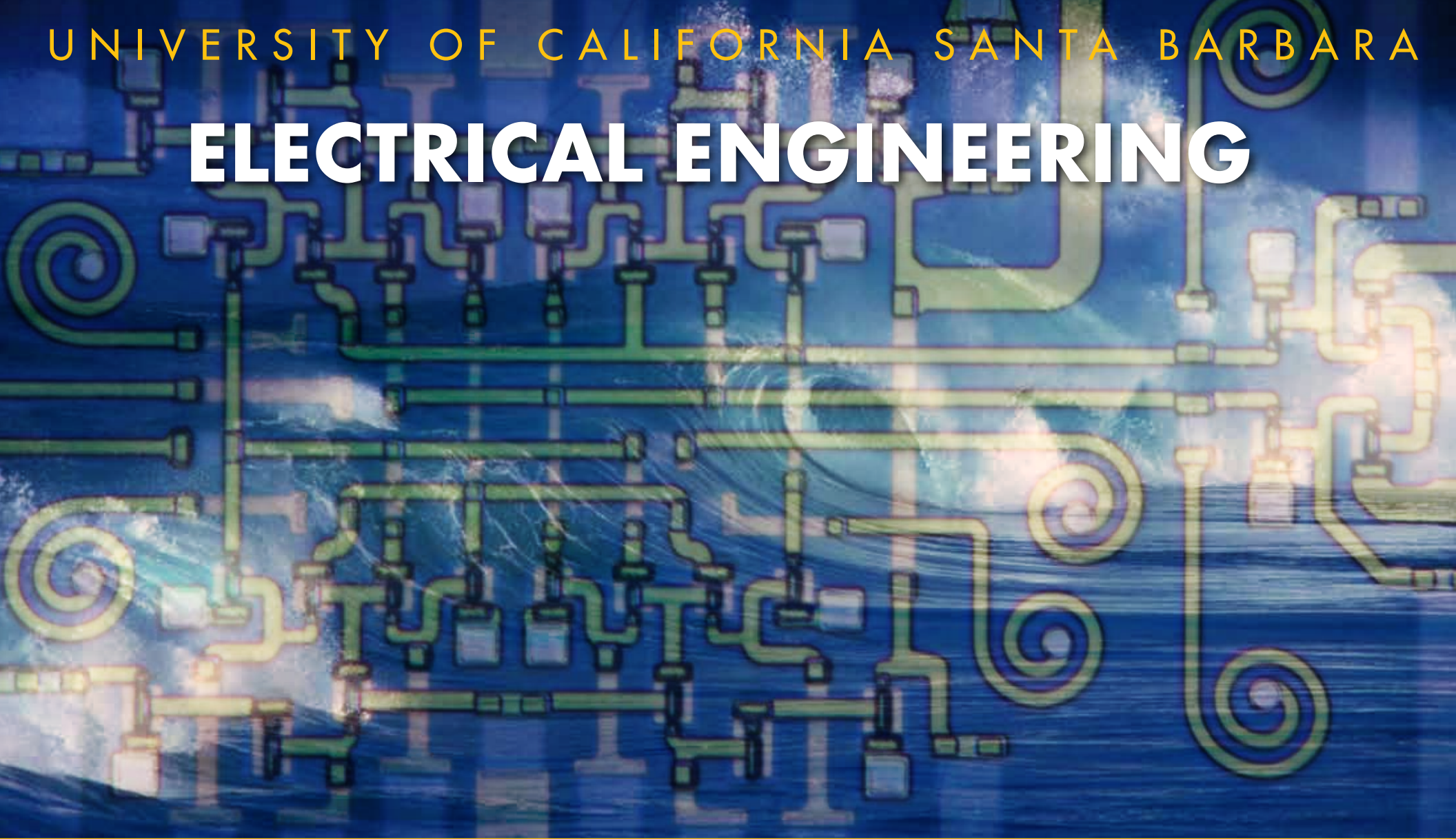


WHY CHOOSE

UNIVERSITY OF CALIFORNIA SANTA BARBARA

**ELECTRICAL ENGINEERING**



THE CONVERGENCE OF EDUCATION AND ENGINEERING

In naming UCSB one of its 25 “hottest colleges,” *Newsweek* states “If there’s a more beautiful campus than this one at the edge of the Pacific, we haven’t seen it..”



