CIVIL ENGINEERING UNDERGRADUATE MAJOR (BA, BS, HBA, HBS)

Jonathan ("Jack") Istok, Associate School Head
101 Kearney Hall
Oregon State University
Corvallis, OR 97331-3212
541-737-1759
Email: cce@engr.orst.edu
Website: http://cce.oregonstate.edu/

The Bachelor of Science degree in Civil Engineering is accredited by the Engineering Commission of ABET, http://www.abet.org.

Civil engineering is a diverse professional field with discipline specialties in structures, transportation, water supply and water pollution control, geotechnical engineering, hydrology, hydraulics and water resources, geomatics, ocean engineering, construction, and engineering planning and economics. All CE students receive basic instruction in the various disciplines, with the option for additional elective courses in desired areas. The program is supported by highly qualified faculty and staff that maintain the programs and facilities at the highest level of quality.

The civil engineering curriculum within the School of Civil and Construction Engineering (CCE) includes the basic sciences, social sciences, humanities, communication skills, engineering sciences, and engineering design in order to teach students an integrated approach to practical solutions.

The mission of the civil engineering program is to provide a comprehensive, state-of-the-art education to prepare students for professional and responsible engineering positions with business, industry, consulting firms or government.

Program Educational Objectives—Civil Engineering

Note: The Bachelor of Science degree in Civil Engineering is accredited by the Engineering Accreditation Commission of ABET (http://www.abet.org), which requires stated program educational objectives and student outcomes to support these.

OSU Civil Engineering graduates receive a compelling education, and within 3 to 5 years of graduation will have:

1. Assembled, analyzed and synthesized/evaluated information to solve engineering problems and perform modern civil engineering design by applying mathematics, engineering sciences and fundamentals of civil engineering.
2. Participated in modern professional practice or a graduate program in a specialty area of civil engineering, demonstrating effective communication, collaborative work and leadership in diverse teams, ethical decision-making, successful management of personal and professional career objectives, and continual development through lifelong learning and professional involvement.
3. Recognized the importance of professional licensure and have achieved or prepared to achieve this significant accomplishment. In this endeavor, consideration of the public health, welfare and safety is seen as the paramount priority.
4. Applied an understanding of public policy and contemporary societal issues with sensitivity to the challenge of meeting social, environmental, and economic constraints within a global community.

Student Outcomes for Civil Engineering Programs

The OSU Civil Engineering program prepares its graduates to achieve the Program Educational Objectives above several years into their careers. This is achieved by having students able to perform the following on graduation, well preparing them for active immediate and lifelong service in the profession:

1. Ability to apply knowledge of mathematics, science, and engineering to solve engineering problems
2. Ability to design and conduct experiments as well as analyze and interpret data
3. Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, social, political, ethical, health and safety, manufacturability and sustainability
4. Ability to function on multi-disciplinary teams
5. Ability to identify, formulate, and solve engineering problems
6. Understanding of professional and ethical responsibility
7. Ability to communicate effectively
8. Broad education necessary to understand impact of engineering solutions in global, economic, environmental and societal context
9. Recognition of need for and ability to engage in lifelong learning
10. Knowledge of contemporary issues
11. Ability to use techniques, skills, and modern engineering tools necessary for engineering practice
12. Knowledge of basic concepts in leadership
13. Ability to include non-engineering considerations, including business, regulatory and safety issues in problem-solving
14. Ability to incorporate effective negotiation or consensus-gaining in group decision-making
15. Knowledge and application of project planning and management practices and tools
16. Ability to assess imperfect or incomplete data conditions, risks and alternatives into problem-solving decisions
17. Exposure to current industry design practices, construction methods and materials, and overall project delivery considerations

Design is the essence of civil engineering. Junior and senior level courses include extensive design content, culminating in a team approach to the solution of open-ended, realistic problems, including capstone design and professional practice courses. Courses with design content include those with "design" in their titles. A more detailed explanation of the design experience and design course sequences is contained in the "Civil Engineering Advising Guide," which may be viewed on the school's website at http://cce.oregonstate.edu/academic-advising.

