

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

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.

Major Code: 306

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.

Course	Title	Hours
First Year		
CCE 101	CIVIL AND CONSTRUCTION ENGINEERING ORIENTATION	2

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CCE 102	CIVIL AND CONSTRUCTION ENGINEERING: PROBLEM-SOLVING AND TECHNOLOGY	3
CH 201	CHEMISTRY FOR ENGINEERING MAJORS	3
CH 202	CHEMISTRY FOR ENGINEERING MAJORS ¹	3
CH 205	LABORATORY FOR CH 202 ¹	1
COMM 111 or COMM 114	*PUBLIC SPEAKING ⁺ or *ARGUMENT AND CRITICAL DISCOURSE	3
ECON 201	*INTRODUCTION TO MICROECONOMICS	4
HHS 231	*LIFETIME FITNESS FOR HEALTH ⁺	2
HHS 241	*LIFETIME FITNESS (or any PAC course) ⁺	1-2
MTH 251	*DIFFERENTIAL CALCULUS	4
MTH 252	INTEGRAL CALCULUS	4
MTH 254	VECTOR CALCULUS I	4
PH 211	*GENERAL PHYSICS WITH CALCULUS	4
WR 121	*ENGLISH COMPOSITION ⁺	3
*Perspectives: Literature and the Arts Course ⁺		3
Hours		44-45

Second Year

Approved Biological Science Course ¹		4
CCE 201	CIVIL AND CONSTRUCTION ENGINEERING GRAPHICS AND DESIGN	3
CCE 207	CCE SEMINAR	1
CE 202	CIVIL ENGINEERING: GEOSPATIAL INFORMATION AND GIS	3
ENGR 211	STATICS	3
ENGR 212	DYNAMICS ¹	3
ENGR 213	STRENGTH OF MATERIALS	3
MTH 256	APPLIED DIFFERENTIAL EQUATIONS	4
MTH 306	MATRIX AND POWER SERIES METHODS	4
PH 212 & PH 213	*GENERAL PHYSICS WITH CALCULUS and *GENERAL PHYSICS WITH CALCULUS	8
ST 314	INTRODUCTION TO STATISTICS FOR ENGINEERS ¹	3
WR 327	*TECHNICAL WRITING ⁺	3
*Perspectives: Cultural Diversity Course ⁺		3
Hours		45

Third Year

CCE 321	CIVIL AND CONSTRUCTION ENGINEERING MATERIALS	4
CE 311	FLUID MECHANICS	4
CE 313	HYDRAULIC ENGINEERING	4
CE 361	SURVEYING THEORY	4
CE 372	GEOTECHNICAL ENGINEERING I	4
CE 373	GEOTECHNICAL ENGINEERING II	4
CE 381 & CE 382	STRUCTURAL THEORY I and STRUCTURAL THEORY II	8
CE 392	INTRODUCTION TO HIGHWAY ENGINEERING	4
CE 412	HYDROLOGY	4
CE 481	REINFORCED CONCRETE I	4
ENVE 321	ENVIRONMENTAL ENGINEERING FUNDAMENTALS	4
Hours		48

Fourth Year

CE 383	DESIGN OF STEEL STRUCTURES	4
CE 418	^CIVIL ENGINEERING PROFESSIONAL PRACTICE	3
CE 419	^CIVIL INFRASTRUCTURE DESIGN	3
CE 420	ENGINEERING PLANNING	4
CE 491	TRANSPORTATION ENGINEERING	3
ENGR 201	ELECTRICAL FUNDAMENTALS I	3
*Difference, Power, and Discrimination ⁺		3
*Perspectives: Western Culture Course ⁺		3
*Synthesis: Contemporary Global Issues Course ⁺		3
*Synthesis: Science, Technology, and Society Course ⁺		3

Technical Electives	11
Hours	43
Total Hours	180-181

- * Baccalaureate Core Course (BCC)
- ^ Writing Intensive Course (WIC)
- ¹ Prerequisite for several upper-division courses
- + 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.

Code	Title	Hours
CE 361	SURVEYING THEORY	4
Select 12 credits of the following:		12
CE 365	HIGHWAY LOCATION AND DESIGN	
CE 461/CE 561	PHOTOGRAMMETRY	
CE 463/CE 563	CONTROL SURVEYING	
CE 465/CE 565	OREGON LAND SURVEY LAW	
CE 469/CE 569	PROPERTY SURVEYS	
CE 562	DIGITAL TERRAIN MODELING	
Total Hours		16

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