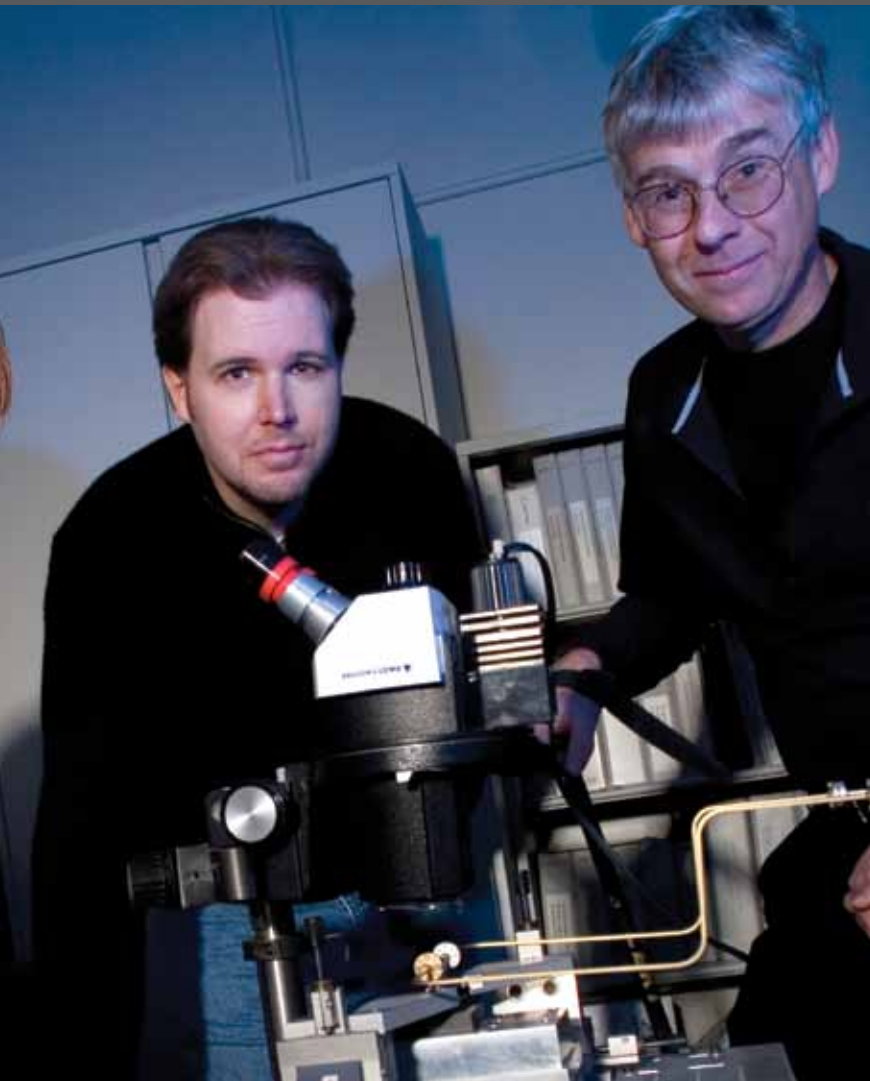
## WHY STUDY ELECTRICAL ENGINEERING?

Electrical engineering is a very broad field, which creatively uses math and science to solve many practical problems – there are lots of directions you could take, depending on your interests. If you like physics, semiconductor materials and devices may be for you—your skills could be used to design a new laser. Or perhaps your interest is with creating cellular or fiber optic communication systems. Maybe you would find that designing very large scale integrated circuits for computing is an exciting area.

If your interests lie more toward the theoretical/mathematical side, then learning about high data rate communication methods or crafting special audio or image processing tools might be your niche. Or if you have interests in both electrical and mechanical systems, control theory is a field of study that can be applied to stabilize and guide the movements of robots and spacecraft. Whichever route you take, our undergraduate EE curriculum will provide you with the tools you need to be a successful engineer.

why choose U.C. Santa Barbara

“...For many students, that would seal the deal, but UCSB also boasts Nobel Prize winners on its faculty, top research centers in science and technology and an extensive study-abroad program.”



