Civil & Environmental Engineering

Undergraduate Guide

November, 2023

TABLE OF CONTENTS

June 2023

WELCOME TO CIVIL & ENVIRONMENTAL ENGINEERING

Dear Civil and Environmental Engineering Student:

As a new student entering our program, you are embarking on a career path that can provide you with many years of professional and personal enjoyment. The academic program is demanding, and you will be asked to work hard. We think it is worth it and hope you will agree after the next four years.

This is **your personal copy of the 2023-24 edition** of the *CIVIL AND ENVIRONMENTAL ENGINEERING UNDERGRADUATE STUDENT GUIDE*. **Read this student guide at your earliest possible convenience.** Changes in the curriculum and procedures occur every year, and there are new facts in this guide that you need to know. You will also gain a good overview of the Department of Civil and Environmental Engineering, the College of Engineering, and the University of Maine. The guide should be used in conjunction with the *University of Maine Catalog* and *Directory of Classes*. Of course, whenever you have a question regarding your program of study, career objectives, or any other questions, please feel free to contact your advisor or me. We will do everything we can to ensure you enjoy your civil and environmental engineering education.

Welcome Aboard!

Shaleen Jain
Professor and Chair
Department of Civil & Environmental Engineering

FACULTY AND STAFF ROSTER

2023-2024

The office addresses and phone numbers for the Civil and Environmental Engineering faculty and staff are given below. All faculty members have office hours for students, but students are welcome to stop by at other times as well. In addition, all faculty and staff can be reached via e-mail.

Civil and Environmental Engineering Faculty:

Name/Title	Office	E-mail	Phone
Onur Apul, PhD, PE Assistant Professor	207A Boardman	Onur.apul@maine.edu	581-2981
Habib Dagher, PhD, PE Professor	Structures and Composites Center	hd@.maine.edu	581-2138
Bill Davids, PhD, PE Professor	319A Boardman	william.davids@maine.edu	581-2116
Aaron Gallant, PhD, PE Associate Professor	311 Boardman	aaron.gallant@maine.edu	581-2391
Shaleen Jain, PhD, PE Professor and Chair	105A Boardman	shaleen.jain@maine.edu	581-2170
Kimberly Huguenard, PhD Associate Professor	313 Boardman	kimberly.huguenard@maine.edu	581-1216
Eric Landis, PhD, PE Professor	303 Boardman	landis@maine.edu	581-2173
Roberto Lopez-Anido, PhD, PE Professor	315B Boardman & Composites Center	rla@maine.edu	581-2119
Reed Miller, PhD Assistant Professor	207 Boardman	reed.miller@maine.edu	581-2777
Jean MacRae, PhD Associate Professor	315A Boardman	jean.macrae@maine.edu	581-2137
Edwin Nagy, PhD, PE, SE Lecturer	301 Boardman	edwin.nagy@maine.edu	581-2164
Xenia Rofes, PE Lecturer	322 Boardman	xenia.rofes@maine.edu	581-2266
Lauren Ross, PhD Associate Professor	201 Boardman	lauren.ross1@maine.edu	581-2088
Ali Shirazi, PhD Assistant Professor	319B Boardman	shirazi@maine.edu	581-5106
Luis Zambrano Cruzatty Assistant Professor	208B Boardman	luis.zambranocruzatty@maine.edu	581-1277

Civil and Environmental Engineering Staff:

Name	Office		Phone
Brenda Collamore Administrative	105 Boardman	brendac@.maine.edu	581-2171
Anne Levasseur Accounting	103 Boardman	anne.levasseur1@maine.edu	581-2172
Neil Fisher, PhD Lab Manager	112 Boardman	neil.r.fisher@maine.edu	581-4406
Jeffrey Aceto Co-op/CIE 394 Coordinator		acetojt@gmail.com	650-5674
Heather Perrone Engineering Reference Librarian	Fogler Library	heather.perrone@maine.edu	581-1697

SCHEDULING ISSUES:
First year students please contact Laurie Fullerton, AMC Building, Room 210, 581-2217, email: laurief@maine.edu and **transfer students** contact Brenda Collamore (see above).

