• UG Advising: Faculty, Counselors, Catalogue
• CE & EnE Degree Programs:
• Performance Assessment and Accreditation
• Professional Registration (FE) & Grad School
• Where to Find Program Information and Advice
• Questions? E-mail me at mmcnally@uci.edu
UNDERGRADUATE ADVISING PROCESS

• **Annual Process:** *every year!*
  – **Group Advising:** sessions for Freshmen in the Fall and separate sessions for Sophomores and Junior/Seniors in the Spring.
  – **Individual Advising:** select a faculty member by name, teaching and research area, or session format (either individual 15 minute session or a small group session). Sign-ups at Group Session.
  – *If you are registering in the next quarter, you must participate!*

• **HSSOE Counselors:**
  – “Advising-R-Us” ECT101 (824-4334)

• **Student Plan of Study:**
  – Schedule course work for 1-2 years in advance
  – Ensures that you are on schedule for graduation

• **UCI General Catalogue:** Your *contract* with UC
  [ http://www.editor.uci.edu/08-09/engr/engr.6.htm ]
Structural Engineering Faculty

Dr. Feng, EG 4165
Structural Health Monitoring
CEE 151A, CEE 153

Dr. Mosallam, EG 4149
Composite Structures
CEE 151C

Dr. Shinozuka, EG 4150
Earthquake Engineering and Risk Analysis

Dr. Sun, EG 4139
Mechanics, Composites
CEE 30, CEE 152

Dr. Yang, EG 4135
Structural Control and Dynamics

Dr. Zareian, EG 4141
Earthquake Engineering
CEE 150
Environmental Faculty

Dr. Cooper, ET 844E
Environmental Chemistry
CEE 162

Dr. Rosso, ET 844F
Environmental Processes
CEE161

Dr. Olson, SE2 1361
Environmental Microbiology
CEE 60

Dr. Jiang, SE2 1367
Water Quality
CEE 167

Dr. Bras, 301 REC
Dean, HSSOE
Hydrology & Geomorphology

Dr. Rosso, ET 844F
Environmental Processes
CEE161
Transportation Systems Engineering

Dr. Jay, AIRB 4055
Transport Systems Anlys
CEE 81b, CEE 122

Dr. Jin, AIRB 4038
Traffic Flow, ITS
CEE 11

Dr. McNally, AIRB 4048
Travel Behavior & Modeling
CEE123, CEE181abc

Dr. Recker, AIRB 4074
Transport Systems Anlys
CEE 111

Dr. Ritchie, AIRB 4014
ITS, Emerging Technology
CEE121, CEE124

Dr. Saphores, AIRB 4028
Transport Planning & Policy
CEE 110, CEE125
FRESHMEN/SOPHOMORE ISSUES

• What’s New?
  – Physics and Chemistry sequences
  – Engineering Science Elective
  – Engineering Design Electives & Specializations

• What Choices?
  – Degree programs? Specializations? Minors?
  – General Education Options? When?
  – Freshman Seminars

• Student Clubs & Professional Associations
• E-Week – February 16th - 20th – Get Involved!
• Assessment (ABET) & Registration (FE, PE)
What’s New?
- Engineering Design Elective (151B, 172, 122, 123)
- CEE 60 versus E8
- Specializations: 4 to 3 with 1 free tech elective

What Choices?
- BSCE Specializations & Minors
- Senior Design Projects & Specializations

Student Clubs & Professional Associations

Assessment (ABET) & Registration (FE, PE)
1. **Stakeholders** include students, faculty, alumni, and employers.

2. **Program Educational Objectives** describe expected accomplishments of graduates during the first several years following graduation.

3. **Program Outcomes** describe knowledge and skills to be attained by the time of graduation.

4. **Course Outcomes** are restatements of Program Outcomes that define specific knowledge and skills to be attained in a particular course.

5. **Degree Requirements** comprise core, specialization, and General Ed courses, and a capstone design experience.
ABET Program Assessment

6. A comprehensive **Assessment Process** is applied to evaluate the CE & EnE degree programs.

   a. **Assessment by Students**: tools include standard UCI Course Evaluation Surveys, HSSOE Course Outcome Surveys, Graduating Senior Program Outcome Surveys, and Senior Exit Interviews.

   b. **Assessment by Faculty**: tools include course grades (may include exams, homework, laboratory exercises, and projects), HSSOE and CTQ Instructor Course Outcome Surveys, and Analysis of FE Exam Results.

   c. **Assessment by Faculty and Industry**: tools include the assessment of CEE181ABC Senior Design Project presentations and reports.

   d. **Assessment by Industry**: tools include the Industry Survey of Program Educational Objectives and Program Outcomes, regular meetings with the Corporate Affiliates, and participation in departmental retreats.

   e. **Assessment by Alumni**: tools include the Alumni Survey of Program Educational Objectives and Program Outcomes, as well as participation in departmental retreats and alumni events.
Program Educational Objectives:

Describe the expected accomplishments of graduates during the first few years following graduation. Our graduates are expected to:

1. Establish a Civil Engineering career in industry, government, or academia and achieve professional licensure as appropriate.

