

COLLEGE OF FORESTRY

2023–2024 UNDERGRADUATE

ADVISING GUIDE

FOREST/CIVIL ENGINEERING



Oregon State
University

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Forest-Civil Engineering Careers

Congratulations on selecting our Forest-Civil Engineering (FE/CE) degree program at Oregon State University! Oregon State's College of Forestry has a long tradition of excellence. Our programs are designed to provide a solid engineering background as well as fundamental knowledge in forestry principles and practices. The FE/CE double degree is unique; it is not available at any other university in North America and both programs are accredited by the Engineering Accreditation Commission (EAC) of ABET, Inc.

The Forest-Civil Engineering curriculum is divided into pre-professional and professional components. The pre-professional coursework provides the foundation on which the professional coursework is built. This gives you an opportunity to demonstrate that you have the aptitude, desire, professionalism, and academic accomplishment required for advancement to the professional level. Acceptance into the Professional Program in Forest Engineering (FE) is based upon performance in the pre-professional courses. Progression in Civil Engineering (CE) is based on progression standards in the College of Engineering undergraduate policy manual. Admission requirements for the FE Professional Program are detailed below. Admission requirements for the Civil Engineering Professional Program can be found at: engineering.oregonstate.edu/current-students/advising/progression.

FE/CE graduates are prepared to play key roles in meeting the world's appetite for wood products from sustainable forests, while also protecting other resource values such as soils, water, wildlife habitat, and recreation opportunities. Society's wood demands are enormous and growing, even with aggressive recycling programs. Many Forest Engineering graduates help meet these demands in positions that plan, design, and implement forestry activities — applying the best engineering, science, technology and experience available to conduct safe, cost effective, and environmentally responsible forest operations.

Traditional forest engineering careers typically involve developing and maintaining transportation systems, planning and designing timber harvests, and other forest operations. Forest products or timberland management companies, federal or state agencies, and consulting or contracting firms are the most common employers for new graduates. Some stay in field-oriented positions for much of their career, but many graduates have become successful managers and executives as they gain experience. A substantial number of graduates find opportunity and satisfaction in owning their own consulting or contracting business, especially if they have an interest in entrepreneurship.

Some Forest Engineering graduates - especially those from the FE/CE degree program - pursue careers with less forestry focus. Examples include land development, surveying engineering, transportation engineering and management, environmental consulting, and municipal engineering. The five-year double degree is challenging, but provides very diverse job opportunities and higher starting salaries.

All of these types of positions represent vibrant and timely career opportunities. Forestry continues to be a cornerstone of the economy of many communities, providing jobs and economic vitality. As the population of the world grows and natural resource challenges become more complex, the need for well-rounded highly trained forest engineers increases. Oregon State University is working to fill that need!

Program Educational Objectives

Forest Engineering Program Objectives

The Program Educational Objectives for the undergraduate Forest Engineering degree program are:

- **Application of Engineering in Forestry:** Practiced engineering applications within a forestry context.
- **Operational application of silviculture:** Developed engineered forest operations that achieve silvicultural objectives.
- **Protect soil and water resources:** Designed forest operations that appropriately protect the physical and biological aspects of soil and water resources.
- **Apply land and resource measurements:** Incorporated surveying and measurement of land and forest resources so that the engineering tasks associated with Forest Land Management and, specifically, the design of appropriate Forest Operations, were effectively completed.
- **Design transportation infrastructure:** Applied analysis and design principles for the physical and system aspects of the Forest Transportation infrastructure to design and manage safe forest transportation systems in a way that meets the needs of forest land management and minimizes adverse environmental impact.
- **Plan and manage economical and safe forest operations:** Fulfilled analysis and design principles to plan and manage safe, economic, and environmentally sound forest operations.
- **Develop forest management plans using principles considering economics, valuation and environmental considerations:** Implemented principles and techniques for forest land management and operational planning in an environmental and economic context to effectively develop successful forest operation plans.
- **Demonstrate leadership, communication and inclusiveness:** Work, collaborate and communicate inclusively and effectively with constituents from diverse backgrounds and interests.

The Program Educational Objectives for the undergraduate Civil Engineering degree program are:

- 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.
- 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.
- 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.
- 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.

Forest/Civil Engineering Curriculum

Degree requirements: To earn the B.S. degrees in Forest and Engineering, students must complete:

- All Pre-FE/CE and Pro-School courses with grades of C or higher
- All courses for OSU's Baccalaureate Core
- Complete at least 6 months of relevant work experience

Pre-FE/CE Courses: these courses must be completed with grades of C or higher (and GPA of 2.25 or higher) before students enter the professional program. * indicates courses that also fulfill Bacc Core.