PROGRAM ACCREDITATION

The program in Civil Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. The program currently grants ~50 BS degrees per year, and our present undergraduate enrollment is about 260 students. Annual student enrollment data can be found at https://umaine.edu/oir/majors-report/, and information on degrees granted is posted at https://umaine.edu/oir/degrees-conferred/.

CIVIL ENGINEERING CURRICULUM

Current information on the curriculum is contained in the 2023-2024 University of Maine Undergraduate Catalog. **As a new student entering in the fall of 2023, you should keep a copy of the 2023-2024 catalog (which is on-line) as it sets the requirements that you will need to follow to receive a degree.** The civil engineering faculty sometimes revises the curriculum to better meet the department's educational objectives, but your graduation requirements are generally established by the 2023-2024 catalog.

As detailed on the following page, the civil engineering curriculum requires five mathematics courses, two physics courses, one chemistry course, two English courses (ENG 101, ENG 320), and a course in public speaking (CMJ 103). These courses are dispersed throughout the undergraduate curriculum. In addition, there are five Human Values and Social Context (HVSC) electives (more details on these in Appendix II), and one approved science elective. The remaining courses are in engineering or other technical areas. These include required civil engineering courses, civil engineering and technical electives, surveying, statics and strength of materials, drafting/CAD, and an engineering science elective. Specific requirements for each category of electives are provided after the curriculum. The two technical elective courses (**6 credits maximum**) can be any civil engineering elective course, or a course listed as an approved technical elective (see the following list).

The Educational Objectives of the Civil Engineering Program are established such that 3-5 years after graduation, graduates typically:

- Practice the disciplines of transportation, environmental, structural, water resources, and geotechnical engineering, and/or related fields.
- Engage in advanced education, research, and development.
- Pursue continuing education and professional licensure.
- Promote and advance public health and safety, and enhance quality of life.
- Act in a responsible, professional, and ethical manner.

As you progress through your course of study, you should never lose sight of the fact that civil engineers design projects for people. In addition to understanding the technical details and, you must gain a strong appreciation of how your projects will affect the community and the environment in which we all live. The public places significant trust in civil engineers to do their job well. For this reason, the Code of Ethics put forth by the American Society of Civil Engineers states in part that "Engineers shall hold paramount the safety, health and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of their professional duties." In contrast with other branches of engineering, most civil engineers need to become licensed by the state to practice civil engineering – in Maine this is known as becoming a "Registered Professional Engineer" or P.E. for short. This is tangible recognition of the trust that the public places in your work. You will note that many of the faculty in our Civil and Environmental Engineering Department are registered P.Es. Our civil engineering curriculum will form the basis that will start you down the path toward licensure.

Fall 2024
TOTAL Credit Hours = 129

C or better for critical prerequisites
Maximum of 6 Tech Elective credits

FALL SEMESTER		Cr Hours	Grade
CIE 100	Intro to Civil & Env Eng	1	
CIE 110	Materials	3	
CIE 111	Materials Lab	1	
CHY 131	Chemistry for Engr	3	
CHY 133	Chemistry Lab	1	
MAT 126	Calculus I	4	
	HVSC W S C P A [1]	3	
	semester credits	16	

SPRING SEMESTER		Cr Hours	Grade
CIE 101	Civil Eng Graphics	3	
CIE 115	Computing in CE	3	
ENG 101	College Comp	3	
MAT 127	Calculus II	4	
PHY 121	Engr Physics I	4	
	semester credits	17	

FALL SEMESTER		Cr Hours	Grade
MAT 228	Calculus III	4	
MEE 150	Statics	3	
PHY 122	Engineering Physics II	4	
SVT 102	Surveying Principles	3	
CMJ 103	Fund of Public Comm	3	
	semester credits	17	

SPRING SEMESTER		Cr Hours	Grade
CIE 225	Transportation Engr	3	
MAT 258	Diff Eq & Lin Alg	4	
MEE 251	Strength of Materials	3	
	HVSC W S C P A [1]	3	
	Approved sci. elective [7]	4	
	semester credits	17	

