

Two four-year BS programs exist in the School of Civil and Construction Engineering.

1. Civil Engineering, ABET/EAC
2. Construction Engineering Management, ACCE

Both of these programs allow undergraduates, in the spring of their senior year, to sit for the Fundamentals of Engineering (FE) examination for enrollment as an Engineering Intern (EI).

### TWO FOR ONE

These two programs contain some required Geomatics, Surveying, courses which can be added too to meet the requirements of the Oregon State Board of Examiners for Engineering and Land Surveying, OSBEELS, to take the Fundamentals of Surveying (FS) examination for enrollment as a Land Surveying Intern (LSI). The requirement for both programs is graduation and 16 quarter-hours of geomatics instruction including surveying law. A list of courses is shown on the next page followed by curriculum diagrams of each program.



### **Geomatics Engineering**

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Oregon State University  
School of Civil and Construction Engineering  
220 Owen Hall  
Corvallis, OR 97331

Oregon State University  
School of Civil and Construction Engineering

## Geomatics (Surveying) Courses for Fundamentals of Surveying Exam, FS

### Fall 2009

#### **CE 361. SURVEYING THEORY (4)**

Use of surveying equipment, Gaussian error theory applied to measurements, calculations of position on spherical and plane surfaces, state plane coordinate systems, introduction to global positioning systems.

#### **CE 461/561. PHOTOGRAMMETRY (3)**

Geometry of terrestrial and vertical photographs, flightline planning, stereoscopy and parallax, stereoscopic plotting instruments, analytical photogrammetry, orthophotography, introduction to photo interpretation, and aerial cameras. ENFORCED PREREQS: CE 361 or CEM 263 or FE 308

### Winter 2010

#### **CE 365. HIGHWAY LOCATION AND DESIGN (3)**

Curve problems in highway design, including circular, vertical, compound curves and spirals; earth distribution analysis; preliminary office studies; paper location procedures and field layout problems. ENFORCED PREREQS: CE 361 or CEM 263 or FE 308

#### **CE 465/565. OREGON LAND SURVEY LAW (3)**

Introduction to U.S. public land survey; Oregon state statutes, common law decisions, and administrative rules dealing with boundary law; case studies; unwritten land transfers; original and resurvey platting laws; guarantees of title; deed descriptions. ENFORCED PREREQS: CE 361 or CEM 263 or FE 308

### Spring 2010

#### **CEM 263. PLANE SURVEYING (3)**

Use of field surveying equipment; error analysis; plane surveying methods applied to construction; plane coordinate computations; topographic mapping; and introduction to GPS. Lec/lab. ENFORCED PREREQS: ENGR 211 or ENGR 211H OTHER PREREQS: And sophomore standing in engineering.

#### **CE 469/569. PROPERTY SURVEYS (3)**

U.S. public land survey: restoration of corners, subdivision of sections; topographic mapping; subdivision and partition plats, resurvey plats, subdivision design; introduction to LIS/GIS; field astronomy. ENFORCED PREREQS: CE 361 or CEM 263 or FE 308

#### **CE 406/506. GPS Projects (1)**

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Graduates of Civil Engineering or Construction Engineering Management curriculums who take a total of 16 quarter credits of surveying instruction are eligible in Oregon to sit for the Fundamentals of Surveying Examination (FS), in addition to the Fundamentals of Engineering Examination (FE).

CE463/563 Control Surveying in the spring quarter is replaced on a rotating basis with CE 469/569 Property Surveys and CE 406/506 GPS Projects.