Course Number	Title	Cr	Corvallis Campus	Distance Campus	Prerequisites / Notes
First Year Courses					
CH 201	Chemistry for Engineering Majors	3	F,W	W	MTH 111Z
CH 202	Chemistry for Engineering Majors	3	W,SP	W	CH 201
CH 205	Lab for Chemistry 202	1	W,SP		Take with CH 202
COMM 111Z* or COMM 114*	Public Speaking Argument and Critical Discourse	4 3	F,W,SP,SU F,W,SP	F,W,SP,SU F,W,SP,SU	
ECON 201*	Intro to Microeconomics	4	F,W,SP	F,W,SP,SU	MTH 111Z Rec.
ENGR 100	The Oregon State Engineering Student	3	F,W,SP	F,W,SP,SU	
ENGR 102	Design Engineering & Problem-Solving		F,W,SP	F,W,SP,SU	
FE 101	Intro to Forest Engineering	2	F		
FE 102 or ENGR 103	Forest Engineering Problem-Solving and Technology Engineering Computation and Algorithmic Thinking	3 3	W F,W,SP,SU	F,W,SP,SU	
FES 240*	Forest Biology	4	F,SP	F,SP,SU	
MTH 251*	Differential Calculus	4	F,W,SP,SU	F,W,SP,SU	MTH 112Z
MTH 252	Integral Calculus	4	F,W,SP,SU	F,W,SP,SU	MTH 251
MTH 254	Vector Calculus	4	F,W,SP,SU	F,W,SP,SU	MTH 252
PH 211*	General Physics with Calculus I	4	F,W,SP	F,SU	
WR 121Z*	English Composition	4	F,W,SP,SU	F,W,SP,SU	Alpha-sectioned
Second Year Courses					
CCE 201	Civil & Construction Engineering Graphics & Design	3	F,W	F	C in MTH 111Z
ENGR 211	Statics	3	F,W,SP	F,W,SP	C in MTH 252
ENGR 212	Dynamics	3	F,W,SP,SU	F,W,SP	C in ENGR 211 and PH 211
ENGR 213	Strength of Materials	3	F,W,SP	F,W,SP,SU	C in ENGR 211
FE 208 or CE 361	Forest Surveying Surveying Theory	4 4	F F,SP	SP	C in MTH 112Z. CCE 201, ENGR 213, PH 213, ST 314
FE 257	GIS and Forest Engineering Applications	3	W	F	
FES 241	Dendrology	3	F, SP	F,SP,SU	
MTH 256	Applied Differential Equations	4	F,W,SP,SU	F,W,SP,SU	MTH 254
MTH 264	Intro to Matrix Algebra	2	F,W,SP,SU	F,W,SP,SU	MTH 252
MTH 265	Introduction to Series	2	F,W,SP,SU	F,W,SP,SU	MTH 252
PH 212*	General Physics with Calculus II	4	F,W,SP,SU	W	PH 211
PH 213*	General Physics with Calculus III	4	F,W,SP,SU	SP	
SOIL 205*	Soil Science	3	F,W,SP		
FOR 206*	Forest Soils Lab	1	SP		Take with SOIL 205
ST 314	Introduction to Statistics for Engineers	3	F,W,SP	F,W,SP,SU	MTH 252
WR 227Z*	Technical Writing	4	F,W,SP	F,W,SP,SU	WR 121Z

Note: At the end of the sophomore year (the second year of Pre-FE/CE courses) students must apply to be admitted to the FE Professional Program (“Pro-School”). The courses above must all be completed with grades of C or better and a GPA of 2.25 or higher in order to be admissible to Pro-School for fall of the FE junior year.

To advance to the CE junior year, all students pursuing the BS in Forest-Civil Engineering:

1. must earn grades of C or better in all required courses, cross-listed course designators, or approved substitutions and
2. must maintain a 2.0 GPA in all major course work and cross-listed course designators, and courses used for substitution of required courses.

College of Engineering specific requirements:

1. must earn grades of C or better in all required civil engineering major courses and
2. must maintain an OSU Cumulative and term GPA of 2.50 and complete at least 65% of your coursework cumulatively and each term.

Pro-School Courses: * indicates courses that also fulfill Bacc Core.