FALL SEMESTER		Cr Hours	Grade
CIE 331	Fund Env Eng	3	
CIE 340	Intro to Structural Anal	4	
CIE 350	Hydraulics	3	
CIE 351	Hydraulics Lab	1	
ENG 320	Tech Comm for Engineering[2]	3	
	HVSC W S C P A [1]	3	
	semester credits	17	

SPRING SEMESTER		Cr Hours	Grade
CIE 365	Soil Mechanics	3	
CIE 366	Soil Mechanics Lab	1	
STS 332	Statistics for Engr	3	
	CIE Elective [3, 4]	3 4	
	CIE Elective [3, 4]	3 4	
	Engr Sci Elect [5]	3	
	semester credits	16	

FALL SEMESTER		Cr Hours	Grade
CIE 412	Engineering Decisions[2,6]	3	
CIE 413	Project Mgmt [6]	2	
	CIE Elective [3, 4]	3 4	
	CIE Elective [3, 4]	3 4	
	CIE Elect or Tech Elective [3, 4]	3	
	HVSC W S C P A [1]	3	
	semester credits	17	

SPRING SEMESTER		Cr Hours	Grade
CIE 411	Engineering Proj Design	3	
	CIE Elective [3, 4]	3 4	
	CIE Elect or Tech Elective [3, 4]	3	
	HVSC W S C P A [1]	3	
	semester credits	12	

1. Students are assisted by faculty advisors in developing an elective program to meet their individual needs within the University's general education requirements. While most of the general education requirements are automatically met with a civil engineering degree, a student is required to select an additional 15 credit hours of electives to help meet the 18 credit hour "Human Values and Social Context" requirement (the required CMJ 103 satisfies the other three credit hours). **Courses used for credit as an Approved Science Elective, Technical Elective and ENG 320 cannot be used for credit in the Human Values and Social Contexts area, but can be used to fulfill HVSC sub-categories such as Population and the Environment.**
2. General education requirements mandate two writing intensive courses. CIE 412 is designated as a writing intensive course within the CIE major, while ENG 320 meets the outside-the-major writing intensive course.
3. Civil Engineering and technical electives must be a minimum of 21 credit hours with no more than two technical elective courses (**6 credits maximum**). Civil engineering electives are advanced (400 or 500 level) civil engineering courses. The technical elective is an advanced Civil Engineering course or CIE 394 Civil Engineering Practice or other advanced level engineering, science, or mathematics course relevant to Civil Engineering. In addition, ERS 101 Intro to Geology, BIO 100 Basic Biology and CHY 122/124 can be taken as technical electives.
4. An additional requirement of the CIE Electives is that students take a CIE elective course in three of the five civil engineering sub-disciplines: Transportation (CIE 42X), Environmental (CIE 43X), Structural (CIE44X), Water Resources (CIE 45X), and Geotechnical (CIE 46X).
5. Three credits of approved engineering science electives, usually in mechanical or electrical engineering, are required. Civil Engineering courses cannot be used for these three specific credit hours. Typical courses taken are:

   MEE 230 Thermodynamics I — MEE 270 Dynamics
   ECE 209 Fundamentals of Electric Circuits

5. CIE 413 must be taken in the fall semester immediately preceding CIE 411.
6. Courses satisfying the Approved Science Elective are: BIO 100 Basic Biology, ERS 101 Introduction to Geology, ERS 102 Environmental Geology of Maine, EES 140/141 Soil Science, and SMS 302/303 Oceanography
7. Either ERS 101 or ERS 102 satisfy either the Approved Science Elective or one Technical Elective. Only one of the two courses counts towards the CIE degree, and that course only satisfies one of these two requirements.