2. Demonstrate excellence and innovation in engineering problem solving and design in a global and societal context.

3. Commit to lifelong learning and professional development to stay current in technology and contemporary issues.

4. Take on increasing levels of responsibility and leadership in technical and/or managerial roles.

Note: EnE PEOs are virtually identical
Program Outcomes:

Describe what students are expected to know or be able to do by graduation (a-k)

a. An ability to apply knowledge of mathematics through differential equations; probability and statistics; calculus-based physics; general chemistry; and engineering science in the context of civil engineering applications.

b. An ability to design and conduct laboratory experiments, as well as to critically analyze and interpret data, in two or more recognized major civil engineering areas, such as structures, transportation, water resources, and environmental.

c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, constructability, and sustainability.

d. An ability to function in multidisciplinary teams.

e. An ability to identify, formulate, and solve civil engineering problems in at least four recognized major civil engineering areas.
Program Outcomes (continued)

f. An understanding of professional and ethical responsibilities of civil engineers in relation to public and private institutions and in the context of civil engineering infrastructure systems.

g. An ability to communicate effectively, orally and in writing.

h. A broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

i. A recognition of the need for professional licensure and life-long learning.

j. Knowledge of contemporary issues related to civil engineering.

k. An ability to use the techniques, skills, and modern engineering tools necessary for civil engineering practice, and an understanding of professional practice issues such as project management and interactions between the development, design, and construction professions.
CEE 30 STATICS
(Required for CE and EnE)

Catalog Data: CEE 30: Statics (Credit Units 4)  Addition and resolution of forces, distributed forces, equivalent system of forces centroids, first moments, moments and products on inertia, equilibrium of rigid bodies, trusses, beams, cables. Corequisite or prerequisite: Mathematics 2D. Prerequisite: Physics 7A. Only one course from CEE30, ENGR30, and MAE30 may be taken for credit (Design Units: 0)

Relationship to Program Outcomes: - The course relates to Program Outcomes
  CE: a and e as stated at: http://undergraduate.eng.uci.edu/degreeprograms/civil/mission
  EnE: a and e as stated at: http://undergraduate.eng.uci.edu/degreeprograms/environmental/mission

Course Outcome/Performance Criteria: Students will:
  Analyze and draw free body diagrams for single particles and rigid body systems.
  Establish equilibrium equations of particles/rigid bodies for solve for forces and support reactions.
  Calculate centroids of areas and moments of inertia.
  Apply the theory and methods to analyze simple trusses.
  Compute internal forces in cables/beams.
  Formulate statics problems for simple structural beams.
CE Course Requirements 1

**Mathematics and Basic Science (48 units)**
- *Previous Science Options have been replaced*
- Math2A-B-D-E-J, 3D, CEE 11
- Phys7C-D and 7LC-D -- or -- Phys7B-D, 7LB-D
- Chem1A-B, 1LB (1LA will no longer be offered)

**General Education Requirements (44+ units)**
- Provides flexibility, overlaps encouraged, etc.
- Engineering Professional Topics Courses include Economics 20A-B and CEE60 (or SocEcol E8)
CE Course Requirements 2

**Engineering Topics Courses (77 units):**
- LD Core: EECS 10, CEE 20, 30, 80, 81A-B
- UD Core: CEE 110, 111, 121, 130, 130L, 150, 150L, 151A, 151C, 161, 170, and 171
- Engineering Science Elective (materials, circuits, thermo, science)
- Engineering Design Elective (one of 151B, 172, 122 or 123)
- Senior Design Practicum: CEE 181A-B-C

**Specialization or Concentration (16+ units)**
- Must complete senior design project in same area

**Summary**
- A nominal total of 185 units (24+ design units)
## BSCE: Freshman 2009-2010

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- Gen Ed Recommendation: WR39B-C, CEE60
### BSCE: Sophomore 2009-2010

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- Gen Ed Recommendation: Econ 20A-B, **CEE60**
- **Engr Science** Elective => current Science Option
### BSCE: Senior 2009-2010

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- **Engr Design** Elective (151B, 172, 122 or 123)
- Civil Engineering “core”; consider pre-requisites!
### BSCE: Senior 2009-2010

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- Specialization or concentration, and 181
- CEE 181 A-B-C with UD Writing or E190
Specializations 1

General Civil Engineering:
Requires four courses from CEE122 or CEE123; CEE152, CEE153, CEE155, or CEE156; CEE162, 167, or CEE168; CEE172, CEE176, or CEE178; or CEE55 or courses from an approved list.

