WHY CHOOSE

UNIVERSITY OF CALIFORNIA SANTA BARBARA

ELECTRICAL ENGINEERING

THE CONVERGENCE OF EDUCATION AND ENGINEERING
WE ARE QUALIFIED

Electrical Engineering undergraduates receive the finest engineering education including:

- Outstanding faculty and facilities that rank the department in the top five in the country (NRC rankings in 2010)
- State-of-the-art teaching and research laboratories
- Excellent student to faculty ratio (8 to 1)
- A broad variety of courses offered each year, in computer engineering, control, communications, signal processing, and electronics and photonics
- Research opportunities that cut across disciplinary boundaries, enabling students to work closely with faculty in sciences, humanities and engineering in making new discoveries
- Accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org
WHY STUDY ELECTRICAL ENGINEERING?

Electrical Engineering is a very broad field, which creatively uses math and science to solve many practical problems. Our faculty are engaged in cutting edge research and education. Students can tailor their elective courses depending on their interests, and the EE program offers many choices. If you like physics, semiconductor materials and devices may be for you—your skills could be used to design a new laser. There is also a new thrust in the emerging area of energy efficient materials. Or perhaps your interest is with creating cellular or fiber optic communication systems.

If your interests lie more toward analyzing signals or building robots, you may be interested in the Control, Communications and Signal Processing emphasis. Signal processing and communication theory are the ingredients that make the current mobile technologies and the internet work. Control theory is a field of study that can be applied to build a new generation of flexible robots or guide satellites. Image analysis and computer vision are at play (literally) when you use a Kinect device with the Xbox—and you may be interested in knowing how they actually work or how to utilize such devices in various applications. Whichever route you take, our undergraduate EE curriculum will provide you with the tools you need to be a successful engineer.
Kene Akametalu: Entered as a Freshman

Why did you choose to study engineering at UCSB?
I knew UCSB had a strong engineering program (top 25 in the country at the time), but I was really attracted by the opportunity to conduct undergraduate research. Through CNSI and the SIMS program, I was able to participate in a two week research program the summer before my freshman year.

What do you like most about your major and the courses that you’ve taken so far?
I enjoy the challenge that comes with engineering, and that the courses are practical and equip us with skills to solve different types of problems. Another attractive feature is the relatively small classroom sizes. Since there are not many electrical engineering majors, we all have the same classes. A lot of friendships are formed (especially during difficult courses like ECE 137AB). We study together, we struggle together, and eventually we will graduate together too!

What kinds of things have you participated in to enrich your education while at UCSB?
I have participated in a good deal of undergraduate research here at UCSB, on topics from thermoelectric semiconductors to image processing to solar energy. This past summer I was fortunate to do research at the University of Michigan in the area of wireless power transfer. Research has given me an opportunity to see how some of the concepts I have learned actually get used; and in some cases, it has served as a prelude to things that I will learn in future courses. Doing an internship under Dr. Umesh Mishra last summer gave me an advantage when I took his device physics course (ECE 132). Last year, I served as a co-chair for the National Society of Black Engineers. The organization focuses on providing support for students who may need help in the STEM disciplines.

Is there something that you wished you knew in high school about college that you could pass along to prospective students?
A good deal of what you learn in college will come from your courses, but not all of it will. It is important to supplement what you learn in your courses with your own pursuits for knowledge whether this be through research, reading articles, working on projects, or keeping your ears open to the latest technological developments. Also, getting a bachelor’s degree is not the end. As things get more competitive many of you will pursue higher degrees. Use these four years to position yourselves to do whatever it is you want after you graduate.

How do you balance your academic and the rest of your life at UCSB?
I balance my time by taking a step away from engineering related stuff (that includes engineers themselves!). The first key is to have a diverse group of friends that have different majors. Usually they will have different interests from you and this will open you up to events that are going on, such as plays in the Theatre Department or a gospel choir concert. When you look back on your college experience, you will most likely remember the fun times and not the midterms. Do well in classes, but leave time to make memories.