SPECIAL NOTE:

Sixteen credit hours of engineering design courses are required. Eleven hours are earned in the required courses. At least five additional design hours must be included in the electives selected by the student. The College of Engineering only allows seniors whose "advancement in the field will permit their taking a graduate level course among graduate students without disadvantage to themselves" to take 500-level courses. The design content of CIE electives is as follows:

Engineering Science & Design Content of Departmental Electives

Course No.	*	Engr. Design	Engr. Science	Course No.	*	Engr. Design	Engr. Science
CIE 394		1-3	0	CIE 533	E	0	3
CIE 424	T	2	1	CIE 534	E	0	3
CIE 425	T	1	2	CIE 537	E	0	3
CIE 426	T	3	0	CIE 540	S	0	3
CIE 428	T	2	1	CIE 543	S	2	1
CIE 430	E	3	1	CIE 544	S	4	0
CIE 431	E	3	0	CIE 545	S	0	3
CIE 434	E	4	0	CIE 548	S	3	0
CIE 439	E	0	3	CIE 549	S	0	3
CIE 440	S	0	4	CIE 556	W	1	2
CIE 442	S	4	0	CIE 562	G	3	0
CIE 443	S	4	0	CIE 563	G	1	1
CIE 450	W	1	2	CIE 564	G	3	0
CIE 455	W	1	2	CIE 565	G	3	0
CIE 456	W	1	2	CIE 566	G	3	0
CIE 460	G	3	0	CIE 567	G	3	0
CIE 480		0	3				

- T = transportation; E = environmental; W = water resources; S = structures; G = geotechnical

University of Maine Courses Meeting CIE Technical Elective Requirements

[1]*Biochemistry, Microbiology & Molecular Biology*
BMB 280 Intro Molecular & Cellular Biology
BMB 322 Biochemistry

[1]*Biological Engineering*
BLE 462 Power Transmission and Control

Biology
BIO 100 Basic Biology
BIO 122/3 Biology: the Living Science
BIO 200 Biology of Organisms
BIO 319 General Ecology
BIO 468 Limnology

[1]*Chemical Engineering*
CHE 420 Colloid Technology
CHE 480 Pollution Prevention in Industrial Ecology

Chemistry
CHY 122 The Molecular Basis of Chemical Changes
CHY 242 Principles of Quantitative Analysis and Solution Equilibria
CHY 251 Organic Chemistry I
CHY 252 Organic Chemistry II
CHY 443 Instrumental Analysis
CHY 471 Physical Chemistry I
CHY 472 Physical Chemistry II

[1]*Civil & Environmental Engineering*
CIE 394/498/598 courses

Computer Science
COS 215 Introduction to Computing Using FORTRAN
COS 220 Introduction to C++ Programming
COS 221 Advanced C++ Programming

Construction Management
CET 412 Sustainable Population and Environmental Design and Construction
CET 425 Virtual Design and Construction
CET 462 Construction Planning and Scheduling

Earth Science
ERS 101 Introduction to Geology
ERS 102 Environmental Geology of Maine
ERS 210 Geology Applied to Engineering
ERS 315 Principles of Sedimentology and Stratigraphy
ERS 316 Structural Geology
ERS 317 Introduction to Geophysics
ERS 369 Energy Resources and Climate Change
ERS 420 Computation in Earth Science
ERS 441 Glaciers and Our Landscape
ERS 461 Fluvial Processes in Geomorphology

Ecology and Environmental Science
EES 418 Environmental Assessment and Management Techniques
EES 450 Principles of Environmental Science

Economics
ECO 341 Waste Management

ECO 366 Applied Data Analysis for Resource Economics and Policy
ECO 377 Introduction to Natural Resource Economics and Policy
ECO 381 Sustainable Development Principles and Policy
ECO 405 Sustainable Energy Economics & Policy
ECO 473 Economic and Policy Applications of GIS
ECO 477 Economics of Environmental and Resource Management
ECO 479 Land Use Planning

[1]*Electrical and Computer Engineering*
ECE 209 Fundamentals of Electrical Circuits

Electrical Engineering Technology
EET 321 Electro-Mechanical Energy Conversion
EET 323 Power Systems Analysis
EET 460 Renewable Energy and Electricity Production

Global Positioning Systems
400 level courses

Information Systems Engineering
ISE 303 Human-Computer Interaction
ISE 304 Digital Image Processing
ISE 305 Digital Video Analysis
ISE 403 Spatial Database Systems
ISE 404 Time in Information Systems Design

