• UG Advising: Faculty, Counselors, Catalogue
• CE & EnE Degree Programs:
  – Mission Statement & Program Educational Objectives
  – Program Outcomes and Course Outcomes
  – Curriculum Requirements
• Performance Assessment and Accreditation
• Professional Registration (EIT/FE, PE) & Grad School
UNDERGRADUATE ADVISING PROCESS

• **Annual Process: *every spring***!
  – **Group Advising**: separate session for Freshmen, Sophomores, and for Junior/Seniors
  – **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 fall, 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/07-08/engr/engr.6.htm ]
FRESHMEN/SOPHOMORE ISSUES

• What’s New?
  – General Education replaced Breadth
  – New Physics and Chemistry sequences
  – Engineering Science Elective
  – Engineering Design Elective (151B, 172, 122 or 123)

• What Choices?
  – Degree program?
  – General Education Options? When?
  – Freshman Seminars

• What other opportunities are available?
• Student Clubs & Professional Associations
• Assessment (ABET) & Registration (FE, PE)
JUNIOR / SENIOR ISSUES

• What’s New?
  – Engineering Design Elective (151B, 172, 122, 123)
  – General Education replaces Breadth

• What Choices?
  – BSCE Specializations & Minors
  – Senior Design Projects & Specializations
  – Opportunities (EAP, research, internships)

• 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 breadth courses, and a capstone design experience.
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 a sample of 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.
Educational Mission of the Civil Engineering Program:

• To provide students with an 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/
Program Educational Objectives:

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

1. Be knowledgeable of the historical context, the state-of-the-art, and emerging issues in the field of civil engineering and its role in contemporary society.

2. Demonstrate critical reasoning and requisite quantitative skills to identify, formulate, and resolve civil engineering problems, and to create designs that reflect economic, environmental, and social sensitivities.

3. Display a systems viewpoint, critical thinking, effective communication & interpersonal skills, a spirit of curiosity, and conduct reflecting a professional and ethical manner.

4. Exhibit a commitment to life-long learning and professional development, involvement in professional activity and public service, and achievement of professional licensure.

5. Reflect a broad intellectual training for success in multidisciplinary professional practice, in civil engineering or diverse related careers, and toward achieving leadership roles in industry, government, and academia.
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.

2008
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.
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)
- Significantly more flexibility, overlaps encouraged, etc.
- CEE 60 Environmental Challenges …

Engineering Professional Topics Courses
- Economics 20A-B and Soc Ecol E8
Engineering Topics Courses (73 units):
- LD Core: EECS 10, CEE 20, 30, 80, 81A-B
- UD Core: CEE 110, 111, 121, 130, 130L, 150, 150L, 151A-C, 161, 170, and 171
- Engineering Design Elective (one of 151B, 172, 122 or 123)
- Senior Design Practicum: CEE 181A-B-C

Specialization or Concentration (4+ courses)
- Must complete senior design project in same area

Engineering Science Elective
- materials, circuits, thermo, physics, chemistry…

Summary
- A nominal total of 185 units (24+ design units)
<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th></th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2A</td>
<td>4</td>
<td>Math 2B</td>
<td>4</td>
<td>Math 2D</td>
</tr>
<tr>
<td>EECS 10</td>
<td>4</td>
<td>Phys 7C, L</td>
<td>5</td>
<td>Phys 7D, L</td>
</tr>
<tr>
<td>Chem 1A</td>
<td>4</td>
<td>Chem 1B, L</td>
<td>6</td>
<td>CEE 81A</td>
</tr>
<tr>
<td>breadth</td>
<td>4</td>
<td></td>
<td>breadth</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>15</td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

- Gen Ed Recommendation: WR39B-C
### BSCE: Sophomore 2008-2009

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2J</td>
<td>4</td>
<td>Math 3D</td>
<td>4</td>
</tr>
<tr>
<td>CEE 81B</td>
<td>2</td>
<td><strong>Engr Sci</strong></td>
<td>4</td>
</tr>
<tr>
<td>CEE 30</td>
<td>4</td>
<td>MAE 80</td>
<td>4</td>
</tr>
<tr>
<td>breadth</td>
<td>4</td>
<td>breadth</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

- Gen Ed Recommendation: Econ 20A-B
- **Engr Sci**ence Elective => current Science Option
### BSCE: Junior 2008-2009

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 150, L</td>
<td>CEE 151A</td>
<td><strong>EngrDsgn</strong></td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CEE 170</td>
<td>CEE 171</td>
<td>CEE 110</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CEE 121</td>
<td>CEE 130, L</td>
<td>CEE 161</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>breadth</td>
<td>breadth</td>
<td>breadth</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>17</td>
<td>16</td>
</tr>
</tbody>
</table>

- **Eng Design** Elective (151B, 172, 122 or 123)
- Civil Engineering “core”; consider pre-requisites!
BSCE: Senior 2008-2009

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 181A</td>
<td>2</td>
<td>CEE 181B</td>
</tr>
<tr>
<td>CEE 151C</td>
<td>4</td>
<td>CEE 111</td>
</tr>
<tr>
<td>Spec. Elec.</td>
<td>4</td>
<td>Spec. Elec.</td>
</tr>
<tr>
<td>breadth</td>
<td>4</td>
<td>breadth</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

- 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 1

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:
Requires Math 13 and 140A, and 4 other courses selected from Math 6A, 7, 105A and 105LA (or MAE 185), 105B and 105LB, 107, 112A-B-C, 118A-B-C, 130A-B-C, 131A-B-C, and other approved courses

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
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.

