltech, 2001
Research Area: Secondary organic aerosol formation, emissions characterization, air quality systems

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(951) 827-6229
Ph.D., Chemical Engineering, McMaster University, 2008
Research Area: Therapeutic antibody discovery and engineering, directed evolution of enzymes, metabolic pathways and microbial stains, next generation DNA sequencing and bioinformatics, in vivo partitioning for biogenesis and bioremediation
Juchen Guo, Assistant Professor
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(951) 827-6472
Ph.D., Chemical Engineering, University of Maryland, College Park, 2007
Research Area: Rational design, synthesis, and characterization of novel materials for energy and environmental technologies including rechargeable batteries, polymer electrolyte membrane fuel cells, photovoltaic devices, and water treatment

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(951) 827-6475
Ph.D., Chemical Engineering, Duke University, 2011
Research Area: Membrane technology, water and wastewater treatment, environmental implications and applications of nanotechnology. To meet the water demand of a growing population and treat the increasingly complex waste generated by human activity, new technologies need to be developed and incorporated into existing infrastructure

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(951) 827-4655
Ph.D., Applied Chemistry, Colorado School of Mines, 2014
Research Area: Metabolically engineering biological systems, re-routing native metabolism in microorganisms, transcriptomics, proteomics, metabolomics, photoautotrophic microorganisms (algae and cyanobacteria)
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Ph.D., Materials Science and Engineering, UC Santa Barbara, 2002
Research Area: Bio-mimetics, Bio-inspired Materials Synthesis for Nanomaterials, Energy Storage and Conversion Materials (Fuel Cell, Batteries), Biomineralization Studies, Ceramic Processing, Thin Film Growth

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Ph.D., Chemical Engineering, UC Los Angeles, 2012
Research Area: Metabolic engineering

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Ph.D., Environmental Engineering, University of Washington, 2010
Research Area: Advancing the knowledge and application of environmental chemical processes at the molecular level to provide more reliable water supplies, improve water quality and protect public health, with particular interests in enhancement of drinking water quality, remediation of contaminated groundwater, and development of new water purification technologies
Jinyong Liu, Assistant Professor
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Ph.D., Environmental Engineering, University of Illinois at Urbana-Champaign, 2014
Research Area: Water purification catalysts and pollutant detection technologies based on biomimetic metal complexes, functional materials, and nanoparticles; Chemical destruction of recalcitrant contaminants (inorganic, organic, and perfluorinated) in water and wastewater, Environmental behavior study and recovery technology for rare elements

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Mechanical Engineering
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(951) 827-3373
Ph.D., Mechanical Engineering, California Institute of Technology, 2015
Research Area: Fluid transport and mixing by collective motion of self-propelled organisms, Hydrodynamics of plankton aggregations in the wild, Effect of turbulence in naturally occurring biological phenomena

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Ph.D., Chemical Engineering, McGill University, 1985
Research Area: Nanobiotechnology, environmental biotechnology, biosensors, bioengineering
Nosang Myung, Professor
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(951) 827-7710
Ph.D., Chemical Engineering, UC Los Angeles, 1998
Research Area: Synthesis of nanoengineering materials, thermoelectric, spintronics, NEMS/MEMS, gas sensor, bio-sensor environmental remediation, dental biofilm

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Chemical & Environmental Engineering
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(951) 827-2498
Ph.D., Biosystems Engineering, McGill University, 2002
Research Area: Bioremediation, mixed culture and biofilm development and characterization

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Ph.D. Environmental Engineering, Yale, 2004
Research Area: Particle fate and transport in aquatic environments including bacterial pathogens and nanoparticles

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(951) 827-2471
Ph.D., Chemical Engineering, Columbia University, 2009
Research Area: Biocatalysis, biologically inspired engineering, protein engineering, synthetic biology, adaptive materials, bioenergy
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(951) 827-2163  
Ph.D., Physical Chemistry, Massachusetts Institute of Technology, 2007  
**Research Area:** Development and application of theoretical tools to calculate, understand, and rationally design functional materials

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Ph.D. Chemical Engineering, UC Berkeley, 1998  
**Research Area:** Molecular modeling and design, soft materials, and biophysics

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Ph.D., Chemical Engineering, Princeton University, 1971  
**Research Area:** Biological and thermochemical conversion of abundant, non-food cellulosic biomass to transportation fuels on biomass pretreatment, enzymatics hydrolysis, and dehydration to make appropriate precursors

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Chemical & Environmental Engineering  
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Ph.D., Chemistry, UC Berkeley, 2010  
**Research Area:** Nanomaterials, nano-catalysis, solar energy conversion, nano-photonics, nano-live cell interface
Adjunct Faculty

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Computer Engineering

Computer Engineering (CEN) at UCR’s BCOE has long been a popular major. In 2010 the Computer Engineering Program was created as an interdepartmental program between the Computer Science and Engineering and Electrical and Computer Engineering departments to accommodate its rapid growth and enable future graduate degrees.

What is Computer Engineering?
CEN has been a distinct discipline for over 30 years, focused on the design, programming and use of computing structures, large and small.

Computer engineering is a discipline that embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. Computer engineering has traditionally been viewed as a combination of both computer science (CS) and electrical engineering (EE).

[IEEE/ACM Curriculum Guidelines for Undergraduate Degree Programs in Computer Engineering, 2004]

Computer engineers have training in electronic engineering, software design and hardware-software integration. They are involved in many aspects of computing, from the design of individual microprocessors, personal computers, and supercomputers, to circuit design. This field of engineering not only focuses on how computer systems themselves work, but also how they integrate into the larger picture of the specific application.

Computer Engineering Careers
The career options for CEN graduates are extremely varied and diverse, ranging from embedded systems to large-scale servers; from software to hardware design etc. This major has seen and continues to see a very healthy growth in employment. The Bureau of Labor Statistics (BLS) projects a 12% growth in computer occupations between 2014 and 2024 in the United States.
• Computer software engineers and developers are projected to grow by 19 percent from 2014-2024
• Excellent job prospects are expected for applicants with at least bachelor’s degree in computer engineering or computer science and with practical work experience.
• Computer software engineers must continually strive to acquire new skills in conjunction with the rapid changes that occur in computer technology”.