Marine Sciences
SMS 302 Oceanography
SMS 402 Oceans and Climate Change

Mathematics
MAT 400 Topics in Mathematics
MAT 453 Partial Differential Equations I
MAT 471 Differential Geometry

[1]*Mechanical Engineering*
MEE 230 Thermodynamics I
MEE 231 Thermodynamics II
MEE 270 Applied Mechanics: Dynamics
MEE 480 Wind Energy Engineering

Plant, Soil & Environmental Science
PSE 140 Soil Science
PSE 344 Soil and Water Quality: Human Impacts on the Environment
PSE 413 Wetland Delineation and Mapping
PSE 423 Wetland Ecology and Conservation
PSE 469 Soil Microbiology

School of Forestry Resources
SFR 400 Applied Geographic Information Systems
SFR 454 Wood Composites
SFR 455 Bioenergy Sources, Systems and Environmental Effects
SFR 482 Industrial Ecology and Life Cycle Assessment

Surveying Engineering Technology
SVT 329 Site Planning and Subdivision Design
SVT 331 Photogrammetry
SVT 341 Advanced Surveying
SVT 437 Practical GPS

Wildlife Ecology
WLE 423 Wetland Ecology and Conservation

Notes:

1 300/400/500 level courses in CIE, other engineering disciplines, and math and sciences are typically accepted, but *you must get advisor approval for any course not listed here.*

Updated 1 April 2021

CONCENTRATIONS

Concentrations may be completed in Environmental Engineering, Water Resources Engineering, and Structural Engineering. Students desiring a concentration must declare it with the Civil and Environmental Engineering Department before the start of their final semester. To earn a concentration, a student must complete three 400-level electives with grades of C or better in the concentration area as defined below.

Environmental Engineering**:** CIE 430 (Water Treatment) and CIE 434 (Wastewater Process Design), and either CIE 431 (Pollutant Fate and Transport) or CIE 439 (Solid Waste and Air Pollution)
Water Resources Engineering**:** CIE 450 (Open Channel Flow), CIE 455 (Hydrology) and CIE 456 (Groundwater Hydrology and Hydraulics)
Structural Engineering**:** CIE 440 (Structural Analysis I), CIE 442 (Structural Design I) and CIE 443 (Structural Design II)

CIVIL AND ENVIRONMENTAL ENGINEERING ADVISORS

All students majoring in civil and environmental engineering will have a faculty member as their academic advisor. Students are assigned an advisor at the beginning of their first year or when transferring into the program.

Students meet with their advisors during the pre-registration process each semester to plan the next semester's program with the required program of courses in mind. Faculty members will make sure their advisees are aware of available meeting times during a roughly three-week period that spans UMaine's pre-registration and registration periods. **Your schedule must be reviewed by your advisor before you will be allowed to enroll in courses.** If your advisor is unavailable, you can consult with the department chair.

Pre-registration for the spring semester is generally the last week of October through the second week of November (**check your MaineStreet account**). Just prior to the pre-registration period, a new directory of classes will be available on-line. You can make preliminary selection of courses (create a "wish list" in MaineStreet), schedule a meeting with your advisor to finalize your schedule, and submit your wish list in MaineStreet. A block of time will be scheduled during which you can register for the classes in your wish list. **NOTE: creating the wish list does not place you in the classes you select; you must still register after meeting with your advisor.**

GRADING POLICIES

Letter grades on a scale of A to F are given by faculty at the university. Civil engineering faculty may assign whole letter grades or may grant plus and minus grades. If you are in doubt as to the grading procedure used in any course, check with the instructor.

Passing grades:	A	=	excellent
	B	=	good
	C	=	satisfactory
	D	=	low level passing
Failing grades:	F	=	failed
	L	=	stopped attending after 10 weeks (Note: same as F)
Non-credit grades:	W	=	dropped without penalty
	H	=	an audited class

Incomplete grades: I = course work incomplete (**form required**). A grade of incomplete must be made up at the discretion of the instructor. However, this action must be **taken no later than one calendar year** from the end of the semester in which the student was registered for the work. At that time an incomplete grade will automatically **change to an F**. Thus, it is the **student's responsibility to ensure that any incomplete work has been made up within this time frame and a grade change form has been submitted by the instructor.**

Academic Standards
In addition to meeting all University academic requirements, a civil and environmental engineering student must **maintain a 2.0 GPA overall, and a 2.0 GPA in the major**. Many elective and required Civil Engineering courses carry the additional requirement that a grade of **C or better be earned in all pre-requisites.**

Courses numbered 500-599 are graduate courses that may only be taken by undergraduates with a cumulative GPA greater than or equal to 3.0 who have permission from their academic advisor.

