Electrical Engineering

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Group Advising Meeting
Where are We?

University of California

UC Riverside

Bourns College of Engineering

Department of Electrical Engineering

Major/Program: Electrical Engineering

Department of Computer Science and Engineering

Major/Program: Computer Engineering

Other campuses: Berkeley
San Diego
Los Angeles
Irvine
Santa Cruz
Davis
Santa Barbara
San Francisco
Merced
Specialization / Focus Areas

- intelligent systems (IS)
- nano materials, devices and circuits (NMDC)
- communications and signal processing (CSP)
- controls and robotics (CR)
- computer engineering (CE)

In addition to the Suggested Course Plan the students receive Recommended Technical Electives list for the chosen EE Focus Area.
Technical Electives and New Courses

**Intelligent Systems (IS)**

*EE141 Digital Signal Processing*
- EE128 Data Acquisition and Process Control
- EE140 Computer Visualization
- EE143 Multimedia Technologies and Programming
- EE146 Computer Vision
- EE144 Introduction to Robotics
- EE152 Image Processing

**Nano Materials, Devices and Circuits (NMDC)**

*EE133 Solid-State Electronics*
- EE117 Electromagnetics-II
- EE130 Engineering Quantum Mechanics (F 05)
- EE134 Digital Integrated Circuit Layout and Design
- EE135 Analog Integrated Circuit Layout and Design
- EE136 Semiconductor Device Processing Lab (S 06)
- EE137 Intro to Semi Optoelectronic Devices (S 06)
- EE160 Fiber Optic Communication Systems (S 05)

**Communications and Signal Processing (CSP)**

*EE141 Digital Signal Processing*
- EE117 Electromagnetics-II
- EE128 Data Acquisition and Process Control
- EE140 Computer Visualization
- EE143 Multimedia Technologies and Programming
- EE146 Computer Vision
- EE150 Digital Communications
- EE152 Image Processing
- EE160 Fiber Optic Communication Systems

**Controls and Robotics (CR)**

*EE132 Automatic Control*
- EE128 Data Acquisition and Process Control
- EE140 Computer Visualization
- EE143 Multimedia Technologies and Programming
- EE144 Introduction to Robotics
- EE151 Introduction to Digital Control
Undergraduate Advising and TEs

Advising by Focus Areas

Communications and Signal Processing (CSP)
Prof. Amit Roy Chowdhury  amitrc@ee.ucr.edu

Intelligent Systems (IS)
Prof. Matt Barth  barth@ee.ucr.edu

Nano Materials Devices and Circuits (NMDC)
Prof. Jianlin Liu  jianlin@ee.ucr.edu

Controls and Robotics (CR)
Prof. Gerardo Beni  beni@ee.ucr.edu

Undergraduate Advisor
Prof. Alexander Balandin
Web: http://ndl.ee.ucr.edu/
E-mail: alexb@ee.ucr.edu
Scope: general TE issues
Suggested Course Plan for an 

**Electrical Engineering**
Major at UC Riverside (Sample Plan)

**Fall Quarter**
- MATHEMATICS 9A
  - First Year Calculus
- CHEMISTRY 1A
  - General Chemistry
- ENGLISH 1A
  - English Composition
- ELECTIVE
- Humanities/Social Sciences

**Winter Quarter**
- MATHEMATICS 9B
  - First Year Calculus
- ENGLISH 1B
  - English Composition
- PHYSICS 40A
  - Physics (Mechanics)
- ELECTRICAL
- ENGINEERING 10*
  - Intro to EE

**Spring Quarter**
- MATHEMATICS 9C
  - First Year Calculus
- ENGLISH 1C
  - English Composition
- PHYSICS 40B
  - Physics
    - (Heat/Waves/Sound)
  - ENGR 092*
    - Freshman Seminar

Humanities / Social Sciences / Biological Science courses fulfill the breadth requirements specific to the College of Engineering
Electrical Engineering Program at UCR

