

CONSTRUCTION ENGINEERING MANAGEMENT UNDERGRADUATE MAJOR (BA, BS, HBA, HBS)

The School of Civil and Construction Engineering offers BA and BS degrees in Construction Engineering Management (CEM). This unique program blends principles of basic science, engineering, and technology with a strong component of business subjects to prepare graduates for a productive career in the construction industry. The BS in Construction Engineering Management is ACCE accredited.

The CEM program is built on a rigorous four-year curriculum that emphasizes practical applications as well as basic principles. Students are given hands-on experiences in the laboratory and are involved in field trips as a supplement to their classroom activities. A more detailed explanation of the CEM Program is contained in the 'Construction Engineering Management Advising Guide,' which may be viewed on the school's website (<http://cce.oregonstate.edu/academic-advising/>).

The mission of the CEM program is to provide a comprehensive, state-of-the-art education to prepare students for professional and responsible constructor positions with business, industry, consulting firms or government. The program's educational objectives are to:

1. Provide a compelling education based in the natural sciences, mathematics, engineering sciences, and business, and in the fundamental paradigms, concepts, understandings, applications, and knowledge of civil and construction engineering and construction management.
2. Develop students' abilities through their education to analyze, synthesize, and evaluate information, solve engineering problems, and be prepared to effectively perform project engineering and management tasks for effective execution of construction projects.
3. Provide education for modern professional practice including the abilities for effective communication, collaborative work in diverse teams, ethical decision-making, successful management of personal and professional career objectives, and continual development through lifelong learning and professional involvement.
4. Prepare our graduates for either immediate employment or for graduate school opportunities in construction or business.
5. Provide students with knowledge of contemporary societal issues and a sensitivity to the challenge of meeting social, environmental, and economic constraints within a global community.

Major Code: 338

- Create written communications appropriate to the construction discipline.
- Create oral presentations appropriate to the construction discipline.
- Create a construction project safety plan.
- Create construction project cost estimates.
- Create construction project schedules.
- Analyze professional decisions based on ethical principles.

- Analyze construction documents for planning and management of construction processes.
- Analyze methods, materials, and equipment used to construct projects.
- Apply construction management skills as an effective member of a multi-disciplinary team.
- Apply electronic-based technology to manage the construction process.
- Apply basic surveying techniques for construction layout and control.
- Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
- Understand construction risk management.
- Understand construction accounting and cost control.
- Understand construction quality assurance and control.
- Understand construction project control processes.
- Understand the legal implications of contract, common, and regulatory law to manage a construction project.
- Understand the basic principles of sustainable construction.
- Understand the basic principles of structural behavior.
- Understand the basic principles of mechanical, electrical, and plumbing systems.

First Year		Credits
CCE 101	CIVIL AND CONSTRUCTION ENGINEERING ORIENTATION ¹	2
CCE 102	CIVIL AND CONSTRUCTION ENGINEERING: PROBLEM-SOLVING AND TECHNOLOGY	3
CH 201	CHEMISTRY FOR ENGINEERING MAJORS ¹	3
COMM 111 or COMM 114	*PUBLIC SPEAKING ⁺ or *ARGUMENT AND CRITICAL DISCOURSE	3
ECON 201	*INTRODUCTION TO MICROECONOMICS ⁺	4
ECON 202	*INTRODUCTION TO MACROECONOMICS ⁺	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
PH 211	*GENERAL PHYSICS WITH CALCULUS	4
WR 121	*ENGLISH COMPOSITION ⁺	3
*Perspectives: Cultural Diversity Course ⁺		3
*Perspectives: Literature and the Arts Course ⁺		3
Credits		43-44
Second Year		
Approved Biological Science Course ¹		4
BA 315	ACCOUNTING FOR DECISION MAKING	4
BA 330	LEGAL ENVIRONMENT OF BUSINESS	4
CCE 201	CIVIL AND CONSTRUCTION ENGINEERING GRAPHICS AND DESIGN ⁺	3
CCE 203	INTRODUCTION TO VIRTUAL DESIGN AND CONSTRUCTION	3
CCE 207	CCE SEMINAR	1
CEM 263	PLANE SURVEYING ¹	3
ENGR 211	STATICS	3
ENGR 213	STRENGTH OF MATERIALS	3
ENGR 390	ENGINEERING ECONOMY	3
PH 212	*GENERAL PHYSICS WITH CALCULUS	4
PHL 205	*ETHICS ⁺	4
ST 314	INTRODUCTION TO STATISTICS FOR ENGINEERS	3
WR 327	*TECHNICAL WRITING ⁺	3
Credits		45