#### **CE 463/563. CONTROL SURVEYING (4).**

Global Positioning Systems (GPS) theory, networks, and fieldwork; control specifications, methods and problems in obtaining large area measurements; precise leveling; network adjustments using least square techniques; field instrument adjustments. ENFORCED PREREQS: CE 361 or CEM 263 or FE 308

**CIVIL ENGINEERING PROGRAM  
PRE-ENGINEERING PROGRAM**

**FRESHMAN YEAR**

	Fall	Winter	Spring
1	Differential Calculus MTH 251 <sup>E</sup> F,W,S	Integral Calculus MTH 252 <sup>E</sup> F,W,S	Vector Calculus I MTH 254 <sup>E</sup> F,W,S
2			
3			
4			
5	Chemistry for Engrs. CH 201 <sup>E</sup>	Chemistry for Engrs. **CH 202	Gen Physics/Calc PH 211 <sup>E</sup> S, F
6			
7	**CCE 101 Orientation	**CH 205 - LAB	Engr. Computations CE 102 <sup>E</sup>
8			
9			
10	English Composition WR 121 <sup>E</sup> a F, W, S	Sp Communications COMM 111/114 <sup>E</sup> F, W, S	ECON 201 Social Processes & Institutions F,W,S
11			
12	Perspectives Cultural Diversity F, W, S	**Biological Science Elective F, W, S	ECON 201 Social Processes & Institutions F,W,S
13			
14			
15			HHS 241-251
16			

**SOPHOMORE YEAR**

	Fall	Winter	Spring
	Matrix & Power Series Methods MTH 306 <sup>E</sup> F, W, S	Applied Diff. Eqns. MTH 256 <sup>E</sup> F,W,S	Intro. to Statistics **ST 314 F,W,S
	Gen Physics With Calculus PH 212 <sup>E</sup> F, W	Gen Physics With Calculus PH 213 <sup>E</sup> W, S	Electrical Fund. **ENGR 201 F,W,S
	Statics ENGR 211 <sup>E</sup> F, W, S	Strength of Materials ENGR 213 <sup>E</sup> F, W, S	Dynamics **ENGR 212 F, W, S
	Engr. Graphics & Design **CCE 201	Geospatial Info & GIS **CE 202	Technical Writing WR 327 F, W, S
	Lifetime Fitness HHS 231/NFM 232		Perspectives Differ. Power & Discrim. F, W, S

<sup>a</sup> Enrollment term is limited by alphabetical sectioning:

	Fall	Winter	Spring
WR 121	A-G	H-N	O-Z

Biological science electives without prerequisites:

Fall	Winter	Spring
BI 101	BI 102	BI 103
MB 230	MB 230	MB 230
ANS 121	ANS 121	BOT 101
CSS 205		ANS 121
		CSS 205

<sup>E</sup> Required by College of Engineering for entry into the Pro Program

\*\*Additional school requirements, prerequisites for Professional Program courses.

F, W, S = Multiple terms in which same course is offered

**PROFESSIONAL PROGRAM**

**JUNIOR YEAR**

	Fall	Winter	Spring
1	Fluid Mechanics CE 311	Hydraulic Engineering CE 313	Hydrology CE 412
2			
3			
4			
5	Structural Theory I CE 381	Structural Theory II CE 382	Design of Steel Structures CE 383
6			
7	Surveying Theory CE 361	Geotechnical Engineering I CE 372	Geotechnical Engineering II CE 373
8			
9			
10	Civil Engineering Materials CCE 321	Introduction to Highway Engineering CE 392	Environmental Engring Fundamentals EnE 321
11			
12			
13			
14			
15			
16			

**SENIOR YEAR**

	Fall	Winter	Spring
	Reinforced Concrete I CE 481	^ CE Professional Practice CE 418	^ Civil Infrastructure Design CE 419
	Transportation Engineering CE 491	Engineering Planning CE 420	Technical Elective F, W, S
	Technical Elective F,W,S	Technical Elective F,W,S	Synthesis Contemp. Global Iss. F, W, S
	Perspectives Western Culture F,W,S	Perspectives Literature and Arts F,W,S	Synthesis Sci Tech & Soc F, W, S

^ = Writing Intensive Course

Total credits required for BSCE = 180 credit hours (average load = 15 credits per term)