**Research university benefits**
- Faculty are leaders in their fields
- Exposure to real research problems

**Graduate getting jobs at top companies**
- Electrical Engineers are always in demand

**Graduates getting admitted to best graduate schools**
- Consider EE graduate program
- You can get paid for getting EE PhD degree

**Summer projects**
- Talk to faculty, visit their web-site, look for outside sources of support

**Senior design projects**
Study Strategy

Electrical Engineering involves a lot of mathematics and physics

Example: you cannot succeed in EE116 without knowing vector algebra or how to take surface integrals

Some EE specializations need more math others need more physics

Work hard

Rule of thumb: 3-4 hours per week per unit: 12 units = 36-48 hours

Study ahead; read the textbook: just lectures are NOT enough

High GPA is more important than early graduation

Big mistakes to avoid

Underestimate program difficulty, not studying enough hours

Too much video games, movies, etc.

Academic dishonesty
Preparing for Future Career

Graduate study is fun

You get paid for getting PhD (or MS) degree
This is mostly about research not taking courses
You future career will greatly benefit from it even if you do different stuff

GPA and letters are important

Letters of reference

Summer jobs

Career and Placement services
Start searching at the beginning of Senior year

IEEE and other professional memberships

EE degree is good for many careers: law degree, medical school, management, military, public service, etc.
EE175 A/B: Senior Design Course

EE175 A/B: two-quarter, eight-unit “capstone” course: serves as a culmination of the students’ learning experience in Electrical Engineering

Focus Areas and Professors:

- Nano Materials Devices and Circuits (NMDC): J.L. Liu
- Intelligent Systems (IS): M. Barth
- Controls and Robotics (CR): P. Liang
- Communications and Signal Processing (CSP): Y. Hua
EE Program Objectives

The objective of EE program is to produce graduates who:

demonstrate the ability to apply mathematics, engineering sciences, computer applications, and natural sciences to electrical engineering practice

are prepared for entry into careers in electrical engineering in the areas of intelligent systems; materials, devices and circuits; communications and signal processing; and controls and robotics

are prepared to pursue graduate education and research in electrical engineering at major research universities

are capable of synthesizing principles and techniques from engineering, mathematics, engineering planning and project management to develop and evaluate alternative design solutions to engineering problems with specific constraints

exercise professional responsibility and sensitivity to a broad range of social concerns, such as ethical, environmental, economic, regulatory, and global issues

work effectively in a team environment, communicate well, and are aware of the necessity for professional and personal growth

Take seriously end-of-the-course ABET student self-evaluations

http://www.ee.ucr.edu/students/objectives.html
Program Outcomes and Assessment

Engineering program must demonstrate that their graduates have:

Outcome 1: Ability to apply knowledge of mathematics, science, and engineering.
Outcome 2: Ability to design and conduct experiments, as well as analyze and interpret data.
Outcome 3: Ability to design a system, component, or process to meet desired needs.
Outcome 4: Ability to function on multidisciplinary teams.
Outcome 5: Ability to identify, formulate, and solve engineering problems.
Outcome 6: Understanding of professional and ethical responsibility.
Outcome 7: Ability to communicate effectively.
Outcome 8: Broad education to understand the impact of engineering in a global and societal context.
Outcome 9: Recognition of the need for and an ability to engage in lifelong learning.
Outcome 10: Knowledge of contemporary issues.
Outcome 11: Ability to use the techniques and engineering tools necessary for engineering practice.

Ask instructors to provide you with the learning objectives at the beginning of each course.
Conclusions

• Changes in the Undergraduate Committee
  • A.A. Balandin and G. Beni are on sabbatical
  • M. Barth is interim Undergraduate Advisor
  • J.L. Liu and A. Roy-Chowdhury are in charge of student petitions

Please send comments to the EE Undergraduate Advisor Alexander Balandin at alexb@ee.ucr.edu