[Job prospect for Computer Engineers”, from the BLS Occupational Outlook Handbook]

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Research Area: Computer architecture, Parallel discrete event simulation, computer system security, high performance computing, wireless and sensor networks

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Ph.D., Computer Engineering, Wayne State University, 1982
Research Area: Heterogeneous architectures, parallel and distributed systems, power aware design, network computing, performance evaluation

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Research Area: Computer architecture, reconfigurable computing, application specific and customizable processors, compilers
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Ph.D., Computer Science, University of Tennessee at Knoxville, 2006  
**Research Area:** Parallel and distributed systems, fault-tolerance and checkpointing, power-aware algorithms and software, grid and cloud computing, numerical algorithms and software, large scale computer simulations, high performance computing

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Ph.D., Computer Science, University of Pittsburg, 1987  
**Research Area:** Parallelizing and optimizing compilers, parallel computer architectures, parallel graph analysis on GPUs and clusters, programming, runtime and compiler support for parallelism

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**Research Area:** Cyber-physical systems, embedded real-time systems, safety-critical systems, autonomous vehicles, operating systems, virtualization, multi-core and many-core architectures
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Ph.D., Purdue University, 1992
Research Area: Electron and thermal transport in low-dimensional structures such as graphene, transition metal di-chalcogenides, carbon nanotubes, semiconductor nanowires, semiconductor nanocrystals, and molecules

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421 Winston Chung Hall
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Ph.D., Computer Engineering, USC, 1988
Research Area: Computer architecture and parallel computing, low power computer architectures, compilation and code optimizations for reconfigurable computing systems, novel platforms and programming paradigms for sensor networks

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Ph.D., UC Los Angeles, 2008
Research Area: Data centers, mobile edge computing, smart grid and buildings, cyber-physical systems, scheduling in web-scale systems
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Ph.D., Electrical & Computer Engineering, University of Iowa, 1999  
**Research Area:** VLSI long-term reliability, modeling, optimizations and management at circuit and system levels, thermal modeling, optimization and dynamic thermal management at circuit, chip and board levels, parallel and intelligent computing and analysis on heterogeneous and accelerator-rich platforms, hardware security and trust computing, smart devices and embedded and cyber-physical systems, statistical modeling and optimization for VLSI systems

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**Research Area:** Embedded systems, college STEM education, anti-DUI technologies

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Ph.D., Electrical Engineering, University of New York at Buffalo, 1996  
**Research Area:** RF/Analog/Mixed-signal integrated circuits (IC), design-for-reliability and advanced ESD protection for ICs & systems, SoC (system-on-a-chip), IC CAD and modeling, emerging nano devices & circuits
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Ph.D., Electrical Engineering, USC, 2015
**Research Area:** Computer architecture, energy efficient computer design, data centers, parallel architectures, microarchitecture application of embedded systems

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Ph.D., Electrical Engineering & Computer Science, UC Berkeley, 2008
**Research Area:** cyber-physical systems, embedded software, model-based design and synthesis, SoC design
Fostering groundbreaking research and producing graduates who are in demand, our department has established itself as a leader in the field of computer science and engineering. In recognition of the quality of our research and educational opportunities, the department has been highly ranked by the National Review Council, the Princeton Review, and U.S. News & World Report.

All degree programs combine the teaching of core principles with hands-on laboratory experience, preparing students for exciting careers in industry and academia. Students at all levels can enrich their educational experience by participating in sponsored research projects and professional student organizations like ACM or IEEE. The majority of our undergraduates go on to work in the computer industry at major companies like Google, Microsoft, or Facebook, while others get involved in start-ups, work for government agencies, or continue their education in graduate school. A number of our graduate students continue into careers in academia.

Our department’s 33 faculty are involved in cutting-edge research in the areas of computer architecture, compilers, embedded systems, algorithms, computational biology, databases, data mining, machine learning, computer networks, distributed processing, artificial intelligence, software engineering, and graphics. Attesting to the quality and impact of the research conducted in our laboratories are the prestigious awards won by our faculty, who include three ACM Fellows, five IEEE Fellows, five AAAS Fellows, and nine NSF CAREER awardees. Research projects in our department receive more than $10 million in funding per year from external sources, including federal agencies like NSF, NIH, and DARPA as well as high-tech companies like Google, HP, Intel, AT&T, and Samsung.

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Research Area: Heterogeneous architectures, parallel and distributed systems, power aware design, network computing, performance evaluation

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Research Area: Computer architecture, reconfigurable computing, application specific and customizable processors, compilers
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Ph.D., Computer Science, Princeton, 2015
Research Area: Internet video streaming, wireless & mobile networks, network economics, and sensor networks

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Research Area: Parallel and distributed systems, fault-tolerance and checkpointing, power-aware algorithms and software, grid and cloud computing, numerical algorithms and software, large scale computer simulations, high performance computing

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Ph.D., Computer Science, Warsaw University, 1985
Research Area: Design and analysis of algorithms, data structures, theory of computation, combinatorial optimization, computational geometry, automata theory, graph theory, on-line algorithms, graph drawing algorithms, algorithms in discrete tomography

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Ph.D., Computer Science, University of Minnesota, 2016
Research Area: Database, big data management, spatial data
Michalis Faloutsos, Professor  
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Ph.D., Computer Science, University of Toronto, 1999  
**Research Area:** Internet protocols and measurements, peer-to-peer networks, social networks, network security, and ad-hoc networks

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Ph.D., Computer Science, University of Pittsburg, 1987  
**Research Area:** Programming, compiler, runtime & architectural support for parallel & distributed heterogeneous systems, and software tools for monitoring and managing the runtime behavior

Vagelis Hristidis, Professor  
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Ph.D., Computer Science, UC San Diego, 2004  
**Research Area:** Databases, information retrieval, web search, database search, healthcare data, semi-structured data

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Ph.D., Computer Science, University of Minnesota, 1988  
**Research Area:** Design and analysis of algorithms, computational molecular biology, bioinformatics, comparative genomics, approximation algorithms, average-case analysis, applications of Kolmogorov complexity
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318 Winston Chung Hall  
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Ph.D., Computer Science, UC Irvine, 2001  
**Research Area:** Machine learning and information retrieval, techniques for solving similarity and indexing problems in time-series datasets

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Ph.D., Electrical & Computer Engineering, UC San Diego, 1997  
**Research Area:** Wireless networks and systems, broadband networks, network security

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Ph.D., Computer Science, UC Los Angeles, 2016  
**Research Area:** Programming languages, compilers and verification, concurrent and distributed algorithms

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Ph.D., Computer Science, Purdue, 2001  
**Research Area:** Computational molecular biology, data mining & compression, design & analysis of algorithms
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Ph.D., Computer Science, UC Los Angeles, 1981  
**Research Area:** Computer networking, performance evaluation, distributed algorithms, fundamental performance limits, applications of analytical modeling techniques to practical problems in computer systems

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Ph.D., Computer Engineering, USC, 1988  
**Research Area:** Computer architectures and compilers for parallel and high-performance computing, embedded systems, FPGA-based code acceleration and reconfigurable computing

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Ph.D., Computer Science, Carnegie Mellon University, 2016  
**Research Area:** Data mining, data science, machine learning, tensor decompositions, matrix factorization, factorization models, signal processing for data mining, scalable algorithms, applications in social networks, neuroscience, web search, anomaly detection
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Ph.D., Computer Science, UC Los Angeles, 1987
Research Area: Investigation and analysis of learning methods that make use of prior knowledge to guide the learning process