Environmental Hydrology & Water Resources:
Requires four courses from CEE162, CEE163, CEE172, CEE173, CEE176, CEE178, or courses from an approved list.

Note: WRE and EnE Specializations No Longer Available to new students
Specializations 2

**Structural Engineering:**
Requires [CEE153](#) and three courses from CEE152, CEE155, CEE156, MAE157, or courses from an approved list.

**Transportation Systems Engineering:**
Requires [CEE122](#) and [CEE123](#), and two courses from CEE 124, CEE125, ECE 70A, MAE 140, MAE 170, MAE 171, or courses from an approved list.

[CEE 198/199 ITE Project]
Concentrations comprise courses primarily from other Schools and thus more courses than for specializations. *CEE does not control the scheduling for these courses.*

**Computer Applications:**
Requires at least five classes or 20 units from ICS/Math 6A, ICS21, 22, 23, 52, EECS 20, EECS 40, and other approved courses.

**Infrastructure Planning:**
Concentrations 2

Mathematical Methods:

Engineering Management *:
Requires MGT 5 and five other courses from CEE 112, E190, E192, E193, or MGT 160, 181, 183, 185, 188, and other approved courses.

* must be admitted to PMSOB UG Minor in Management
Key Pre-requisites

Prerequisite Chains for CEE181ABC

Note:
a. Math and science pre-reqs are not shown
b. For 1 through 7, specific pre-reqs are not shown
c. For 4, there are no formal pre-reqs
Program Educational Objectives:

Describe the expected accomplishments of graduates during the first few years following graduation. Our graduates are expected to:

1. Establish an Environmental Engineering career in industry, government, or academia and achieve professional licensure as appropriate.
2. Demonstrate excellence and innovation in engineering problem solving and design in a global and societal context.
3. Commit to lifelong learning and professional development to stay current in technology and contemporary issues.
4. Take on increasing levels of responsibility and leadership in technical and/or managerial roles.

2009
EnE Program Outcomes:
Describe what students are expected to know or be able to do by graduation (a-k)

a. An ability to apply knowledge of mathematics through differential equations, probability and statistics, calculus-based physics, general chemistry, an earth science and biological science relevant to environmental engineering, and fluid mechanics in the context of environmental engineering.

b. An ability to design and conduct experiments, as well as to analyze and interpret data in more than one environmental engineering focus area such as: air, water, land or environmental health.

c. An ability to design an environmental engineering system, component, or process to meet desired needs within realistic constraints such as economic, social, ethical, political, constructability, and sustainability.

d. An ability to function in multidisciplinary teams.

e. An ability to identify, formulate, and solve engineering problems in more than one environmental engineering focus area such as: air, water, land or environmental health.
EnE Program Outcomes (continued)

f. An understanding of professional and ethical responsibilities of environmental engineers in relation to public and private institutions and in the context of environmental systems (e.g., drinking water distribution, waste management).

g. An ability to communicate effectively, orally and in writing.

h. A broad education necessary for understanding the societal and economic impacts of engineering solutions to environmental problems at both regional and global scales.

i. Recognition of the need for, and an ability to engage in life-long learning.

j. Knowledge of contemporary issues related to environmental engineering.

k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice, an understanding of the importance of licensure for professional practice, and an introduction to administrative business (planning, contracting, etc.) of professional practice.
EnE Course Requirements 1

Mathematics and Basic Science (64 units)
- Math 2A-B-D-J, 3D, 2E
- Phys 7C-D, 7LC-D -- or -- Phys 7B-D, 7LB-D
- Chem 1A-B-C, 1LB-LC, 51A, 51LA
- 4 units of Earth System Science and 4 units of Biological Sciences

General Education Requirements (44+ units)
- Engineering Professional Topics Courses include:
- Economics 20A-B and CEE60 (or Soc Ecol E8)
Engineering Topics Courses (81+ units):

- LD Core: EECS 10, CEE 11, 20, 30, 80, 81A-B, thermo
- UD Core: CEE 110, 130, 130L, 150, 150L, 162, 168, 170 (options)
- Senior Design Practicum: CEE 181A-B-C (options)
- Engineering Electives (2 from 2 areas/1 from other):
  - Water Supply and Resources (CEE171, 172, 173, 176, 178, ESS132)
  - Waste Water Management (CEE 161, 163, 165)
  - Atmospheric Systems & Air Pollution Control (MAE110, 115, 162, 164, ESS 112)
- A nominal total of 189 units

- Must verify Program of Study and unit counts with UG Office
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- Gen Ed Recommendation: WR39B-C or CEE60
## BS EnE: Sophomore 2009-2010

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- Various options for MAE 91 (thermodynamics)
- Gen Ed Recommendation: CEE60
### BS EnE: Junior 2009-2010