## WE ARE QUALIFIED

Electrical Engineering undergraduates receive the finest engineering education including:

- Campus ranked 12th for best U.S. public university by *U.S. News and World Report*
- State-of-the-art teaching and research laboratories
- Excellent student to faculty ratio (8 to 1)
- Knowledge of mathematics and the natural sciences is combined with engineering fundamentals and applied to the theory, design, analysis, and implementation of devices and systems
- Variety of elective courses: computer engineering, solid state, VLSI, high frequency electronics and optoelectronics, communications, control, and signal processing
- Research opportunities through 21 engineering research centers
- Capstone senior project design elective
- Good balance between theory and practice
- Accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012  
phone: (410) 347-7700

# Electrical Engineering

# why I chose...



## **Kyle Stewart:** Entered as a Freshman

### **Why did you choose to study at UCSB?**

I had several options on where I wanted to go for school, I got into UC Berkeley, Cal Poly, and UCSB. I was really torn about where to go, but once I came here and saw the campus, I just fell in love with it. I love the fact that it's right on the ocean and how relaxed the people are. It is a very nice friendly environment, and I didn't feel that same kind of connection with the other schools I got into.

### **Have you participated in any summer programs?**

This past summer I went to Chile and did research at the Universidad de Chile en Santiago and overall it was a really great experience. I had taken high school Spanish so my language skills were okay, but by the time I left, I was better able to communicate and survive in a foreign country. The research itself was developing electric cars, which I am considering as a career choice, so it was a really enjoyable experience.

I also spent the summer before that doing research on photonics in Ireland, which taught me to love and cherish Irish culture, as well as gave me the chance to explore continental Europe during my vacations! I highly recommend foreign work or research experience, and UCSB has several programs that enable this.

### **Have you had any employment on campus since you came to UCSB?**

I've had two jobs on campus during my time here at UCSB, one was as resident assistant, where I was responsible for making sure that students have an enjoyable time living on campus. My other job is tutoring for the Campus Learning Assistance Services (CLAS), where they offer tutoring resources for most of the lower-division courses, including engineering, math, and science. I've learned the material so much better by teaching it to others that I feel like I am better prepared for my own upper division courses.

### **What activities do you participate in to balance your academic and social life?**

One of the things I have always loved doing is running. I ran cross country in high school, and now that I'm not on a competitive team, I'm able to just go out and run – Santa Barbara is a beautiful area and I have been up and down the beaches here. I love the outdoors, and last year I went on a trip to the Colorado River with the campus Adventure Program. That was a lot of fun!

It's sometimes hard to balance coursework, jobs and other activities, but I feel that by finding that balance it has been a real experience, and I have loved my time here.

### **What are your future plans?**

I have been accepted into the Electrical and Computer Engineering (ECE) BS/MS five year program, and I am really excited to have the opportunity to get a master's degree in just one more year. I have started taking some masters courses now, which is very challenging – it is definitely a lot higher level than some of the undergraduate courses I've taken. After that, I will look for a position in the engineering world.

# what's going on...

## ARE YOU IN DEMAND?

**Starting** salaries for the class of 2008

**Electrical Engineering National Average\*** \$56,910

**UC Santa Barbara Average:** \$66,850

**Electrical engineers** are expected to have an employment growth of 6% 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, and electrical engineers working in firms providing engineering expertise and design services to manufacturers should have higher job prospects. According to our recent surveys, **UCSB Electrical Engineering students have higher starting salaries than the national average.**

\* According to the 2008 National Association of Colleges and Employers

## Education Highlights

### BS/MS Programs

Outstanding students can earn a baccalaureate and master's degree in 5 years.