What are your plans for the future?
I would like to earn a PhD in electrical engineering. I am interested in how mathematics can be used to better understand and manipulate physical systems. I plan on specializing in the area of controls or robotics, and am currently applying to various graduate programs across the country.
ARE YOU IN DEMAND?

Starting salaries for the class of 2011

Electrical Engineering National Average* $61,021
UC Santa Barbara Average: $62,571

Electrical engineers are expected to have an employment growth of 2% over the next decade, according to the United States Bureau of Labor Statistics. Strong demand for electrical devices—including electric power generators, wireless phone transmitters, high-density batteries, and navigation systems—should spur job growth. Electrical engineers working in firms providing engineering expertise and design services to manufacturers should have strong job prospects. According to our recent surveys, UCSB Electrical Engineering students have higher starting salaries than the national average.

*According to the 2011 National Association of Colleges and Employers Survey

Education Highlights

BS/MS Programs
Outstanding students can earn a baccalaureate and master’s degree in five years.

Engineering Honors Program
Privileges include: priority registration, residential scholars housing floors, research opportunities, and honors courses. The College also has a chapter of Tau Beta Pi, which is the national engineering honors society.

Research/Internships
UCSB offers a variety of outstanding research opportunities for undergraduates where students can receive either course credit or a salary. Internships are available through Career Services and research positions are available through individual departmental faculty.

Professional Societies
Active student chapters of professional societies include: Engineers Without Borders, Institute of Electrical and Electronic Engineers, and the Society of Women Engineers.

Special Programs
The College supports a diverse range of programs for student support, including mentoring, tutoring, study skills workshops, and career planning. We also partner with the MESA program on campus, which offers services to first-generation college students.

Scholarships
Numerous scholarships are available to enrolled undergraduate students in the college, totaling about $65,000 annually. engineering.ucsb.edu/scholarships

Entrepreneurial Courses
The Technology Management Program provides classes in management, entrepreneurship, and marketing. The program offers a Technology Entrepreneurship certificate with UC Extension. www tmp.ucsb.edu
what you do...

Solving Real World Problems
Many graduating EEs, whether at the bachelor or graduate level, choose careers in industry. Recent graduates have been employed by Agilent Technologies, Analog Devices, Apple, Google, Intel, Microsoft, Northrup Grumman, Raytheon, Rockwell Scientific, RF Micro Devices, Skyworks Solutions, and Sony, to name a few representatives of a much longer list of local and national companies. Several recent EE graduates who participated in the Technology Management Program have even started their own companies.

A growing number of our students continue their education by earning either a master’s in ECE at UCSB through the 5-year BS/MS program, or a PhD, here or elsewhere. Those who have left UCSB have gone on to graduate school at other universities such as Berkeley, MIT, Stanford, UCLA, and UCSD.

What you will study in Electrical Engineering
• Freshmen are introduced to computing methods and foundational courses in their first year, preparing them to design and build circuit boards as sophomores.
• Students are exposed to a balance of fundamental theories and principles in science and engineering with the practical skills necessary to apply them. A broad selection of technical electives encourage students to pursue special interests in communications and signal processing, control systems, computer engineering, and electronics and photonics.
• Electrical engineering majors benefit from imaginative and highly supportive laboratory experiences which are closely integrated with coursework and utilize up-to-date instrumentation and computing facilities.
• Students experience both hardware-oriented and simulation-oriented exercises that integrate skills and knowledge acquired in several courses, which include design of components with performance specifications.
• Students complement their classroom education by participation in research, industrial internships, membership in professional societies, and by studying abroad. A variety of competitions and conferences are also available to make valuable connections in industry.
• Students have the option of completing a senior project which allows them to use what they have learned and apply the skills towards the project. At the end of the year, there is a presentation of the projects in a public forum, where the best project receives an award.

why choose Electrical Engineering

Oh, the places you can go...