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- Consider pre-requisites!
- Science Electives: 1 each in Bio Sci and Earth Systems Sci
### BS EnE: Senior 2009-2010

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- Spread Gen Ed (include Econ 20A-B, UD Writing)
- Consider pre-requisites for Science and Engineering Electives
General Education Requirements

1. General Education requirements:
   - *Writing* (3 courses)
   - *Arts and Humanities* (3 courses)
   - *Social and Behavioral Sciences* (3 courses)
   - *Multicultural Studies / International Issues* (1)

2. BSCE and BSEnE already cover:
   - *Science and Technology*
   - *Quantitative, Symbolic, Computational Reasoning*

3. Need to consult with a counselor

4. Everyone can switch to new requirements!
• Civil and Environmental Engineering is perhaps at the pinnacle of the practice of, and the need for, ethical behavior.

• At you progress through the program, any form of cheating has minimum benefit (on grades) and maximum cost (of not finishing your degree).

• The UCI Policy on Academic Honesty is defined at: http://www.editor.uci.edu/08-09/appx/appx.2.htm#gen0

• Ask your instructors to discuss course policies on joint work on HW, labs, or other required tasks.
1. **Profession Registration**: licensure as a professional engineer is required to practice as a civil or environmental engineer.

2. **Steps Toward Licensure: First…**
   a. Complete a BS from an accredited institution (UCI)
   b. Successfully complete the *Fundamentals of Engineering* exam (material covered includes physics, chemistry, thermo, circuits, mathematics, statics & dynamics, engineering economics, fluids, engineering ethics, strength of materials, computers, etc.)

3. **Steps Toward Licensure: Then…**
   a. After 2 years of work under professional engineers…
   b. Successfully complete the *Principles and Practice of Engineering* (PE)
Why study Civil Engineering abroad?

"As a Civil Engineering student studying abroad, you will gain exposure to different modes of problem solving, leading toward different approaches to the design and implementation of civil engineering projects. In light of the increasing globalization of engineering practice, this acquired knowledge will likely be beneficial in your future engineering career. You will see the significance of US building codes and how these are implemented in other countries, as well as how the US adopts sections of engineering building codes from other countries. EAP programs often have more academic support staff to assist engineering professors with computing, wet/dry, and field labs, which leads toward more meaningful laboratory experiences. Not only will EAP be one of the most memorable times in your life, the international experience will open a world of engineering opportunities in your future."

*Professor Michael McNally*
Department of Civil & Environmental Engineering

http://www.cie.uci.edu/academics/ce.html
Summary

1. Academic Honesty…
2. ABET evaluations versus UCI course evaluations
3. Civil Engineering Specializations and Concentrations
4. Petitions: substitutions, variations, and related issues
5. Student Clubs? [ G-E-T I-N-V-O-L-V-E-D ]
6. Independent Study and Research Opportunities?
7. Internships, Jobs, Careers
8. Graduate School? (GRE)
9. Professional Practice (FE, PE, professional societies)
Contact Information

HSSOE UG Affairs Office:
1. UG Counselors in ECT 101 (824-4334)
2. Web site: http://undergraduate.eng.uci.edu/

Civil & Environmental Engineering:
1. Department Office in EG 4130 (824-5333)
2. CEE web site: http://www.eng.uci.edu/cee/
3. CE Advisor: Professor McNally <mmcnally@uci.edu>
4. EnE Advisor: Professor Detwiler <detwiler@uci.edu>
The following slides were not used in Sp’09

1. CE Educational Mission
2. EnE Educational Mission
The Educational Mission of the Civil Engineering Program is to provide students with a multidisciplinary curriculum that is fundamental, yet broad and flexible, to produce graduates who are well-grounded in mathematical, scientific, and technical knowledge; have the ability to analyze, evaluate, and design civil engineering systems; have the ability to communicate effectively; have had meaningful opportunities for undergraduate research; and who have acquired an understanding and appreciation for global and societal issues and are thus prepared for a career path toward leadership in industry, government, and academia.

CE Web Site: [http://undergraduate.eng.uci.edu/degreeprograms/civil/](http://undergraduate.eng.uci.edu/degreeprograms/civil/)

2009
Educational Mission of the Environmental Engineering Program:

- To prepare students to begin a research or professional practice career path in Environmental Engineering or related discipline by a three-pronged approach: (1) Fundamentals. Provide a strong educational foundation of engineering fundamentals (mathematics, physical sciences, and engineering sciences), (2) Environmental Topics. Introduce students to land, air, and water resources; physical, chemical, and biological entities and processes important to these resources; and the legal, social, ecological, and economic frameworks within which these resources must be managed, (3) Analysis and Design. Develop analysis and design skill for land, air, and water resources that build upon Fundamentals and Environmental Topics.