PASS/FAIL COURSES

Civil and environmental engineering students cannot take courses on a "Pass/Fail" basis and earn credit toward their degrees. The only exceptions are CIE 100, CIE 394, and courses that are not applied toward graduation. Similarly, any courses taken for post-baccalaureate credit, e.g., MS degree, cannot be taken "Pass/Fail"

COURSE SUBSTITUTIONS

Except for students transferring from other universities or programs, substitutions are generally allowed only under exceptional circumstances. Even then, the course substituted must be highly similar to the normally required course and be at a higher academic level. For substitutions to be allowed, **prior approval by the Department of Civil and Environmental Engineering Chair is needed.**

TRANSFER STUDENTS

Candidates who desire to transfer to the Civil and Environmental Engineering Program from another university or college of recognized standing **must file an application with the University of Maine Admissions Office**. Students wanting to transfer into the Department from another program at the University of Maine need to meet with the Department Chair to discuss their eligibility and apply to change their major in accordance with the transfer policy established by the College of Engineering.

The evaluation of transcripts of prior academic work is done initially by the Office of Student Records, followed by the Chair of Civil and Environmental Engineering. Evaluations are completed only after the candidate has been approved for admission to the University and full final transcripts from other institutions have been received by the Office of Student Records. The University makes every attempt to give reasonable credit for work performed at other academic institutions.

POLICY ON SELECTED STUDIES COURSES

Selected studies courses (CIE 498) require approval of the Department Chair. If a student wishes to take a CIE 498 course, they must do the following:

1. Meet with the proposed instructor to develop the content and requirements for the selected topic.
2. Submit to the Department Chair a request for approval of the course, which will be signed by the proposed instructor and student. The request must include:
    a. Explanation of why the proposed CIE 498 course will be taken in lieu of a regularly offered Civil Engineering elective
    b. Topic or topics to be studied
    c. Relationship of course to student's education and career goals
    d. Hours of credit to be awarded
    e. Resources available
    f. Outline of proposed work
    g. Type and timing of reports or examinations

(Request should be submitted before the beginning of the normal registration period.)

After reviewing the request, the department chair will either schedule the CIE 498 course with an appropriate title and register the student, or deny the request.

Special topics courses that are proposed largely to allow a student to meet graduation requirements by taking a 1- or 2-credit course in lieu of a regularly offered CIE elective will not be approved.

COOPERATIVE EDUCATION/FIELD EXPERIENCE

Jeffrey Aceto PE, (acetojt@gmail.com) is the Department's Cooperative Education coordinator. This program provides paid work experience related to your career objectives. The Career Center at the Memorial Union maintains a list of co-op employers who are interested in hiring civil engineering students. In addition, you may obtain a job with a qualified firm not on the list and request the firm to register with the campus co-op office. The department will regularly email information on internship opportunities to your maine.edu address. You can access the Career

Center job database to search for openings.

Students can receive up to three credits of academic course work for summer work experience. Students must be registered for CIE 394 during the summer while participating in the work experience. A learning plan and description of the anticipated work experience must be submitted to Mr. Aceto within two weeks of beginning of your co-op experience. A form is available for this purpose, which must be filled out by you in conjunction with your co-op employer. You are expected to keep a weekly log of the tasks you carry out while on the job, and required documentation is defined in your co-op agreement established with Mr. Aceto. Before receiving academic credit for the work experience, you must submit a three- to five-page report summarizing the experience and detailing both positive and negative aspects of the experience. The weekly log, detailing progress in meeting your objectives, must be attached to your final report. Employers may specify additional requirements for your participation in a co-op experience with them. **CIE 394 credits only count as technical elective credits**.