Third Year		
CCE 321	CIVIL AND CONSTRUCTION ENGINEERING MATERIALS	4
CE 365	HIGHWAY LOCATION AND DESIGN	3
CE 424	CONTRACTS AND SPECIFICATIONS	4
CEM 311	HYDRAULICS	4
CEM 341	CONSTRUCTION ESTIMATING I	4
CEM 381	STRUCTURES I	4
CEM 441	HEAVY CIVIL CONSTRUCTION MANAGEMENT	4
CEM 442	BUILDING CONSTRUCTION MANAGEMENT	4
CEM 471	ELECTRICAL FACILITIES	4
CEM 472	MECHANICAL FACILITIES	3
FE 315	SOIL ENGINEERING	4
or CE 372	or GEOTECHNICAL ENGINEERING I	
*Difference, Power, and Discrimination Course ⁺		3
Credits		45
Fourth Year		
BA 351	MANAGING ORGANIZATIONS	4
CE 427	TEMPORARY CONSTRUCTION STRUCTURES	4
CEM 342	CONSTRUCTION ESTIMATING II	4
CEM 343	CONSTRUCTION PLANNING AND SCHEDULING	4
CEM 383	STRUCTURES II	4
CEM 431	OBTAINING CONSTRUCTION CONTRACTS	3-4
or CEM 432	or CONSTRUCTION PROJECT PLANNING	
CEM 443	*PROJECT MANAGEMENT FOR CONSTRUCTION	4
H 385	SAFETY AND HEALTH STANDARDS AND LAWS	3
or CEM 326	or CONSTRUCTION SAFETY	
MGMT 453	HUMAN RESOURCES MANAGEMENT	4
Restricted Upper-Division Business Elective		4
Upper-Division Engineering Elective		3
*Synthesis Course ⁺		6
Credits		47-48
Total Credits		180-182

* 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

Geomatics (Surveying and Mapping)

Construction engineering management graduates are eligible to take the Fundamentals of Land Surveying Examination by completing:

Code	Title	Credits
CE 365	HIGHWAY LOCATION AND DESIGN	3
CEM 263	PLANE SURVEYING	3
Select 10 credits from the following:		10
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 Credits		16

Major Code: 338

First Year		
Fall		Credits
CCE 101	CIVIL AND CONSTRUCTION ENGINEERING ORIENTATION	2
CH 201	CHEMISTRY FOR ENGINEERING MAJORS	3
MTH 251	*DIFFERENTIAL CALCULUS	4
WR 121	*ENGLISH COMPOSITION	3
Bacc Core: Literature and The Arts		3
Credits		15
Winter		Credits
CCE 102	CIVIL AND CONSTRUCTION ENGINEERING: PROBLEM-SOLVING AND TECHNOLOGY	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 252	INTEGRAL CALCULUS	4
Credits		14-15
Spring		Credits
COMM 111	*PUBLIC SPEAKING	3
or COMM 114	or *ARGUMENT AND CRITICAL DISCOURSE	
ECON 202	*INTRODUCTION TO MACROECONOMICS	4
PH 211	*GENERAL PHYSICS WITH CALCULUS	4
Bacc Core: Cultural Diversity		3
Credits		14
Second Year		
Fall		Credits
BA 315	ACCOUNTING FOR DECISION MAKING	4
CCE 201	CIVIL AND CONSTRUCTION ENGINEERING GRAPHICS AND DESIGN	3
CCE 207	CCE SEMINAR	1
PH 212	*GENERAL PHYSICS WITH CALCULUS	4
ST 314	INTRODUCTION TO STATISTICS FOR ENGINEERS	3
Credits		15
Winter		Credits
BA 330	LEGAL ENVIRONMENT OF BUSINESS	4
CCE 203	INTRODUCTION TO VIRTUAL DESIGN AND CONSTRUCTION	3
ENGR 211	STATICS	3
Bacc Core: Biological Science Lab		4
Credits		14
Spring		Credits
CEM 263	PLANE SURVEYING	3
ENGR 213	STRENGTH OF MATERIALS	3
ENGR 390	ENGINEERING ECONOMY	3
PHL 205	*ETHICS	4
WR 327	*TECHNICAL WRITING	3
Credits		16
Third Year		
Fall		Credits
CCE 321	CIVIL AND CONSTRUCTION ENGINEERING MATERIALS	4
CEM 442	BUILDING CONSTRUCTION MANAGEMENT	4
CEM 471	ELECTRICAL FACILITIES	4
Bacc Core: DPD		3
Credits		15
Winter		Credits
CE 365	HIGHWAY LOCATION AND DESIGN	3
CEM 311	HYDRAULICS	4
CEM 472	MECHANICAL FACILITIES	3
FE 315	SOIL ENGINEERING	4
Credits		14
Spring		Credits
CE 424	CONTRACTS AND SPECIFICATIONS	4
CEM 341	CONSTRUCTION ESTIMATING I	4

CEM 381	STRUCTURES I	4
CEM 441	HEAVY CIVIL CONSTRUCTION MANAGEMENT	4
	Credits	16
Fourth Year		
Fall		
CEM 342	CONSTRUCTION ESTIMATING II	4
CEM 343	CONSTRUCTION PLANNING AND SCHEDULING	4
CEM 383	STRUCTURES II	4
CEM 431	OBTAINING CONSTRUCTION CONTRACTS	4
	Credits	16
Winter		
BA 351	MANAGING ORGANIZATIONS	4
CE 427	TEMPORARY CONSTRUCTION STRUCTURES	4
CEM 443	^PROJECT MANAGEMENT FOR CONSTRUCTION	4
College of Business Upper-Division Elective		3
	Credits	15
Spring		
CEM 326	CONSTRUCTION SAFETY	3
MGMT 453	HUMAN RESOURCES MANAGEMENT	4
College of Engineering Upper-Division Elective		3
Bacc Core: Science, Technology & Society		3
Bacc Core: Contemporary Global Issues		3
	Credits	16
	Total Credits	180-181