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Ph.D., Mathematics, University of Notre Dame, 1967
Research Area: Efficient implementation of programming language features related to operating systems - concurrency, protection, dynamic binding

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Ph.D., Mathematics, Institute of Mathematics of the Polish Academy of Sciences in Warsaw, 1974
Research Area: Declarative knowledge representation in artificial intelligence, commonsense reasoning, symbolic representation and efficient computer automation of human reasoning

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Research Area: Cyber security, mobile computing and network systems
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Ph.D., Computer Science, University of Maryland, College Park, 1983  
**Research Area:** Computer Network Architectures, Protocols and Systems, Virtualization and Cloud Computing; Information Centric Networks

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Ph.D., Computer Science, University of Wisconsin-Madison, 1987  
**Research Area:** Databases, security, distributed systems, networking, programming languages, practical and theoretical techniques to build large software systems

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Ph.D., Computer Science, Stanford, 2011  
**Research Area:** Computational fluid dynamics, solid mechanics, fluid-structure interaction, physically-based simulation for computer graphics, mathematical modelling, and scientific computing
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Ph.D., Computer Science, Massachusetts Institute of Technology, 2001  
**Research Area:** Automated decision-making in uncertain or unknown environments, learning algorithms, sequential decision making

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**Research Area:** Scientific computing, computational fluid mechanics, computational biology, computer graphics

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**Research Area:** System security, program analysis, operating systems

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**Research Area:** Database management, indexing and search, query processing, data dissemination, mobile data services, spatial, temporal, and spatiotemporal databases, XML and semistructured data
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Ph.D., Computer Engineering, UC Irvine, 1994
Research Area: Embedded systems, college STEM education, anti-DUI technologies

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Research Area: Applying binary or bytecode code analysis and virtualization techniques to tackle computer security problems, such as malware analysis and detection, smartphone security, digital forensics, etc.

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Ph.D., Computer Science, Princeton, 1991
Research Area: Approximation algorithms for combinatorial optimization, Lagrangian-relaxation, algorithms for networks and caching, dynamic optimization problems, fast algorithms for special classes of linear programs

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Ph.D., Computer Science, College of William & Mary, 2015
Research Area: Programming systems and run-times for parallel computing, big data, and mobile computing
Adjunct Faculty

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The Electrical & Computer Engineering (ECE) department was founded in the early 1990’s and has grown rapidly in size and stature. ECE has 31 faculty members: 10 IEEE Fellows, 7 AAAS Fellows, 9 NSF Career Awardees, 3 ARO or ONR Young Investigator Awardees, 1 OSA and 1 APS Fellow. In 2014, three professors were president of their IEEE society. The latest NRC S-Ranking placed the UCR ECE department in the top quartile. The faculty research expertise covers:

- Communications and Signal Processing
- Controls and Robotics
- Integrated Circuits
- Intelligent Systems
- Nanoscale Materials and Devices

The related research funding by ECE faculty and staff provides many funded research positions for graduate and undergraduate students.

The department offers undergraduate programs in Electrical Engineering and Computer Engineering. Both programs are ABET accredited. The EE program currently enrolls 282 students. The Computer Engineering program currently enrolls 218 students. A distinction of the UCR EE undergraduate courses is that most are accompanied by a hands-on laboratory component, so that the classroom theory is immediately applied in the lab. A senior design project caps the undergraduate experience. Projects such as sumo-robots, self-guided vehicles, and carbon nanotube solar cells span all areas of EE.

The graduate program focuses on research leading to M.S. and Ph.D. degrees. The research involves strong interaction with campus and system wide research centers: the Center for Nanoscale Science and Engineering (CNSE), the Center for Research in Intelligent Systems (CRIS), the Center for Environmental
Bourns College of Engineering

Research and Technology (CE-CERT), the UC-Light Center and the Phonon Optimized Engineered Materials Center (POEM). Four of the Center Directors are ECE professors. A shared class 100 clean room is available for fabrication of nanodevices such as graphene transistors. UCR ECE students travel nationally and internationally to present their research at conferences. Several faculty and graduate students have earned best paper awards. Our students obtain summer internships and permanent jobs with top universities and industries.

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Ph.D., Computer Engineering, University of Cincinnati, 1997
Research Area: Computer architecture support for security, networking and distributed systems, and parallel computing

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Ph.D., Electrical & Computer Engineering, Georgia Tech, 2013
Research Area: Machine learning and information processing, computational imaging, compressive sensing

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Research Area: Advanced materials, nanostructures and nanodevices for electronics, optoelectronics and renewable energy conversion
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Research Area: Intelligent transportation systems

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Ph.D., Physics, UC Los Angeles, 1974
Research Area: Swarm intelligence, distributed robotic systems, financial engineering, multimedia (3D animation) for education technology

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Ph.D., Electrical Engineering, USC, 1981
Research Area: Computer vision, machine learning and pattern recognition, video networks, image and video databases, biological and medical image & signal processing, sensor fusion, computer graphics and visualization, robotics, artificial intelligence, commercial, medical, military and intelligence applications
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Ph.D., Information Theory, Institute for Problems of Information Transmission, Russian Academy of Sciences, 1981
Research Area: Error-correcting codes, nonbinary coding, decoding algorithms, information theory

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Ph.D., Electrical Engineering, University of Notre Dame, 1989
Research Area: Estimation and control for nonlinear dynamic systems. Current research includes adaptive approximation based control systems, aided navigation systems and autonomous vehicles

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Research Area: Bio-templated materials for electronic, optoelectronic, and energy applications; nanostructured hybrid materials; and novel top-down and bottom-up assembly techniques
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Ph.D., Solid State Ionics, DeMontfort University, UK, 1979
Research Area: Intelligent Systems, particularly those using Distributed Sensing, and Multimedia Controllers; Robotics, related to Manufacturing, and the Robot-Human Interface

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Ph.D., Electrical Engineering, Syracuse University, 1988
Research Area: Signal processing and its applications, wireless communications and networking, remote sensing and sensor networks

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Ph.D., Electrical & Computer Engineering, University of Texas at Austin, 2014
Research Area: Optimal estimation, navigation systems, autonomous vehicles, target tracking, and intelligent transportation systems
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Ph.D., Mechanical Engineering, University of Delaware, 2015  
Research Area:  Motion planning, navigation, and control of uncertain and stochastic systems, multi robot cyber-physical systems, robot design for bio-robotics research

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Research Area:  Cyber-physical systems, embedded real-time systems, safety-critical systems, autonomous vehicles, operating systems, virtualization, multi-core and many-core architectures

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Ph.D., Physics, Moscow State University, Russia, 1991  
Research Area:  Single-electronics, transport in semiconductor heterostructures, noise analysis, quantum computing, and quantum measurements
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Ph.D., Purdue University, 1992  
**Research Area:** Electron and thermal transport in low-dimensional structures such as graphene, transition metal di-chalcogenides, carbon nanotubes, semiconductor nanowires, semiconductor nanocrystals, and molecules

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Ph.D., Electrical & Computer Engineering, University of Pittsburg, 1987  
**Research Area:** VLSI/ASIC architectures for signal, video and multimedia processing and network-on-chips, and information retrieval systems.