Course Number	Title	Cr	Corvallis Campus	Distance Campus	Prerequisites / Notes
Third Year Courses (Forest Engineering Junior Year)					
FE 310	Forest Route Surveying	4	SP		FE 208 of CE 361
FE 312	Forestry Field School	2	F		Mid-September
FE 315	Soil Engineering	4	W		C in ENGR 213
FE 316	Soil Mechanics	4	SP		C in FE 315 or CE 372
FE 371	Harvesting Process Engineering	4	F		ENGR 211 & FE 102
FE 434	Forest Watershed Management	4	F		C in CH 201, SOIL 205, & MTH 251
FE 440	Forest Operations Analysis	4	W		C in FE 102 & FE 371
FE 470	Logging Mechanics	4	W		C in ENGR 211, ENGR 213, FE 371
FOR 321	Forest Mensuration	5	F		C in FES 241, FE 208, Calc, Stats
FOR 329	Forest Resource Economics I	4	W		C in ST 314
FOR 332	Forest Resource Economics II	2	SP		C in FOR 329
GEOG 300* or FW 350*	Sustainability for the Common Good Endangered Species, Society, and Sustainability	3 3	F,W,SP,SU F	F,W,SP,SU F,W,SP,SU	
Fourth Year Courses (Civil Engineering Junior Year)					
CCE 321	Civil and Construction Engineering Materials	4	F,SP,SU		C in ENGR 213 & ST 314
CE 311	Fluid Mechanics	4	F,W		C in MTH 256, PH 213, ENGR 212, ENGR 213
CE 313	Hydraulic Engineering	4	W,SP		C in CE 311
CE 381	Structural Theory I	4	F, W		C in ENGR 213
CE 382	Structural Theory II	4	W, SP		C in CE 381, MTH 264, MTH 265
CE 392	Introduction to Highway Engineering	4	W, SP		C in ENGR 212
CE 481	Reinforced Concrete I	4	F, SP		C in CE 382
CE 491	Transportation Engineering	3	F, SP		C in CE 392, ST 314
ENVE 321	Environmental Engineering Fundamentals	4	SP		C in MTH 256
FOR 441	Silviculture	4	F		C in FES 240 & FES 241

Fifth Year Courses					
CE 383	Design of Steel Structures	4	F, W		C in CE 382
CE 418^	Civil Engineering Professional Practice	3	W		C in CE 313, 382 and FE 315
CE 419^	Civil Infrastructure Design	3	SP		C in CE 418
FE 415	Forest Road Engineering	3	W		C in FE 310
FE 416	Forest Road System Management	4	SP		C in ENGR 211, 212, FE 316, FE 415
FE 444	Forestry Remote Sensing & Photogrammetry	4	F		FE 257, MTH 251, PH 211
FE/FOR 457	Techniques for Forest Resource Analysis	4	F		FOR 329 and FOR 441
FE/FOR 459	Forest Management Planning & Design I	4	W		FE 457
FE 460^ or FOR 460^	Forest operations regulations & Policy Issues Forest Policy	3 4	F W		
FE/FOR 469	Forest Management Planning & Design II	4	SP		FE 459
FE 480	Forest Engineering Practices and Professionalism	1	W		

Baccalaureate Core: Students must complete one course in each Bacc Core category. Some Bacc Core categories can be fulfilled by courses from the FE/CE major. The chart below shows the overlap between major requirements and the Bacc Core. A full listing of Bacc Core requirements can be found in the OSU Catalog (<https://catalog.oregonstate.edu/earning-degrees/bcc/>).

Title	Course	Cr.
Writing I	Fulfilled by WR 121Z	4
Writing II	Fulfilled by WR 227Z	4
Speech	Fulfilled by COMM 111Z or COMM 114	3-4
Lifetime Fitness for Health	HHS 231	2
Fitness Activity	HHS 24X or PAC	1
Mathematics	Fulfilled by MTH 251	4
Physical Science w/ Lab	Fulfilled by PH 211	5
Biological Science w/ Lab	Fulfilled by FES 240	4
Add'l Physical or Biological Sci w/ Lab	Fulfilled by SOIL 205 & FOR 206	4
Cultural Diversity	Choose a course	3
Literature & Arts	Choose a course	3
Western Culture	Choose a course	3
Social Processes & Institutions	Fulfilled by ECON 201	4
Difference, Power, Discrimination	Choose a course	3
Contemporary Global Issues	Fulfilled by GEOG 300, if selected	3
Science, Technology, Society	Fulfilled by FW 350, if selected	3
Writing Intensive Course	Fulfilled by FE 460 or FOR 460	3-4

Total Credits: 236-238

Sample Course Plan – Forest-Civil Engineering

This is a sample schedule. Actual schedules will vary from student to student based upon factors such as math placement and course availability. Students are strongly encouraged to create a personalized plan with their academic advisor. *Courses in italics also fulfill Baccalaureate Core requirements.*