# CONSTRUCTION ENGINEERING MANAGEMENT PROGRAM

## PRE-ENGINEERING PROGRAM

FRESHMAN				SOPHOMORE			
Cr.	Fall	Winter	Spring	Fall	Winter	Spring	Cr.
1	CH 201 <sup>E</sup> Chemistry for Engineers	MTH 251 <sup>E</sup> Differential Calculus F,W,S	Math 252 <sup>E</sup> Integral Calculus F,W,S	PH 211 <sup>E</sup> Gen Physics/Calc F,S	PH 212 <sup>E</sup> Gen Physics/Calc F,W	WR 327 Technical Writing F,W,S	1
2							2
3							3
4	** CCE 101	EC 201 Intro to Microecon SP&I Perspective F,W,S	EC 202 Intro to Macroecon SP&I Perspective F,W,S	CCE 201 <sup>E</sup> Engr. Graphics & Design	**CE 202 Geospat Info. & GIS W, S	CEM 263 <sup>E</sup> Plane Surveying	4
5	5						
6	6						
7	WR 121 <sup>E</sup> <sub>a</sub> English Composition	Perspective -- Cultural Diversity F,W,S	CE 102 <sup>E</sup> Problem Solving & Technology	BA 215 <sup>E</sup> Fundamentals of Accounting F,W, S	ENGR 211 <sup>E</sup> Statics F,W,S	ENGR 213 <sup>E</sup> Strength of Matls. F,W,S	7
8	8						
9	9						
10	PHL 205 - Ethics Western Culture Perspective F,W,S	Perspective -- Diff., Power, & Discrim. F,W,S	HHS 231 or NFM 232 -- Lifetime Fitness	ST 314 <sup>E</sup> -- Intro. To Statistics F,W,S	BA 230 Business Law F,W,S	ENGR 390 Engineering Economy	10
11							11
12							12
13	Biological Science Elective F,W,S	HHS 241-251	Sp. Communication COMM 111/114 <sup>E</sup> F, W, S			Perspective -- Lit. & Arts F,W,S	13
14							14
15							15
16							16

<sup>a</sup>Enrollment term is limited by alphabetical sectioning:

	Fall	Winter	Spring
WR 121	A-G	H-N	O-Z

Biological science electives without prerequisites:

	Fall	Winter	Spring
	BI 101	BI 102	BI 103
	MB 230	MB 230	MB 230
	ANS 121	ANS 121	ANS 121
	CSS 205	CSS 205	CSS 205
			BOT 101

<sup>E</sup>Required by College of Engineering for entry into the Pro Program.

\*\*Additional School requirements, prerequisites for Professional Program courses.

F, W, S = Terms in which course is offered

## PROFESSIONAL PROGRAM

JUNIOR				SENIOR			
Cr.	Fall	Winter	Spring	Fall	Winter	Spring	Cr.
1	CCE 321 Civil & Construction Engineering Materials	FE 315 Soils Engineering	CEM 381 Structures I	CEM 383 Structures II	CE 427 Temporary Structures	Upper Division CoB Restricted Elective	1
2							2
3							3
4							4
5	CEM 442 Building Construction Management	CEM 311 Fluid Mechanics & Hydraulics	CEM 342 Construction Estimating II	CEM 341 Construction Estimating I	CEM 441 Heavy Civil Construction Management	BA 453 Human Resources Management F,S	5
6							6
7							7
8							8
9	CEM 471 Electrical Facilities	CEM 472 Mechanical Facilities	CE 424 Contracts & Specifications	CEM 343 Construction Planning & Scheduling	CEM 443 <sup>^</sup> Project Management for Construction	Synthesis Science, Tech., & Society	9
10							10
11							11
12	CEM 407-Jr Sem	CE 365 Highway Location & Design	H 385 Safety & Health Standards & Laws	COMM Elective	BA 351 Managing Organizations F,W,S	Synthesis Contemporary Global Issues	12
13							13
14							14
15							15
16	Free Elective			CEM 407-Sr Sem			16

<sup>^</sup> = Writing Intensive course

Total credits required for BSCEM = 180 credit hours (average load = 15 credits per term)