EnE Program Educational Objectives:

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

1. Be knowledgeable of the historical context, the state-of-the-art, and emerging issues in the field of environmental engineering and its role in contemporary society.

2. Demonstrate critical reasoning and requisite quantitative skills to identify, formulate, and resolve environmental engineering problems, and to create designs that reflect legal, social, ecological, and economic sensitivities.

3. Display a systems viewpoint, critical thinking, effective communication & interpersonal skills, a spirit of curiosity, and conduct reflecting a professional and ethical manner.

4. Exhibit a commitment to lifelong learning and professional development in industry, government, and/or academia.

5. Recognize the multidisciplinary nature of environmental engineering and the limitations of disciplinary perspectives in the context of environmental analysis, design, engineering, policy, and management.
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 (68 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 Sys Sci and 4 units of Bio Sci and 4 units of either ESS or BioSci

General Education Requirements (44+ units)
• CEE 60 Environmental Challenges …

Engineering Professional Topics Courses
• Economics 20A-B and Soc Ecol E8
Engineering Topics Courses (72+ units):

- LD Core: EECS 10, CEE 11, 20, 30, 80, 81A-B, thermo
- UD Core: CEE 110, 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) (176)

- A nominal total of 192 units

- Must verify Program of Study and unit counts with UG Office
<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2A</td>
<td>Math 2B</td>
<td>Math 2D</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>EECS 10</td>
<td>Phys 7C, L</td>
<td>Phys 7D, L</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chem 1A</td>
<td>Chem 1B,L</td>
<td>Chem 1C, L</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>breadth</td>
<td></td>
<td>CEE 81A</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>15</td>
</tr>
</tbody>
</table>

- Gen Ed Recommendation: WR39B-C
<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2J</td>
<td>4</td>
<td>Math 3D</td>
<td>4</td>
</tr>
<tr>
<td>CEE 81B</td>
<td>2</td>
<td>Chem 51A, L</td>
<td>6</td>
</tr>
<tr>
<td>CEE 30</td>
<td>4</td>
<td>MAE 80</td>
<td>4</td>
</tr>
<tr>
<td>breadth</td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>

- Various options for MAE 91 (thermodynamics)
## BS EnE: Junior 2008-2009

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 150, L</td>
<td>5</td>
<td>CEE 162</td>
</tr>
<tr>
<td>Sci. Elect.</td>
<td>4</td>
<td>Sci. Elect.</td>
</tr>
<tr>
<td>CEE 170</td>
<td>4</td>
<td>Eng. Elect.</td>
</tr>
<tr>
<td>breadth</td>
<td>4</td>
<td>breadth</td>
</tr>
<tr>
<td><strong>17</strong></td>
<td><strong>16</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

- Consider pre-requisites!
- 3rd Science Elective in Bio Sci or Earth Systems Sci
## BS EnE: Senior 2008-2009

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 181A</td>
<td>2</td>
<td>CEE 181B</td>
<td>2</td>
</tr>
<tr>
<td>Eng. Elect.</td>
<td>4</td>
<td>CEE 168</td>
<td>4</td>
</tr>
<tr>
<td>breadth</td>
<td>4</td>
<td>Eng. Elect.</td>
<td>4</td>
</tr>
<tr>
<td>breadth</td>
<td>4</td>
<td>breadth</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

- Spread Gen Ed (include Econ 20A-B, UD Writing)
- Pre-requisites for Science and Engineering Electives
Old Breadth requirements...

I. Writing (12 units)
II. Natural Sciences
III. Social & Behavioral Sciences (12 units)
IV. Humanistic Inquiry (12 units)
V. Mathematics & Symbolic Systems
VI. Language other than English
VII. Multicultural Studies & Global Issues
1. **New 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!**
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
Top 10 FAQs

1. Academic Honesty…
2. ABET evaluations versus UCI course evaluations?
3. Civil Engineering Specializations and Concentrations?
4. Pre-requisites, Design Units, Breadth, Double Majors?
5. Petitions: substitutions, variations, and aberrant behavior?
7. Independent Study and Research Opportunities?
8. Internships, Jobs?
9. Graduate School? (GRE)
10. Professional Practice? (EIT/FE, PE, professional associations)
Further Information?
Further Information?

HSSOE UG Affairs Office:
1. UG Counselors in ECT 101 (824-4334)
2. Web site: http://undergraduate.eng.uci.edu/
3. E-mail: <counselor@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 UG Advisor: McNally <mmcnally@uci.edu>
4. EnE UG Advisor: Sanders <bsanders@uci.edu>