B.S. in Forest-Civil Engineering

2023-2024

	Fall		Winter		Spring	
First Year	MTH 251: <i>Differential Calculus</i> CH 201: Chemistry for Engineers I ENGR 100: OR State Engr Student FE 101: Intro to Forest Engineering WR 121Z: <i>English Composition</i>	4 3 3 2 4	MTH 252: Integral Calculus CH 202: Chemistry for Engineers II COMM 111Z/114: <i>Communication</i> FE 102: FE Problem Solving & Technology ENGR 102: Design Engineering	4 3 3-4 3 3	MTH 254: Vector Calculus <i>PH 211: General Physics with Calc I</i> FES 240: <i>Forest Biology</i> ECON 201: <i>Intro to Microeconomics</i> CH 205: Chem for Engineering Lab	4 4 4 4 1
	Total Credits	16	Total Credits	16-17	Total Credits	17
Second Year	MTH 264: Intro to Matrix Algebra MTH 265: Intro to Series PH 212: General Physics with Calc II ENGR 211: Statics FE 208: Forest Surveying CCE 201: Civil Engr Graphics & Design	2 2 4 3 4 3	ENGR 213: Strength of Materials PH 213: General Physics with Calc III FE 257: GIS & Forest Engr Applications ST 314: Statistics for Engineers WR 227Z: <i>Technical Writing</i>	3 4 3 3 4	MTH 256: Applied Diff. Equations ENGR 212: Dynamics FES 241: Dendrology SOIL 205: <i>Soil Science</i> FOR 206: <i>Forest Soils Lab</i>	4 3 3 3 1
	Total Credits	18	Total Credits	17	Total Credits	14
Third Year	FE 434: Forest Watershed Mgmt FOR 321: Forest Mensuration FE 371: Harvesting Processes Engr FE 312: Forestry Field School	4 5 4 2	FE 315: Soil Engineering FE 440: Forest Operations Analysis FE 470: Logging Mechanics FOR 329: Forest Resource Econ I	4 4 4 4	FE 310: Forest Route Surveying FE 316: Soil Mechanics FOR 332: Forest Resource Econ II GEOG 300 or FW 350 HHS 231: <i>Lifetime Fitness</i> PAC/HHS 241 or PAC: <i>Fitness Activity</i>	4 4 2 3 2 1
	Total Credits	15	Total Credits	16	Total Credits	16
Fourth Year	CE 311: Fluid Mechanics CE: 381: Structural Theory I CCE 321: Civil & Const Engr Materials FOR 441: Silvicultural Principles	4 4 4 4	CE 313: Hydraulic Engineering CE 382: Structural Theory II CE 392: Intro to Highway Engr <i>Bacc Core – Literature Arts</i>	4 4 4 3	CE 481: Reinforced Concrete I CE 491: Transportation Engineering ENVE 321: Environ Engr Fundamentals <i>Bacc Core – Cultural Diversity</i>	4 3 4 3
	Total Credits	16	Total Credits	15	Total Credits	14
Fifth Year	CE 383: Design of Steel Structures FE 457: Tech for Forest Res Analysis FE 444: For Remote Sensing & Photo <i>FE 460: Forest Op Regulations & Policy</i>	4 4 4 3-4	CE 418: Civil Engr Professional Practice FE 459: Forest Mgmt Planning & Design I FE 415: Forest Road Engineering FE 480: Forest Engr Practice & Prof. <i>Bacc Core – Western Culture</i>	3 4 3 1 3	CE 419: Civil Infrastructure Design FE 469: For. Mgmt Planning & Design II FE 416: Forest Road System Mgmt <i>Bacc Core – Global Issues or STS</i> <i>Bacc Core – Diff, Power, Disc.</i>	3 4 4 3 3
	Total Credits	15-16	Total Credits	14	Total Credits	17



Advising and Assistance

The College of Forestry and the Department of Forest Engineering, Resources and Management are committed to helping students succeed. That includes assistance identifying majors and minors, and understanding University rules and regulations. Your FE/CE Academic Advisor and COF Head Advisor are your first points of contact when you have questions.

This advising guide provides details of the Forest-Civil Engineering (FE/CE) program not listed in the University Catalog (catalog.oregonstate.edu), and helpful information for your success as a student. The FE/CE program is tightly structured, hence there are few elective choices for the student who wishes to graduate in five years. However, the choices that are available are very important for satisfying the intent of the curriculum and providing the professional education that you desire. Your advisor is a valuable resource for discussions about options to add extra value to your education through additional coursework, minors, additional degrees, or co-curricular experiences.