### Engineering Honors Program

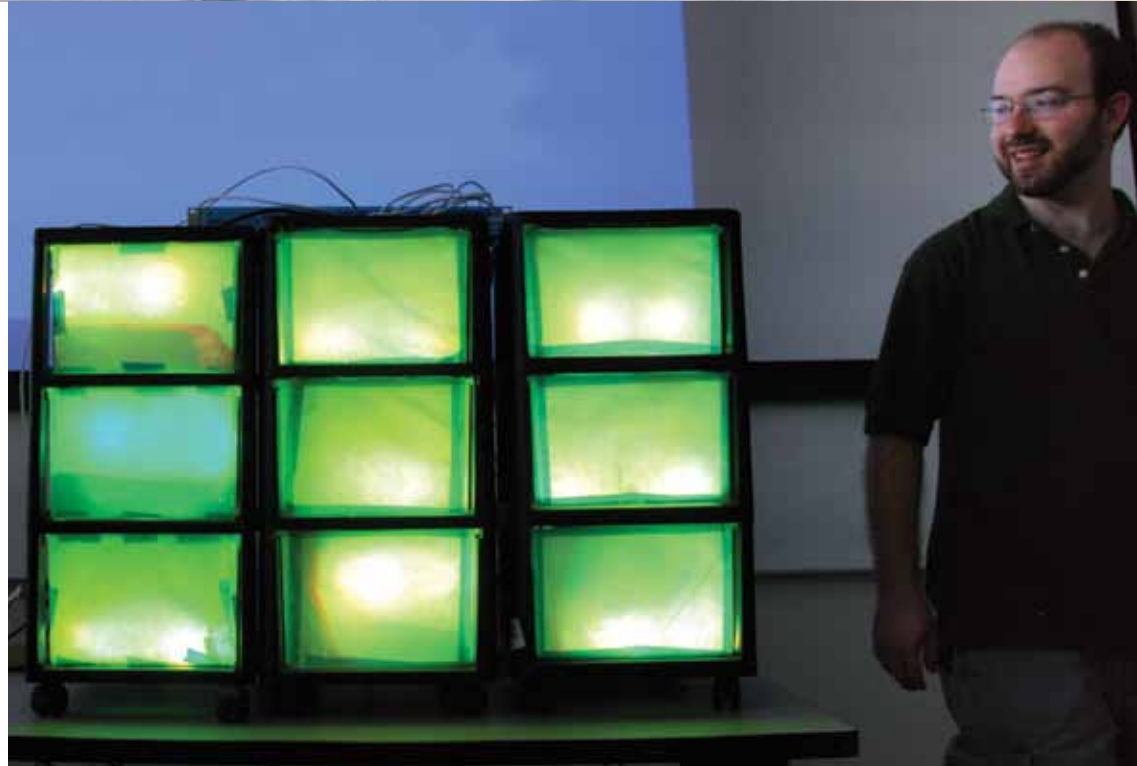
Privileges include: priority registration, residential housing scholars floors, research opportunities, and honors courses. The College also has a chapter of Tau Beta Pi, the national engineering honors society.

### Research/Internships

Many opportunities exist for undergraduates to be involved in research and receive either course credit or a salary.

### Professional Societies

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



### Special Programs

The College coordinates a diverse range of programs for student support, including mentoring, tutoring services, study skills workshops, and career planning. We also partner with the MESA (Mathematics Engineering Science Achievement) Center on campus, which offers special services to first-generation college students.

### Scholarships

Numerous scholarships are available to continuing students in the college.  
[www.engineering.ucsb.edu/current\\_undergraduates/scholarships](http://www.engineering.ucsb.edu/current_undergraduates/scholarships)

### Entrepreneurial courses

The Technology Management Program provides classes in management, entrepreneurship, and marketing where students can earn a Technology Entrepreneurship Certificate.  
[www.tmp.ucsb.edu](http://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, Intel, Northrup Grumman, Raytheon, Rockwell Scientific, RF Micro Devices, and Skyworks Solutions, to name a few representatives of a much longer list of local and national companies. Several students 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, 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 make use of 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 compliment 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.

## 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 had an amazing time studying abroad in Singapore. NUS is considered one of the top universities in Asia and the world, so I was able to complete all the coursework I needed in an academically challenging environment. Deciding to go to Singapore through EAP was one of the best decisions I ever made! ”**

Michael Zimmer – Electrical Engineering major  
EAP Student at National University of Singapore



# why I transferred...

**Danielle Morton**  
Transfer Student

## **Why did you choose to study at UCSB?**

I didn't really know about the prestige of UCSB, but I had a lot more connections here, and I knew that I would get a lot further at UCSB. When I got here, my meeting with an academic advisor was great. She has helped me out during my time here and walked me through the procedures.