Education Abroad Program
The College encourages its students to participate in the U.C. Education Abroad Program to enhance their educational experience. Participants stay registered at UCSB while abroad and make timely progress towards their degrees. Nearly all participants say their EAP experiences were life-changing, career-enhancing, and the highlight of their education.

http://eap.ucop.edu

“I’m currently having a fantastic time here at the University of Western Australia in the city of Perth. Going to another country is such an amazing opportunity and I’m so thankful to have been able to study abroad.”

Julian Robert Cadotte
Electrical Engineering Senior
EAP student at University of Western Australia
why I transferred...

**Why did you choose UCSB as your college destination?**
The location is great, UCSB is a great campus, and offers some of the best engineering studies in the world.

**What did you do last summer?**
I had an internship in Silicon Valley that I got through the campus career fair. I gained a lot of experience and learned about working in industry.

**What activities did you participate in to enhance your education prior to coming to UCSB?**
I completed courses that were not available at my community college by cross enrolling in classes at UCSB shortening my time to graduation. I also learned more about my major by talking to professors during office hours.

**What kind of benefits did you get out of those programs?**
Both these choices gave me a head start when I transferred to UCSB.

**What would you tell a student preparing to transfer to a major research institution in an engineering field?**
Really learn the math you have to take in order to transfer, as you will use all that math in your engineering classes later, and you will have a huge advantage.

**What are your plans for the future?**
Work, save some money, and then come back to graduate school.
Admissions

The College of Engineering seeks to enroll well-prepared students who exceed UC’s minimum academic requirements. We look for students who will bring passion, creativity and dedication to their college experience.

Given the strength of our programs and national reputation, it is not surprising that UCSB’s College of Engineering receives far more applications from qualified students than can be admitted. Each applicant must apply to a specific major, and those with the strongest qualifications are admitted. The exact level of performance required to gain admission varies from year to year and from major to major depending on the size and quality of the applicant pool and the number of available spaces. The College accepts applications for the fall term only and preference is given to freshmen and upper-division transfer students (who have completed at least 90 transferable quarter units).

High School Preparation

When admitting freshmen, the College considers: GPA in college preparatory courses and standardized test scores (with an emphasis on mathematics grades and scores); completion of coursework beyond the university’s A-G requirements; advanced placement; and honors courses, especially in science and mathematics. For more information about applying to UCSB as a freshman see:

www.admissions.ucsb.edu/

Opportunities to get an early start on your freshman year:

UCSB offers many opportunities for incoming students, from the Freshman Summer Start Program where students can get an early start on classes, to summer bridge programs which offer hands-on work with scientific research projects. For a complete list of summer opportunities, see:

engineering.ucsb.edu/fresh-opps

Transfer Preparation

When admitting transfer students, the College of Engineering considers the amount of preparatory coursework completed, grades earned in those courses, and cumulative transferable GPA. Consequently, transfer students should focus on completing all engineering preparatory courses offered at their college with the best grades possible and then finish their General Education requirements after matriculation to UCSB. IGETC is not recommended for this major.

For general University of California Transfer Admissions information see:

www.universityofcalifornia.edu/admissions

California Community College students should refer to www.assist.org for course articulations and information on the California Community College Transfer Admissions Guarantee.

Opportunities for transfer students:

• Shorten your time to degree by attending UCSB the summer before you start as a transfer student
• Participate in the Summer Transitions Program for new transfers
• Engage in scientific research through a summer enrichment program

For a complete list of transfer student opportunities, see:

engineering.ucsb.edu/trans-opps

Need More Information?
Electrical and Computer Engineering
Building 380, Room 101
ugradinfo@ece.ucsb.edu
(805) 893-8292
www.ece.ucsb.edu

College of Engineering Transfer Admission Advising
admissions@engineering.ucsb.edu
(805) 893-6139