EXCHANGE PROGRAMS FOR CIVIL ENGINEERING STUDENTS

International Student Exchange Program

Opportunities for international study may be explored at the Office of International Programs in 300 Stodder Hall ((207) 581-3437). Engineering students can spend a semester or year abroad, but generally need to plan a year ahead. Fees are often comparable to UMaine's and scholarships are available. Of special interest is the program in The Polytechnic School of Valencia, Spain, with a fall semester, second year curriculum that matches very well UMaine's, and all courses taught in English. More information is available at https://civil.umaine.edu/undergraduate/, and the Office of International Programs can provide details of the curriculum.

Also, to encourage student exchanges with Canada, students may attend one of the Canadian programs while paying only in-state tuition at the University of Maine. In addition, several tuition waiver grants are available such that students receiving them pay no tuition while they are attending the Canadian University. Because the courses at Laval University are presented in French, you must necessarily have a working grasp of the language prior to attending this institution. Most students apply during the sophomore year and attend the exchange university during their junior year for one or two semesters. Details on the exchange program with Canada and financial aid may be obtained from The Canadian-American Center, 154 College Avenue, University of Maine, Orono, ME 04469, telephone (207) 581-4220.

CAMPUS RESOURCES

ENGLISH DEPARTMENT WRITING CENTER

Whether carrying out work for an English course or preparing a term paper in any course, the University of Maine Writing Center is available to help you. The Department hopes you will take advantage of this resource to develop your written communication skills. Tutors are available five days per week during the school semester as follows:

Writing Center, 402 Neville Hall, 581-3828

umwcenter@maine.edu

First Visit?

Go to **WCOnline to register for an account** with your maine.edu email. You can view our schedule and make appointments on the website.

DEPARTMENTAL POLICY ON COMMUNICATION SKILLS

A student's ability to express himself/herself in written or oral form is not the concern of the Department of English or Speech alone, but of every member of the Civil Engineering Department's faculty. Inadequate competence in this respect is to be regarded as a reason for lowering a student's grade for any course, laboratory report, class project, etc. in the program.

The Department recognizes the need to develop competence in communication skills for its potential graduates. This point has been further emphasized by feedback from alumni. Thus, the Department is committed to the philosophy that the development of these skills among its graduates will be assured through both formal course work and continued usage throughout the curriculum. Specific details on how these goals will be achieved are as follows:

1. Each civil engineering student must show satisfactory proficiency in the use of written English. The requirement is normally met by taking English 101, totaling 3 credit hours. Students must be tested by the English Department to assess their skills in written composition before registration into English composition courses.
2. ENG 320 is a required technical writing course that will further develop your writing skills and help prepare you for CIE 412, the in-major writing-intensive course.
3. In order to further develop as well as maintain their writing skills, each civil engineering student is expected to demonstrate such competence in all written laboratory reports, class projects, etc., and failure to do so will be regarded as a reason for lowering the student's grade. In addition, other writing assignments, to include graded class journals in some instances, will be made throughout the curriculum in order to ensure that the student frequently has the opportunity to organize and present his/her thoughts in a logical and effective manner. In designing such assignments, students are provided with a "real engineering world" context for each task by requiring them to explain basic engineering concepts in their own words, which in turn obliges students to clarify these concepts for themselves.
4. Each civil engineering student must successfully complete CMJ 103 for credit.
5. There is a concentrated departmental effort to further develop these oral communication skills in civil engineering students by requiring oral presentations of the senior capstone design projects. Less formal speaking opportunities include encouraged class discussions, oral presentations of class (design) projects, and oral examinations.

MATH COURSE ADVISING

Course Placement

Prior to entering their first math course (typically MAT 126) at the University of Maine, engineering students may be required to take a math placement examination, which will allow them to register for math course for which they are prepared.

Tutoring

If you have difficulties while actually enrolled in a math course, the following resources are available:

1. Your mathematics instructor is a primary source for help. You should determine your instructor's office hours and regularly consult that individual for help.