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Ph.D., Electrical Engineering, UC Los Angeles, 2003  
**Research Area:** 1) Silicon-based and zinc oxide based thin films, quantum wires and quantum dots; 2) Nano-electronic devices including nonvolatile memories and nanoscale field effect transistors; 3) Silicon photonics and zinc oxide photonics including lasers, light emitting diodes and photodetectors; 4) Diluted magnetic semiconductors and spintronic devices.
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Ph.D., Applied Physics, UC Berkeley, 2010  
**Research Area:** Photonics, optical communication, material science, nano-fabrication

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**Research Area:** Smart Power Grid, Cyber-physical Systems, Communication Networks, Optimization, and Game Theory

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Ph.D., Computer Science, University of Minnesota, 2008  
**Research Area:** Autonomous vehicle localization, multi-robot systems, estimation in mobile sensor networks, vision-aided inertial navigation, simultaneous localization and mapping, structure from motion.
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Ph.D., Electrical & Computer Engineering, UC San Diego, 2001

Research Area: Industrial scale advanced energy storage devices such as batteries and super capacitors for zero emission vehicles, wearable technologies and sustainable manufacturing. Research group's materials portfolio includes 2D Van de Waal materials (graphene, BN, MoS2, WS2), nanoparticles, nanofabrics, nanowires, bioinspired and bio-mass hybrids and porous materials.

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Research Area: Data centers, mobile edge computing, smart grid and buildings, cyber-physical systems, scheduling in web-scale systems

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Ph.D., Electrical Engineering, Brigham Young University, 2004

Research Area: Multi-agent systems, cyber-physical systems, cooperative control, distributed control, networked control systems, autonomous vehicles, robotics.
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Research Area: Computer vision and image processing, statistical pattern recognition, machine learning, video communication, imaging/non-imaging sensor networks, biological image processing

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Ph.D., Electrical & Computer Engineering, University of Iowa, 1999
Research Area: VLSI long-term reliability, resilient systems, fault tolerant computing, reliability-aware design and management at circuit and system levels, parallel and intelligent computing (deep learning) and analysis on heterogeneous and accelerator-rich (GPUs) platforms, hardware security and trust computing; Smart devices and embedded and cyber-physical systems, thermal modeling, optimization and dynamic thermal management at circuit, chip and board levels

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Research Area: Information theory, distributed source coding in sensor networks with emphasis on low-delay communication, multi-terminal joint source-channel coding, content-based retrieval from high-dimensional databases and fundamental limits of retrieval performance
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Ph.D., Electrical Engineering, University of New York at Buffalo, 1996
Research Area: RF/Analog/Mixed-signal integrated circuits (IC), design-for-reliability and advanced ESD protection for ICs & systems, SoC (system-on-a-chip), IC CAD and modeling, emerging nano devices & circuits

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Research Area: Computer architecture, energy efficient computer design, data centers, parallel architectures, microarchitecture application of embedded systems

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MSE is an intercollegiate and interdisciplinary program made up of faculty from the departments of Bioengineering, Chemical and Environmental Engineering, Electrical and Computer Engineering, Computer Science and Engineering, and Mechanical Engineering from BCOE and Biology, Chemistry, and Physics and Astronomy from CNAS. The program provides students with interdisciplinary education related to the development, adaptation and validation of novel materials for a broad spectrum of applications. The Accreditation Board of Engineering and Technology (ABET) accredited B.S. degree curriculum prepares the students for graduate studies/school and careers in a variety of industries, ranging from nanotechnology, electronics, energy generation and distribution, medical and pharmaceuticals, aerospace and automotive. The M.S. and Ph.D. degree programs are open to students from varied undergraduate majors, gives students comprehensive training in fundamental materials subjects to pursue many areas of specialization for rewarding careers in industry, government laboratories and academia.

Our world class faculty from the eight departments of the two colleges include many elected fellows of professional societies, MRS Medal recipient, and winners of the National Science Foundation (NSF), Department of Energy (DoE) and Department
Bourns College of Engineering

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**Research Area:** Advanced materials, nanostructures and nanodevices for electronics, optoelectronics and renewable energy conversion

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Ph.D., Chemical Engineering, University of Michigan, Ann Arbor, 2011
**Research Area:** Heterogeneous catalysis, photocatalysis, electrocatalysis, nanomaterials synthesis, solar energy conversion, molecular modeling
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Ph.D., Physics, Rutgers University, 2011  
**Research Area:** Computational materials theorist working on nanostructures, complex oxides, layered materials, topological insulators, superconductors, and optical properties of materials

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**Research Area:** High-transition temperature Josephson devices, superconducting electronics, multiferroic and magnetic oxides, oxide electronic devices for a diverse range of applications

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Ph.D., Chemical Engineering, University of Maryland, College Park, 2007  
**Research Area:** Rational design, synthesis, and characterization of novel materials for energy and environmental technologies including rechargeable batteries, polymer electrolyte membrane fuel cells, photovoltaic devices, and water treatment
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Research Area: Thermal properties of materials, mechanical properties, functional nanostructures materials, and computational design of materials, energy conversion, energy storage, and clean water

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Research Area: Bio-templated materials for electronic, optoelectronic, and energy applications, nano-structured hybrid materials, and novel top-down and bottom-up assembly techniques

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Research Area: Bio-mimetics, bio-inspired materials synthesis for nanomaterials, energy storage and conversion materials (fuel cell, batteries), biomineralization studies, ceramic processing, thin film growth
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Ph.D., Mechanical Engineering, Pennsylvania State University, 2012  
**Research Area:** Spin mediated thermal transport in semiconductor and ferromagnetic thin films, Spin-Phonon interactions and enhanced spin-Seebeck effect, Spin wave characterization in ferromagnetic thin films and Thermal transport in dilute ferromagnetic semiconductors

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**Research Area:** Electron and thermal transport in low-dimensional structures such as graphene, transition metal di-chalcogenides, carbon nanotubes, semiconductor nanowires, semiconductor nanocrystals, and molecules