The most current advising information, and appointment scheduling, is available online: forestry.oregonstate.edu/studentservices/advising

Who:

	<p>Ruth Sterner Academic Advisor Forestry Peavy 116 -J 541-737-6548 ruth.sterner@oregonstate.edu</p>		<p>Nicole Kent Head Advisor College of Forestry Peavy 116 -H 541-737-1592 nicole.kent@oregonstate.edu</p>
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What:

You can expect your advising appointments to be 30 minutes of one-on-one time with your academic advisor. You and your advisor will both prepare in advance—reviewing your MyDegrees page, preparing questions, and looking ahead. During your appointment, you will review your progress to date, make course plans for the upcoming term(s), discuss opportunities and resources pertinent to your goals, and track your progress toward graduation. While your advisor is here to assist and guide you, your educational choices are yours to make. We advise and you decide.

When:

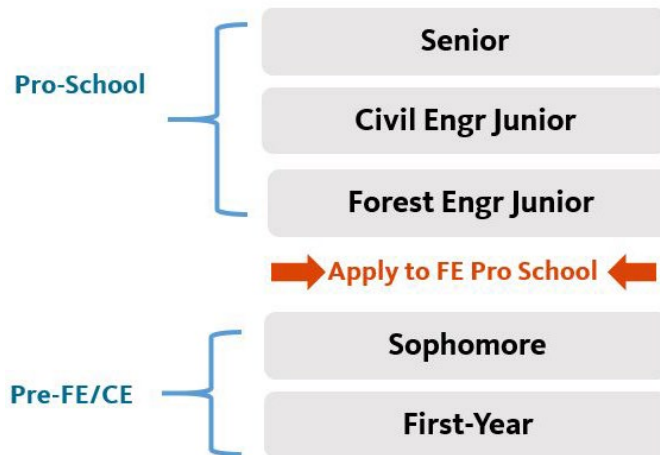
COF students are required to meet with their academic advisor at least once per quarter, and are welcome to meet more often. It's always okay to call, email, or drop in with questions.

How:

The easiest way to schedule your advising appointment is using your advisor's online calendar: forestry.oregonstate.edu/studentservices/advising

Forest - Civil Engineering Program Structure

FE/CE students earn two Bachelor's degrees – one in Forest Engineering and one in Civil Engineering. Because of the higher number of credits required, it takes five years to complete the program.



Years 1 & 2: Pre-FE/CE

The Pre-Professional years lay a strong foundation and prepare students for advanced coursework in Forest and Civil Engineering. Some students may require additional time to complete the program due to preparation in math, chemistry, or physics.

Year 3: Pro-School and Forest Engr Junior Year

Admission to the Forest Engineering pro-school is based on successful and timely completion of courses in years 1 & 2. Students need to start Pro-School in fall term to stay on-track with the degree program. See *FE Pro-School requirements below.

Year 4: Civil Engr Junior Year

To enter the Civil Engineering junior year, students must be in good standing with the College of Engineering. This requires students to maintain a 2.5 cumulative OSU GPA each term, and pass at least 65% of their OSU coursework each term to stay in Good Standing. More information on Academic Standing in the College of Engineering can be found here: engineering.oregonstate.edu/current-students/advising/progression

*FE Pro-School Requirements

To be eligible for admission to FE Pro-School, students must earn:

1. a grade of C or better in all Pre-FE/CE courses required for entry into the professional program. Grade repeat (replacement) policy will follow OSU Academic Regulation #20.
2. a minimum GPA of 2.25 in the required courses (or transfer equivalents).

Application for the Forest Engineering professional program will be available on the College of Forestry website in March of the sophomore year. Applications will be due in early April, and applicants will be notified of their admission status by early May. The number of students admitted to the program is determined based on available resources. Students meeting the minimum Pre-Forest Engineering GPA of 2.25 may or may not be admitted depending on available resources.

**College of Engineering Academic Requirements and Policies

To assure that all College of Engineering graduates have the strongest possible educational preparation for a professional career in engineering with no deficiencies in any required area of study, the College of Engineering has adopted policies and rules that can be found online: <https://engineering.oregonstate.edu/tools-services/advising>.

****School of Civil & Construction Engineering Academic Requirements**

Students must demonstrate that adequate background has been gained in all coursework used to satisfy program requirements. Therefore, all coursework must be passed with a grade of C or better.

Regarding sequence courses or courses with prerequisites, a student receiving a grade below C in a prerequisite course will not be able to proceed in the sequence. Students should see an academic advisor for assistance.

Requirements for Graduation

In addition to the University and degree program requirements, students in the Forest-Civil Engineering program must also meet specific requirements to graduate.

S/U Grading — FE/CE students may not take for S/U (Satisfactory/Unsatisfactory) grading any course listed as a requirement for the major. This includes approved substitutions. Baccalaureate core courses (Specifically *Western Culture, Cultural Diversity, Literature Arts, and Difference/Power/Discrimination*) may be taken S/U unless they are also being used to fulfill a program requirement.