A student may also earn a concurrent Bachelor of Arts (BA) or Honors Bachelor of Arts (HBA) degree by completing 32 additional credits in residence including language proficiency equivalent to that attained at the end of the second year of a foreign language as certified by the School of Language, Culture, and Society. Neither the BA nor the HBA degree in civil engineering is accredited by the Engineering Commission of ABET.
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year: Pre-Civil Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCE 101</td>
<td>CIVIL AND CONSTRUCTION ENGINEERING ORIENTATION</td>
<td>2</td>
</tr>
<tr>
<td>CCE 102</td>
<td>CIVIL AND CONSTRUCTION ENGINEERING: PROBLEM-SOLVING AND TECHNOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>CH 201</td>
<td>CHEMISTRY FOR ENGINEERING MAJORS</td>
<td>3</td>
</tr>
<tr>
<td>CH 202</td>
<td>CHEMISTRY FOR ENGINEERING MAJORS</td>
<td>3</td>
</tr>
<tr>
<td>CH 205</td>
<td>LABORATORY FOR CH 202</td>
<td>1</td>
</tr>
<tr>
<td>COMM 111 or COMM 114</td>
<td>PUBLIC SPEAKING 2,3 or ARGUMENT AND CRITICAL DISCOURSE</td>
<td>3</td>
</tr>
<tr>
<td>ECON 201</td>
<td>*INTRODUCTION TO MICROECONOMY</td>
<td>4</td>
</tr>
<tr>
<td>HHS 231</td>
<td>*LIFETIME FITNESS FOR HEALTH 3</td>
<td>2</td>
</tr>
<tr>
<td>HHS 241</td>
<td>*LIFETIME FITNESS (or any PAC course) 3</td>
<td>1-2</td>
</tr>
<tr>
<td>MTH 251</td>
<td>*DIFFERENTIAL CALCULUS 2</td>
<td>4</td>
</tr>
<tr>
<td>MTH 252</td>
<td>INTEGRAL CALCULUS 2</td>
<td>4</td>
</tr>
<tr>
<td>MTH 254</td>
<td>VECTOR CALCULUS 1</td>
<td>4</td>
</tr>
<tr>
<td>PH 211</td>
<td>*GENERAL PHYSICS WITH CALCULUS 2</td>
<td>4</td>
</tr>
<tr>
<td>WR 121</td>
<td>*ENGLISH COMPOSITION 2,3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>**Perspectives: Literature and the Arts Course 3</td>
<td></td>
</tr>
<tr>
<td>Second Year: Approved Biological Science Course 1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>**Perspectives: Cultural Diversity Course 3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>**Perspectives: Technical Writing 3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Hours</strong></td>
<td>44-45</td>
</tr>
<tr>
<td></td>
<td><strong>Third Year: Professional Civil Engineering</strong></td>
<td></td>
</tr>
<tr>
<td>CCE 321</td>
<td>CIVIL AND CONSTRUCTION ENGINEERING MATERIALS</td>
<td>4</td>
</tr>
<tr>
<td>CE 301</td>
<td>CE JUNIOR SEMINAR</td>
<td>1</td>
</tr>
<tr>
<td>CE 311</td>
<td>FLUID MECHANICS</td>
<td>4</td>
</tr>
<tr>
<td>CE 313</td>
<td>HYDRAULIC ENGINEERING</td>
<td>4</td>
</tr>
<tr>
<td>CE 361</td>
<td>SURVEYING THEORY</td>
<td>4</td>
</tr>
<tr>
<td>CE 372</td>
<td>GEOTECHNICAL ENGINEERING I</td>
<td>4</td>
</tr>
<tr>
<td>CE 373</td>
<td>GEOTECHNICAL ENGINEERING II</td>
<td>4</td>
</tr>
</tbody>
</table>
Civil Engineering Undergraduate Major (BA, BS, HBA, HBS)

CE 381 & CE 382

STRUCTURAL THEORY I and STRUCTURAL THEORY II

Hours 8

CE 392

INTRODUCTION TO HIGHWAY ENGINEERING®

Hours 4

CE 412

HYDROLOGY

Hours 4

CE 481

REINFORCED CONCRETE I

Hours 4

ENVE 321

ENVIRONMENTAL ENGINEERING FUNDAMENTALS

Hours 4

Fourth Year

CE 383

DESIGN OF STEEL STRUCTURES

Hours 4

CE 418

*CIVIL ENGINEERING® PROFESSIONAL PRACTICE

Hours 3

CE 419

*CIVIL INFRASTRUCTURE DESIGN

Hours 3

CE 420

ENGINEERING PLANNING

Hours 4

CE 491

TRANSPORTATION ENGINEERING

Hours 3

ENGR 201

ELECTRICAL FUNDAMENTALS

Hours 3

*Difference, Power, and Discrimination

Hours 3

*Perspectives: Western Culture Course

Hours 3

*Synthesis: Contemporary Global Issues Course

Hours 3

*Synthesis: Science, Technology, and Society Course

Hours 3

Technical Electives

Hours 11

Total credits required for graduation is 180

Hours 43

Total Hours 180-181

* Baccalaureate Core Course (BCC)

^ Writing Intensive Course (WIC)

1 Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program

2 Required for entry into the professional program

3 Must be selected to satisfy the requirements of the baccalaureate core

Civil Engineering-Forest Engineering

A five-year dual-degree program in civil engineering and forest engineering is offered jointly by the School of Civil and Construction Engineering in the College of Engineering and Forest Engineering in the College of Forestry. Advising is done through either academic unit. See Forest Engineering, Resources and Management in the College of Forestry.

Geomatics (Surveying and Mapping)

Graduates of civil engineering are eligible to take the Fundamentals of Land Surveying Examination in pursuit of the Professional Land Surveying license by selecting courses as follows.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 361</td>
<td>SURVEYING THEORY</td>
<td>4</td>
</tr>
<tr>
<td>CE 461/CE 561</td>
<td>PHOTOGRAMMETRY</td>
<td></td>
</tr>
<tr>
<td>CE 463/CE 563</td>
<td>CONTROL SURVEYING</td>
<td></td>
</tr>
<tr>
<td>CE 465/CE 565</td>
<td>OREGON LAND SURVEY LAW</td>
<td></td>
</tr>
<tr>
<td>CE 469</td>
<td>PROPERTY SURVEYS</td>
<td></td>
</tr>
<tr>
<td>CE 569</td>
<td>PROPERTY SURVEYS</td>
<td></td>
</tr>
<tr>
<td>CE 562</td>
<td>DIGITAL TERRAIN MODELING</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours 16

Major Code: 306

Pre-Civil Engineering Major Code: 336