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Ph.D., Materials Science, California Institute of Technology, 2012  
**Research Area:** Geophysics. Structure and transportation properties of energy materials under high pressure with diamond anvil cell (DAC) together using Raman, X-ray, and neutron scattering techniques
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Ph.D., Brown University, 2008  
**Research Area:** Biomaterials guided tissue regeneration, nanotechnology, ceramic nanoparticles, degradable polymers, nanocomposites, resorbable metals, surface treatment for medical implants and devices, controlled drug delivery & stem cell therapy

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**Research Area:** Photonics, optical communication, material science, nano-fabrication

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Ph.D., Computer Science, Purdue, 2001  
**Research Area:** Computational molecular biology, data mining/ compression, design/analysis of algorithms
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Research Area: Development of devices based on nanostructured materials for the solution of energy-related issues, characterization of nano-materials, plasma enhanced chemical vapor deposition synthesis of nanostructures and semiconductor quantum dots

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Research Area: Ultrafine-grained and nano structured materials, processing and consolidation of non-equilibrium and metastable particulate materials, microstructural optimization of lightweight/high-specific strength metals and refractory metals, tailored nanocrystalline microstructures with high thermal and mechanical stability, fundamental physics of deformation in nanostructured metallic alloys, high-rate mechanical response of fine-grained materials, computational materials simulation and design

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Research Area: Computer networking, performance evaluation, distributed algorithms, fundamental performance limits, applications of analytical modeling techniques to practical problems in computer systems
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Ph.D., Physics, Northeastern University, 1990  
**Research Area:** Immunophysics and immunoengineering, computational modeling of biomolecular structure, dynamics, and interactions, structural bioinformatics, protein, peptide, and drug design, NMR spectroscopy

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Ph.D., Chemical Engineering, McGill University, 1985  
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Ph.D., Chemical Engineering, UC Los Angeles, 1998  
**Research Area:** Synthesis of nanoengineering materials, thermoelectric, spintronics, NEMS/MEMS, gas sensor, bio-sensor environmental remediation, dental biofilm

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**Research Area:** Nanomaterials synthesis and processing, graphene, III-V and II-VI materials, energy storage and photovoltaic devices, nanoelectronics, nanopatterning for beyond CMOS
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**Research Area:** Industrial scale advanced energy storage devices such as batteries and super capacitors for zero emission vehicles, wearable technologies and sustainable manufacturing, 2D Van de Waal materials (graphene, BN, MoS2, WS2), nanoparticles, nanofabrics, nanowires, bioinspired and bio-mass hybrids and porous materials

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**Research Area:** Development and application of novel micro/nanofabrication methods and materials for microelectromechanical systems (MEMS), microfluidics, and biomedical microdevices

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Research Area: Transport through porous media, multiphase transport, natural convection in complex configurations, analysis of porous insulations, heat flux applications, free surface flows, unconventional heat pipes, and power electronics, transport through biological membranes, mine detection

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Research Area: Biophysics, microfluidics and charge transfer

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Ph.D., Material Science, University of Illinois at Urbane, 2016
Research Area: Electronic, magnetic, and thermal transport phenomena
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Ph.D., Physical Chemistry, Massachusetts Institute of Technology, 2007
Research Area: Development and application of theoretical tools to calculate, understand, and rationally design functional materials – working closely with experimentalists during each step

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Research Area: Molecular modeling and design, soft materials, and biophysics

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Research Area: Mechanics, Material, and Geophysics with an emphasis on Analytical and Computational Modeling, and their Scientific and Engineering Applications

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Ph.D., Chemistry, UC Berkeley, 2010
Research Area: Nanomaterials, nano-catalysis, solar energy conversion, nano-photonics, nano-live cell interface
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Research Areas: Experimental condensed matter physics, spintronics

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Research Area: Photophysics of photovoltaic materials, photomechanical properties of organic nanostructures, photochemistry in biological tissues

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Dr. Rer. Nat., Freie Universität Berlin, 1997
Research Area: Investigation and design of surface roughness, surface properties, surface reactivity, in particular with regards to organic materials and metals surfaces

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Research Area: Porous materials, porous semiconducting materials, catalytic, electronic, and optical materials, templated self-assembly, and targeted drug delivery

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Ph.D., Cornell University, 2010
Research Area: New quantum phenomena in atomically thin two-dimensional (2D) electronic materials including graphene, hexagonal boron nitride, and layered transition metal dichalcogenides
Harry Green, Distinguished Professor
Geology & Geophysics
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(951) 827-4508
Ph.D., UC Los Angeles, 1968
Research Area: Synthetic and natural ceramics and rocks, mechanisms of plastic deformation, pressure effect on flow properties of solids, effect of stress on phase transformations, shearing instabilities at high pressure, nonhydrostatic thermodynamics, transmission electron microscopy, understanding the deep interior of Earth

Cheryl Hayashi, Professor
Biology
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Ph.D., Yale University, 1996
Research Area: The mechanical properties of silk -- elasticity, tensile properties, breaking strength, etc. -- are ultimately dependent on the sequence of amino acids that form silk proteins

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136 Chemical Sciences
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Ph.D., UC Los Angeles, 2005
Research Area: Computational chemistry, materials chemistry, physical chemistry

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Ph.D., Harvard University, 2001
Research Area: Electrical, thermal and mechanical properties of nanoscale systems; mesoscopic superconductivity, nanofabrication, new electromechanical devices
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Physics
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Ph.D., Brandeis University, 1967
Research Area: defects in thin films, porous materials, electron spin-momentum distributions in half metals, contactless gating of heterostructures

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Physics
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Ph.D., Columbia University, 1992
Research Area: The physical nature of empty space, nanostructure physics, interaction between single molecules or a single assembly of bound proteins

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Chemistry
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Ph.D., California Institute of Technology, 1997
Research Area: Solid-state NMR of materials, electronic and structural characterization of catalysts, organic conductors, fullerenes and nanotubes

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Research Area: spin-dependent transport and tunneling, nanoscale magnetism, graphene physics and devices, transition metal oxide thin films and devices
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Chemistry
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Ph.D., Stanford University, 2009
Research Area: Monovalent gold for nanophotonics at visible wavelength, metamaterials, vacuum rabi splitting, antenna-enhanced fluorescence and raman scattering, single molecule studies of the nanoparticle-ligand interface

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Physics & Astronomy
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Ph.D., UC Berkeley, 1984
Research Area: Nonlinear optical and ultrafast optical studies of interfacial magnetism and spin transport across interfaces, magnetic nanowire devices, optical biosensors, terahertz spectroscopy of biomolecules in liquids, orientation of biological molecules at solid/liquid interfaces

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Ph.D., Organic Chemistry, Cornell University, 1992
Research Area: Materials & organic chemistry