Speech — FE/CE students are required to take COMM 111Z or 114 to fulfill the Speech Baccalaureate Core requirement. COMM 111Z or 114 cannot be taken for S/U (Satisfactory/ Unsatisfactory) grading.

Grades of C or better must be earned in all required courses (or approved substitutions) for the FE/CE program.

Approved Work Experience. Six months of work experience is required in the Forest-Civil Engineering degree program.

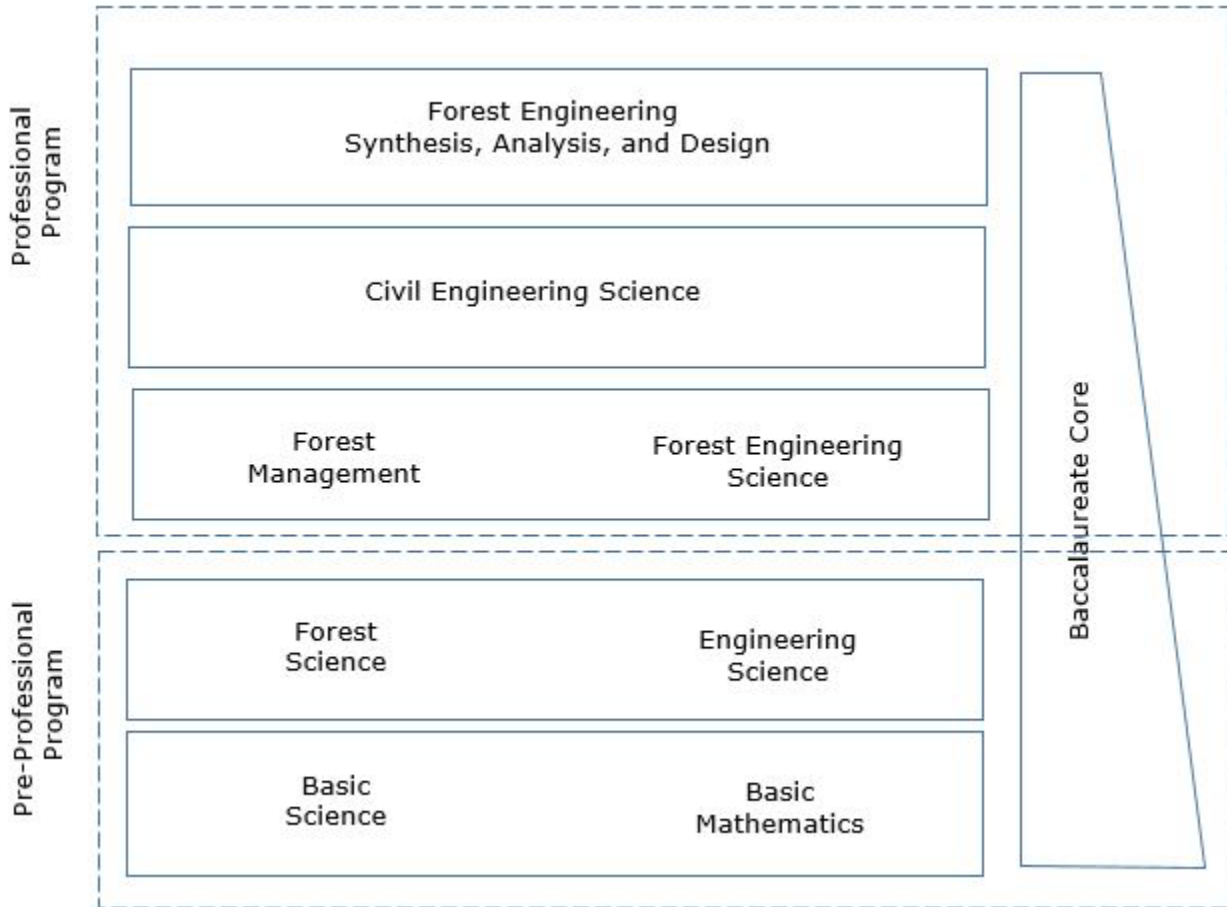
Professional Licensure

The pathway to licensure for Professional Engineers and Professional Land Surveyors is located at <https://www.oregon.gov/osbeels/obtaining/Pages/Licensing-Process-in-Oregon.aspx>. An important part of the pathway to licensure is passing the Fundamentals of Engineering Exam, and Oregon State University supports all engineering students with exam review assistance <https://engineering.oregonstate.edu/current-students/advising/fundamentals-engineering-exam>.