## **What do you know now that you wished you knew at your city college?**

I wish I knew more about time management. I thought I was good at it, but I never mastered it until I came to UCSB. I wish I had found a way to improve those skills before coming to UCSB. I wish I had learned to be better at time management, even with easier classes, to try to schedule time to study.

## **What were you doing before you came to UCSB?**

I was in the U.S. Air Force for six years, during which time I started school at Alan Hancock College. The military stationed me in Montana and I took numerous classes while I worked on ICBM nuclear weapons. This allowed me to learn how to balance work and school.

## **What activities have you participated in to balance your academic and personal life?**

In order to balance my academic and personal life, I participate in Tae Kwon Do. I've been in Tae Kwon Do since I was 10 years old; I have a few black belts, and I also teach classes. I know teaching children really keeps you humble because they just do whatever they want sometimes, so it keeps me grounded and takes my mind off studying, which provides a good break.

## **What has been one of your favorite experiences at UCSB?**

My favorite academic experience, I'd have to say, is the labs. I love working in the labs, it's actually an area where I feel my background as an electrician helps me. I'm not very theoretical, but when it comes to the hands-on stuff, I really feel that I can connect the theory to the actual devices I'm working on.



# Admissions

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

Given the strength of its programs and its national reputation, it is not surprising that UCSB's College of Engineering receives applications from more 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 to the College 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 enrollment spaces. The College accepts applications for the fall term only and gives preference to freshmen and upper-division transfer students (those 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/](http://www.admissions.ucsb.edu/)

### SAT Reasoning Test (or ACT plus Writing) and two SAT Subject Tests

#### UC A-G courses:

- A. Two years of history or social science
- B. Four years of college-preparatory English
- C. Three years of mathematics (four years recommended) to include pre-calculus or calculus
- D. Two years of laboratory science (three years recommended) to include two of the following: biology, chemistry or physics
- E. Two years of language other than English (three years recommended)
- F. One year-long approved arts course from a single discipline (dance, drama, music or art)
- G. Two semesters of college-preparatory electives beyond the requirements above

For course information specific to your California High School see: <https://doorways.ucop.edu/list/>

### Opportunities to get a head-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: [www.engineering.ucsb.edu/prospective\\_undergraduates/summerop\\_fresh](http://www.engineering.ucsb.edu/prospective_undergraduates/summerop_fresh)



## Transfer Preparation

For general University of California Transfer Admissions information, please see: [www.universityofcalifornia.edu/admissions/undergrad\\_adm/paths\\_to\\_adm/transfer.html](http://www.universityofcalifornia.edu/admissions/undergrad_adm/paths_to_adm/transfer.html)

California Community College students should refer to [www.assist.org](http://www.assist.org) for course articulations and information on the California Community College Transfer Admissions Guarantee.

### Required Courses:

One year calculus for engr.	Three semesters calculus-based physics
Differential equations	One course general chemistry and lab
Linear algebra	Intro. to computer programming
Vector calculus	Course in Computer Programming Methods
Circuits and Devices	Fundamentals of Logic Design

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 finishing their General Education requirements after matriculation to UCSB. IGETC is not recommended for this major. Successful recent transfer applicants to engineering majors at UCSB had completed more than 75% of the preparation for the major courses with a GPA of 3.0 or above. **The average time to degree for an engineering transfer student at UCSB is 2.5 to 3 years.**

### Opportunities for transfer students:

- Shorten your time to degree by attending UCSB the summer before you begin your first fall quarter 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: [www.engineering.ucsb.edu/prospective\\_undergraduates/summerop\\_trans](http://www.engineering.ucsb.edu/prospective_undergraduates/summerop_trans)

### College of Engineering Transfer Admission Advising

[admissions@engineering.ucsb.edu](mailto:admissions@engineering.ucsb.edu)  
(805) 893-6139

**Need More Information?**  
Electrical and Computer Engineering  
Building 380, Room 101  
[ugradinfo@ece.ucsb.edu](mailto:ugradinfo@ece.ucsb.edu)  
(805) 893-8292  
[www.ece.ucsb.edu](http://www.ece.ucsb.edu)