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Ph.D., Tsighua University, 2011
Research Area: Combining molecular chemistry and supramolecular chemistry to achieve precise control of electronic/mechanical properties of organic polymer materials at the molecular level
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Ph.D., UC Los Angeles, 1985
Research Area: Investigates physical and chemical properties of solid surfaces and interfaces, chemical reactions at surfaces, and particle-surface interactions, with applications in nanoscale materials, semiconductor processing, tribology, catalysis, and environmental sciences

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Ph.D., University of Washington, 2002
Research Area: Colloidal inorganic nanostructures: synthesis and surface modification, self-assembly approaches to nanoscale electronic and photonic devices, composite nanomaterials for catalytic applications, biomedical applications of nanostructures, colloidal and interface chemistry, nanofabrication using unconventional methods

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Ph.D., UC Berkeley, 1984
Research Area: Surface chemistry, with emphasis in heterogeneous catalysis and materials science, surface reaction mechanisms, thin film deposition
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Faculty research in the Mechanical Engineering (ME) Department spans four broad areas: thermal and fluid sciences; mechanics and materials; biosensors and biomedical applications; and information, computation, and design. Many of our research programs combine to form seven multidisciplinary clusters including: energy processing; bio-applications; micro and nanoscale engineering; computation and design; materials properties and processing; multiphase flow and combustion; and air quality and fire engineering. These research efforts are sponsored by a variety of federal agencies including NSF, NIH, DOE, DARPA, ARO, AFOSR, USDAFS, and ONR; state and county agencies including Caltrans, CTEE, CEC, California Air Resources Board, South Coast Air Quality Management District, Riverside Public Utilities, and UCTC; and industrial sponsors including Raytheon, HP, Microsoft, Aeptec, Lockheed Martin, Magnecomp, SRC, Winston Chung Global Energy Center, Bereket Energy Company, and Bourns Inc. The Department continues to grow and is now home to 22 full-time faculty members.

We have a strong ABET-accredited undergraduate mechanical engineering program that emphasizes fundamentals coupled with effective engineering design and analysis. The curriculum stresses professional skills including an understanding of the relevance and impact of engineering in society, professional ethics, engineering economics, and technical communication. We are a unique program in that 20% of our undergraduate students participate in faculty research. The Department’s Board of Advisors, comprised of dedicated representatives from industry and academia, reviews and recommends curriculum changes that best reflect the needs of industry while maintaining a good balance between theoretical concepts and practical skills.
Our graduate program provides advanced education in a major area of study combined with cutting-edge research. Through this training, our M.S. and Ph.D. graduates are well-prepared to pursue successful careers in academia, government research facilities, and high-tech companies. In addition to running pioneering research programs, our faculty are dedicated teachers, valuing interaction with students beyond the classroom. Several of our faculty serve on editorial boards and as editors of prestigious journals. Collectively, our faculty honors include Fellows of prestigious professional societies, such as TMS, ASM, ASME, AAAS, ASLMS and AIAA; young investigator awards: one ARO, one AFOSR, three NSF CAREER, one NIH-K01, one SAE Ralph Teetor, and one 3M.

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Research Area: Materials processing, solidification including low-gravity experiments, crystal growth, functionally graded composites, & diamond processing

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Research Area: Cryogen Spray Cooling, Medical Lasers and Transport Phenomena for Biomedical Applications

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Ph.D., Physics, Rutgers University, 2011
Research Area: Computational materials theorist working on nanostructures, complex oxides, layered materials, topological insulators, superconductors, and optical properties of materials

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Research Area: High-transition temperature Josephson devices, superconducting electronics multiferroic and magnetic oxides, oxide electronic devices for a diverse range of applications
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Ph.D., Mechanical Engineering, California Institute of Technology, 2011
Research Area: Biological feedback processes, analysis, design and synthesis of robust biochemical networks, in vitro molecular circuits and control systems

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Research Area: Thermal properties of materials, mechanical properties, functional nanostructures materials, and computational design of materials, energy conversion, energy storage, and clean water

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Research Area: Aerosol
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Ph.D., Mechanical Engineering, Pennsylvania State University, 2012
Research Area: Spin mediated thermal transport in semiconductor and ferromagnetic thin films, spin-phonon interactions and enhanced spin-Seebeck effect, spin wave characterization in ferromagnetic thin films and Thermal transport in dilute ferromagnetic semiconductors

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Ph.D., Materials Science, California Institute of Technology, 2012
Research Area: Geophysics, structure and transportation properties of energy materials under high pressure with diamond anvil cell (DAC) together using Raman, X-ray, and neutron scattering techniques

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Ph.D., Mechanical Engineering, University of Minnesota, 2007
Research Area: Development of devices based on nanostructured materials for the solution of energy-related issues, characterization of nano-materials, Plasma Enhanced Chemical Vapor Deposition (PECVD) synthesis of nanostructures and semiconductor quantum dots, advanced process characterization and modeling of gas-phase reactive systems
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Ph.D., Mechanical Engineering, Texas A&M University, 2006  
**Research Area:** Ultrafine-grained and nano structured materials, processing and consolidation of non-equilibrium and metastable particulate materials, microstructural optimization of lightweight/high-specific strength metals and refractory metals, tailored nanocrystalline microstructures with high thermal and mechanical stability, fundamental physics of deformation in nanostructured metallic alloys, high-rate mechanical response of fine-grained materials, computational materials simulation and design

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Ph.D., Mechanical Engineering, California Institute of Technology, 2015  
**Research Area:** Fluid mechanics, oceanography and biology. Biological fluid dynamics, turbulence and two-phase flows

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**Research Area:** Nanomaterials synthesis and processing; graphene, III-V and II-VI materials, energy storage and photovoltaic devices, nanoelectronics, nanopatterning for beyond CMOS
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Ph.D., Mechanical Engineering, UC Santa Barbara, 2012
Research Area: Multi-agent, large-scale, and networked systems, such as power grids, water distribution networks, and cooperative robotic systems

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Research Area: Fundamental and applied fluid mechanics research, the application of fundamental turbulence concepts to studies in environmental flows

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Ph.D., Material Engineering, UC Santa Barbara, 2001
Research Area: Development and application of novel micro/nanofabrication methods and materials for microelectromechanical systems (MEMS), microfluidics, and biomedical microdevices
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**Research Area:** Design, artificial intelligence, pen-based computing, sketch-understanding, and human-computer interaction

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Ph.D., Mechanical Engineering, UC Los Angeles, 2009
**Research Area:** Biomedical microdevices, stem cell engineering, three-dimensional micro/nano fabrication, bio-inspired self-assembly

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Ph.D., Mechanical Engineering, UC Berkeley, 1980
**Research Area:** Transport through porous media, multiphase transport, natural convection in complex configurations, analysis of porous insulations, heat flux applications, free surface flows, unconventional heat pipes, and power electronics, transport through biological membranes, mine detection
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Ph.D., Mechanical Engineering, Purdue, 1976  
**Research Area:** Comprehensive modeling of systems governing air quality, theoretical aspects of small-scale dispersion, application of micrometeorology to dispersion problems, development of simplified models for complex systems

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Mechanical Engineering  
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Ph.D., Material Science, University of Illinois at Urbane, 2016  
**Research Area:** Electronic, magnetic, and thermal transport phenomena

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Mechanical Engineering  
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(951) 827-2497  
Ph.D., Engineering, Brown University, 1994  
**Research Area:** Mechanics, material, and geophysics with an emphasis on analytical and computational modeling, and their scientific and engineering applications
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The Online Master of Science in Engineering Program at BCOE is a calibrated blend of targeted engineering skills and management strategy designed to mold a new generation of leaders in the field. Delivered by experts with industry experience, this empowering program can help students thrive in their segment of a rapidly growing global industry.