Forest Engineering/Civil Engineering Program Overview

Coursework in the FE/CE program begins with a broad foundation in science and math, followed by forest science and engineering to bridge between the basic sciences and forest management, forest engineering, and civil engineering (see figure below). Incorporating the University’s Baccalaureate Core (“Bacc Core”) requirements provides basic skills and broader perspectives. The curriculum is completed with forest engineering synthesis, analysis and design, the hallmark of forest engineering practice.

The FE/CE program is divided into pre-professional and professional coursework. Pre-professional courses are foundational, and should be completed in the freshman and sophomore years. The professional coursework typically begins in the junior year.



In addition to the organization illustrated above, the FE/CE program has been structured to satisfy the accreditation criteria of the Society of American Foresters (SAF) and the Engineering Accreditation Commission of ABET, Inc. SAF divides Forestry curricula into seven categories; Communication, Science and Math, Humanities and Social Science, Forest Ecology and Biology, Forest Measurements, Forest Management, and Forest Policy and Administration. ABET divides engineering curricula into three categories: Mathematics and Basic Science, Engineering topics and a General Education Component. Courses may include material that can fit in more than one category.

Grade Requirements for Accreditation

Mathematics (all required courses must be graded C or higher)

A grade of C or higher is required in all Mathematics courses with the MTH prefix (e.g. MTH 251: Differential Calculus). Preparatory mathematics courses not required for your major (such as MTH 111Z: College Algebra) can be taken for S/U grading, but you must earn an S grade in order to meet the prerequisite requirements for the subsequent courses. You should consult with your advisor on any grading questions.

Basic Science (all courses must be graded C or higher)

The Basic Science requirements include Physics, Chemistry, Soil Science, and an array of Forestry courses. Some Forestry courses include subject matter that is considered to be an Engineering Topic as well.

Engineering Topics (all courses must be graded C or higher)

Engineering Science (ENGR courses) provides the bridge between the basic sciences and engineering synthesis and design. The classical Engineering Science sequence, Statics, Dynamics, and Strength of Materials, is easily identifiable as engineering science course material. Many other components of engineering science are less easily delineated, and make up only portions of engineering or other courses. In some cases, courses taught by other departments have engineering science character appropriate to Forest Engineering. For example, the application of basic mathematics to the Engineering and Management analysis of the “time value of money” is an engineering science topic even though it is presented in Forest Resource Economics I (FOR 329). Similarly, the application of mathematics and statistics to measurement of forest resource quantities is an engineering science topic even though it is presented in Forest Mensuration (FOR 321).

The heart of engineering practice is Synthesis and Design; hence Synthesis and Design are the capstone of an engineering education. Within Forest Engineering coursework, the most common occurrence of engineering science topics is in the beginning of a course or course sequence, the latter portion of which is engineering synthesis or design. The Engineering Design experience in the Forest Engineering program culminates in the Forest Planning Sequence (FE 459 and FE 469). This sequence provides the challenge and opportunity for students to integrate components of the entire curriculum, including the disciplines of Engineering, Forest Ecology, Silviculture, Fisheries, and Wildlife, into the design of a timber harvesting plan that meets a set of financial objectives developed with consideration of the time value of money and forest growth.

Forest Engineering - Civil Engineering Program Outcomes

Along the way to your degrees in Forest Engineering and Civil Engineering, you will be prepared to meet the challenges of professional practice by achievement of a series of “program outcomes” that describe the attributes that a graduate must possess in order to be successful as a professional. These program outcomes have been developed in part by the Engineering Commission of ABET, Inc., and in part by the faculties in Forest Engineering and Civil Engineering in consultation with their respective Industrial Advisory Committees.

As a graduate of the Forest Engineering/Civil Engineering Program, you will have:

1. An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline. (FE/CE)
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. (FE/CE)
3. An ability to communicate effectively with a range of audiences. (FE/CE)
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. (FE/CE)
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. (FE/CE)
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. (FE/CE)
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. (FE/CE)
8. Operational understanding of forest ecology and silviculture. (FE)
9. Understanding of soil and water resources. (FE)
10. Ability to make land and resource measurements. (FE)
11. Ability to design the transportation infrastructure. (FE)
12. Ability to plan and manage economic and safe forest operations. (FE)
13. Understanding of economics and valuation. (FE)