Kimberly Love, Student Affairs Officer

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- Graduate in as few as 13 months
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- In-silico Biosystems and Biomolecular Modeling
- Biophotonics and Laser Applications
- Drug Design
- High Throughput Screening

The College of Engineering-Center for Environmental Research and Technology (CE-CERT)
- Atmospheric Processes
- Emissions and Fuels
- Environmental Modeling
- Sustainable Energy Systems
- Transportation Systems

The Center for Nanoscale Science and Engineering (CNSE)
- Spintronics
- Electronics/Photonics
- Devices
- Computing
- Neuroscience
- Sensors
The Center for Research in Intelligent Systems (CRIS)

- Image Processing and Understanding
- Machine Learning and Pattern Recognition
- Image and Video Databases
- Distributed Sensing, Control and Robotics
- Data Mining
- Cognitive Information Processing
- Intelligent Systems and Machine Intelligence
- Automatic Target/Object Recognition
- Multi-Sensor Fusion
- Autonomous Navigation
- Wireless Large Scale Sensor Networks, Surveillance/Monitoring
- Multi-Modal Biometrics and Security
- Biological and Medical Image Processing and Analysis
- Science of Innovations
- Applications

The Center for Ubiquitous Communication by Light (UC-LIGHT)

- Lighting
- Communications
- Networking
- Navigation
- ASIC Design
- System Integration Resources

UCR Center for Advanced Neuroimaging (CAN)

- Magnetic resonance imaging and spectroscopy
- Functional MRI
- Image reconstruction and processing
- Molecular imaging
Phonon Optimized Engineered Materials (POEM)
- Phonon optimization of nanostructured materials
- Thermal management of advanced electronics
- Efficient renewable energy generation and storage
- Low-power dissipation electronic and optoelectronic devices
- Innovative materials characterization techniques
- Novel biomedical methods of diagnostics

Winston Chung Global Energy Center (WCGEC)
- Efficient Thermal Management of High-Power Batteries and Battery Packs with Graphene-Based Materials
- Biologically Inspired Cathode Materials
- Silicon Quantum Dot–Graphene Composite as Anode for Lithium Ion Batteries
- Electrochemical Synthesis of Vertical LiFePO4 Nanowire Arrays as Cathode for Lithium Ion Rechargeable Microbatteries
- Tunable Hybrid Nanotube-Graphene Architectures for Energy Storage
- Nano/Micro Hierarchically Structured Porous Metal Oxides for Lithium-Ion Batteries
The Center for Bioengineering Research (CBR) is the focus of research activities of the Department of Bioengineering in cooperation with other UC Riverside engineering and science departments. CBR has outreach activities with biomedical research units at other regional and cooperating institutions. CBR also serves as the research arm for the Bioengineering Interdepartmental Graduate Program (BIG) and provides extraordinary additional interdisciplinary research opportunities for students.

CBR is being organized in technical divisions the first of which is the Biomolecular Imaging Research and Technology Group. The focus of the team is on developing new cutting-edge biophotonic technologies, utilizing a large array of advanced optical tools. Some current projects include the development of nanoparticles for laser treatment of cancer, mechanism of hearing, and studies on the mechanism of charge transfer in biological systems, non-invasive monitoring of neurological systems and microfluidic devices for detection of infectious agents.

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BCOE’s Center for Environmental Research & Technology (CE-CERT) is a recognized leader in environmental education, a collaborator with industry and government to improve the technical basis for regulations and policy, a creative source of new technology, and a contributor to a better understanding of the environment. CE-CERT is committed to furthering education and research for the next generation of engineers. Our students not only receive an excellent education, but unprecedented opportunities to be intimately involved in the research enterprise. Maintaining abroad-based industry network requires that research at the Center remains on the cutting edge of technology. The Center has created partnerships between UCR and the community-at-large. Inside the CE-CERT laboratories, engineers and scientists explore a wide-ranging research agenda that encompasses:

- Developing intelligent transportation systems for the future;
- Converting biomass such as yard waste into vehicle fuel;
- Measuring air pollutants and modeling how they react in the atmosphere;
- Using computer models to evaluate the impact of roadway improvement on air quality and global climate change;
- Measurement of emissions from on-road and off-road mobile and stationary sources;
- Development and evaluation of innovative solar energy systems; and

Exploring fundamentals and applications in energy generation, storage, and distribution.
# CE-CERT Administration

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# Atmospheric Processes

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The Center for Nanoscale Science and Engineering (CNSE) brings together scientists from the disciplines of chemistry, physics, biology and electrical engineering.

The current research thrusts are devoted to next generation electronics with an emphasis on spintronics and 3D-electronics, new magnetic and electronic devices and advanced materials including carbon nanotubes, graphene and organics.

As part of CNSE, a nanofabrication facility provides clean room and semiconductor processing facilities for micro- and nano-device fabrication.
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The Phonon Optimized Engineered Materials (POEM) Center is a unique research establishment created with the seed funds provided by the Bourns College of Engineering (BCOE) and UC Riverside. Its operation is supported by the federal research grants and industry contracts. Most recent technological developments indicate that engineering of phonons is becoming the next big revolution, which will lead to a further increase in the integration density in computer chips and efficiency of energy generation and storage. Phonons – quanta of crystal lattice vibrations – reveal themselves in all electrical, thermal and optical phenomena in materials. Phonons carry heat in semiconductors and simultaneously limit their electrical conductivity. Heat removal became the main roadblocks for continuous downscaling, increasing speed and integration density of electronic circuits. From the other side, the advent of nanostructures and two-dimensional materials such as graphene created possibilities for better control of phonon properties.
The mission of the POEM Center is to use the full scope of phonon engineering approaches for optimizing materials for applications in electronics, optoelectronics, thermoelectric and photovoltaic energy generation, battery technology, and biomedical applications. The POEM Center offers a unique set of experimental equipment for various aspects of phononics research. The facilities include Raman and Brillouin spectrometers, thermal conductivity and diffusivity measurement systems, and nanometrology tools. Among accomplishments of the POEM Center researchers are the discovery of the exceptional heat conduction properties of graphene and pioneering development of the phonon confinement approach for increasing efficiency of the thermoelectric energy conversion.