Forest - Civil Engineering Degree Credit Distribution

Check Completed	Course Title	Course Prefix and Number	Basic Science and Mathematics Credit	Engineering Topics Credit	Supporting General Education Credits
Forest Engineering/Civil Engineering Pre-Professional Program					
	Chemistry for Engineering Majors **	CH 201	3		
	Introduction to Forest Engineering **	FE 101		1	1
	The Oregon State Engineering Student **	ENGR 100		3	
	Differential Calculus [BC] **	MTH 251	4		
	English Composition [BC] **	WR 121Z			4
	Chemistry for Engineering Majors **	CH 202	3		
	Design Engineering & Problem Solving **	ENGR 102		3	
	Forest Engineering Problem Solving and Technology **	FE 102	1	1	1
	Public Speaking, or Argument & Critical Discourse [BC] **	COMM111Z /114			3-4
	Integral Calculus **	MTH 252	4		
	Laboratory for Chemistry 202 **	CH 205	1		
	General Physics with Calculus [BC] **	PH 211	4		
	Forest Biology**	FES 240	4		
	Vector Calculus I **	MTH 254	4		
	Introduction to Microeconomics [BC] **	ECON 201			4
	Civil Engr and Const Engr Graphics & Design **	CCE 201		3	
	Statics **	ENGR 211		3	
	Forest Surveying **	FE 208		4	
	Introduction to Matrix Algebra**	MTH 264	2		
	Introduction to Series **	MTH 265	2		
	General Physics with Calculus **	PH 212	4		
	General Physics with Calculus **	PH 213	4		
	Strength of Materials **	ENGR 213		3	
	GIS & Forest Engineering Applications **	FE 257		3	
	Intro to Statistics for Engineers**	ST 314	3		
	Technical Writing [BC]	WR 227Z			4
	Dynamics **	ENGR 212		3	
	Dendrology**	FES 241	3		
	Soil Science [BC] **	SOIL 205	3		
	Forest Soils lab or Soil Science lab and Forest Soil recitation	FOR 206 OR SOIL 206 and FOR 208	1		
	Applied Differential Equations **	MTH 256	4		
Forest Engineering/Civil Engineering Professional Program					
	Forest Engineering Field School	FE 312		2	
	Harvesting Process Engineering	FE 371		4	
	Forest Watershed Management	FE 434	2	2	
	Forest Mensuration	FOR 321	1	1	3
	Soil Engineering	FE 315		4	
	Forest Operations Analysis	FE 440		4	
	Forest Resource Economics I	FOR 329		1	3
	Logging Mechanics	FE 470		4	
	Forest Route Surveying	FE 310		4	
	Soil Mechanics	FE 316		4	
	Silviculture Principles	FOR 441	4		
	Sustainability for the Common Good [BC] or Endangered Species, Society, and Sustainability [BC]	GEOG 300 or FW 350	1		2

Forest - Civil Engineering Degree Credit Distribution (Continued)

Check Completed	Course Title	Course Prefix and Number	Basic Science and Mathematics Credit	Engineering Topics Credit	Supporting General Education Credits
Forest Engineering/Civil Engineering Professional Program continued					
	Fluid Mechanics I	CE 311		4	
	Structural Theory I	CE 381		4	
	Lifetime Fitness [BC] **	HHS 231			2
	Lifetime Fitness Activity [BC] or Physical Activity (PAC) **	HHS 241 or PAC			1
	Civil & Construction Engineering Materials	CCE 321		4	
	Hydraulic Engineering	CE 313		4	
	Structural Theory II	CE 382		4	
	Introduction to Highway Engineering	CE 392		4	
	Reinforced Concrete I	CE 481		4	
	Transportation Engineering	CE 491		3	
	Environmental Engineering Fundamentals	ENVE 321		4	
	Design of Steel Structures	CE 383		4	
	Forestry Remote Sensing and Photogrammetry	FE 444		4	
	Techniques for Forest Resource Analysis	FE 457		4	
	Forest Op. Regulations and Policy Issues [WIC] or Forest Policy	FE 460 or FOR 460		3 4	
	Forest Resource Economics II	FOR 332		1	1
	Civil Engineering Professional Practice [WIC]	CE 418		3	
	Forest Management Planning and Design I	FE 459		4	
	Forest Road Engineering	FE 415		3	
	Forest Engineering Practice & Professionalism	FE 480		1	
	Civil Infrastructure Design	CE 419		3	
	Forest Management Planning and Design II	FE 469		4	
	Forest Road System Management	FE 416		4	
	International Forestry	FE 456	1		2
Other Baccalaureate Core Courses [Bacc Core]					
	Cultural Diversity				3
	Literature and Arts				3
	Western Culture				3
	Difference, Power, and Discrimination				3
	Category Credit Totals		63	130-131	42-43

** Pre-Professional Course that must be completed before entering the Professional Program.

DISCLAIMER:

Future term data are continually updated. Check the web frequently for current information.