**Participating Faculty**
- Reza Abbaschian (ME & MSE)
- Javier Garay (ME & MSE)
- Elaine Haberer (ECE & MSE)
- Alexander Khitun (ECE & MSE)
- David Kisailus (CEE & MSE)
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- Ming Liu (ECE & MSE)
- Lorenzo Mangolini (MSE & ME)
- Ashok Mulchandani (CEE & MSE)
- Jing Shi (Physics)
UCR Center for Advanced Neuroimaging

The center is a newly established core facility and research center at UC Riverside that focuses on magnetic resonance imaging/spectroscopy based approaches for studying the brain. Its mission consists of methodological development, application-oriented research, and training/education of magnetic resonance imaging/spectroscopy techniques for imaging the brain and other organs.

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The Center for Research in Intelligent Systems (CRIS), established in 1998, is developing technology to create computers and robotic systems that are flexible, adaptive and intelligent. The interdisciplinary center involves faculty members and researchers from departments across the UCR campus: Electrical & Computer Engineering, Computer Science & Engineering, Bioengineering, Mechanical Engineering, Chemical Engineering, Statistics, Mathematics, Cell Biology and Neuroscience, Botany and Plant Sciences, Biomedical Sciences, Plant Pathology and Microbiology, Nematology, Entomology. Psychology, Economics and Management.

The goal of the center is to perform research in the development of autonomous and semiautonomous systems with sensing capabilities that can communicate and interact with other intelligent systems, both human and artificial.

CRIS has many active interdisciplinary projects supported by various funding agencies. Representative projects are: NSF IGERT on Video Bioinformatics; Activity and Human Recognition in Distributed Video Sensor Networks for Surveillance and Monitoring; Analysis and Synthesis for Video Mining; Learning Morphological Concepts in Image Databases; Biologically Inspired Computational Models for Perception; Predictive Theory of Object Recognition and Multi-modal Human/Vehicle Identification.

Graduate students have outstanding opportunities to work on interdisciplinary projects with faculty from different research areas. Ph.D. students have interdisciplinary qualifying and dissertation committees and take graduate courses in appropriate departments.
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The mission of the UC-Light center is to enable wireless communications by embedding signals into the light emitted by next-generation LEDs in systems for illumination, traffic control, advertising, and other purposes.

Funded from the Multicampus Research Program and Initiatives (MRPI) competition within the University of California (UC) system and under assistance of Founding Director, Zhengyuan Xu, the UC-Light center is situated in a modern engineering complex at UC Riverside. The Center research comprehensively and uniquely covers three thrust areas pertinent to LED lighting – efficient lighting, communication, and navigation – with significant potential for creating new technological innovations, economic activity, and energy savings benefits. Developed protocols and sub-systems are further integrated into modern architecture design and ASIC chips to ultimately deliver deployable systems and transfer technologies. The iterative experimentation, modeling, design, validation, and multi-dimensional feedback constitute a unified coherent framework to ensure Center success.

The Center closely interacts with a large community, from communication to lighting industries, standardization organizations, peer researchers, funding agencies, and general public. Additionally, the Center plans to assist industry in commercializing technologies that can revolutionize LED communication and navigation, which will in turn stimulate demands for LED lighting. It also welcomes new advisory board members and industry partners through its partnership programs to support and reshape the Center program. All of them jointly contribute to the next generation LED-based technologies and benefit the society at large, and are warmly welcome to participate in Center’s annual technical review and industry-day events.
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The UC-Light Center Director and a Professor of Electrical Engineering at UCR. His research centers on RF/Analog/Mixed-Signal Integrated Circuits (IC), Advanced on-Chip ESD (Electrostatic Discharge) Protection for ICs, Systems-on-a-Chip (SoC), IC CAD and Modeling, Nano and Emerging Devices and Circuits.

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The Southern California Research Initiative for Solar Energy (SC-RISE) is a partnership of industry members, government agencies, public and private utilities, trade organizations, and academic institutions. In a collaborative environment based at UCR’s College of Engineering-Center for Environmental Research and Technology, the Initiative is developing materials for solar energy, new photovoltaic devices, solar-thermal technologies and theoretical models to simulate the performance of novel device structures.

The vision of SC-RISE is to serve as an “honest broker,” providing reliable, unbiased information and advice on all aspects about solar energy. SC-RISE provides a focal point for public education, demonstration projects and faculty and graduate research.

SC-RISE is a vertically integrated solar initiative with a threefold mission:
Conduct research in collaboration with government agencies and industry to advance the state of technology in photovoltaic electricity and other renewable energy concepts;
Demonstrate and assess new technologies, and help end users identify the best applications of solar energy to their needs; and
Train electrical technicians, end users, college students, and the public about solar energy concepts, installations, maintenance, and operations.

Because of its nature and scope, SC-RISE is the first of its kind – establishing alliances with complementary institutions to enhance credibility and avoid redundancy. This Initiative is filling a critically needed role as a trusted resource for information on the state of solar technology, the technical and economic feasibility of solar installations, and the benefits of solar technology.
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Winston Chung Global Energy Center (WCGEC)

This new center will advance solutions for today’s energy storage demands, while developing far-sighted energy storage research and energy-use strategies for tomorrow’s applications. Bridging the gap between industry and academia, the center will contribute to the economic, social and environmental health of communities around the world. This innovative center will:

- Foster a premier academic environment of research and discovery in sustainable energy, with a focus on storage issues;
- Educate a diverse and distinguished engineering workforce that is dedicated to addressing global energy needs;
- Offer tools and training that will increase the capacity of public and private planners, architects, engineers, utilities and developers to design and build energy-efficient community projects;
- Reach out to global organizations and businesses as a partner in fostering clean energy storage solutions; and
- Inspire leadership and community action to address energy storage issues in California and the world.

A Vision for Global Energy Storage

Energy, the motive force of civilization, will be more efficiently and sustainably employed through advanced technologies which integrate its generation, storage and distribution.

Goals of the Winston Chung Global Energy Center

- Advance solutions for today’s energy storage demands;
- Develop far-sighted energy storage research and energy-use strategies for tomorrow’s applications;
- Foster a premier academic environment of research and discovery in sustainable energy, with a focus on storage issues;
- Educate a diverse and distinguished engineering workforce that is dedicated to addressing global energy needs;
Offer tools and training that will increase the capacity of public and private planners, architects, engineers, utilities and developers to design and build energy-efficient community projects;

Reach out to global organizations and businesses as a partner in fostering clean energy storage solutions; and

Inspire leadership and community action to address energy storage issues in California and the world.

Reza Abbaschian, Director

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