2. The University of Maine Mathematics Department operates a Math Lab and you are encouraged to **take full advantage of this facility.** Many students wait too long and miss out on some excellent help that can make a real difference early in the semester. The location and scheduled hours are (note scheduled hours and location subject to change each semester):

Tutor Program Staff are working remotely. Please email tutorprogram@maine.edu with any questions.

Click to join the **ONLINE MATH LAB** during hours of operation. As you join, in a separate browser tab, you can open the **Math Lab's collaborative virtual whiteboard (on Limnu)**.

3. The Student Accessibility Services holds group tutoring sessions. Typically, you will be placed in a group with students from your same course and section and matched with an appropriate tutor. We **highly recommend** you sign up for the tutor program within the first couple of weeks of each semester. The tutoring program often has a waiting list and is absolutely closed to new people after the first eight weeks of the semester. Consult the Student Accessibility Services at the below address to sign up for tutoring sessions.

Student Accessibility Services
University of Maine
5725 East Annex – Room 121
Orono, ME 04469-5757
(207) 581-2319
Um.sas@maine.edu

COLLEGE SUCCESS PROGRAMS

The Tutor Program, one unit of the University of Maine's College Success Programs, provides tutoring for UMaine students who need academic assistance in 100 and 200 level, non-web based courses. Small group and drop-in by appointment tutoring is available at no additional cost to students.

A staff of peer tutors is hired to work with small groups of students two times per week throughout the semester. Tutoring sessions are held Monday through Friday (during the day or evening) and are held in a classroom on campus. Tutor groups consist of students who are in the same course and have the same instructor. Students learn how to conceptualize course material, sharpen reasoning and questioning skills, and utilize available resources to become stronger, interdependent learners. Sessions are process-oriented, learner-centered, and require the active involvement of each student.

Drop-in by appointment tutoring is held in the Tutor Program classroom in Fogler Library. Students may utilize drop-in tutoring for up to one hour per course per week.

The Counselor/Coordinator of **Student Accessibility Services** facilitates the education of students with physical or learning disabilities by providing a point of coordination for any special services they may need while attending the University of Maine.

Some of the services provided or coordinated for disabled students are advising, special orientation to campus, readers, recorders, tutors as needed, the ordering of taped texts, classroom relocation, priority registration, mediation and advocacy, classroom accommodations, as well as personal, education, and vocational counseling. Students believed to be learning disabled without documentation can be screened through this office and referred for assessment.

The Counselor/Coordinator of Student Accessibility Services has an office in 121 East Annex and will be happy to supply further information and answer questions. Students are encouraged to contact the Counselor/Coordinator of Student Accessibility Services, University of Maine, 121 East Annex, Orono, ME, 04469. Phone (207) 581-2319. um.sas@maine.edu and the College Success Programs, 125 East Annex, Orono, ME 04469. Phone (207) 581-2320. Um.sss@maine.edu.

RAYMOND H. FOGLER LIBRARY

The campus library offers a wide variety of both general services as well as research specific services which are often referred to as "Reference Services".

General Services Overview

- Within the library you will find resources like books, journals, movies and music which you can find in the library's catalog: http://ursus.maine.edu/.
- We also offer group study rooms, a computer cluster including over 50 computers, 3 printer/scanners (including a color printer) and multiple copy machines located throughout the library.
- If you have general questions about the library please call 207-581-1661 or email us via https://library.umaine.edu/contacts/
- Reference Services Overview
- Research Assistance
- For whatever question you have, there is always someone to help. You can get access to a librarian either:
  - In person (At the Reference Desk, 1st Floor of the Library)

- By appointment (Send an email to the Engineering Reference Librarian at heather.perrone@maine.edu)
- Or via Chat, Text or Email (For details visit https://library.umaine.edu/ask-a-librarian/)
- Tutorials
- The library also offers YouTube Video Tutorials on how to use the library. Visit http://libguides.library.umaine.edu/tutorials and click on Reference Tutorials.
- Online Research Guides
- These research guides include one(s) specific to Civil and Environmental Engineering as well as general guides such as how to cite a work, or how to conduct research, or how to design a conference poster. For a list of all the guides visit (http://libguides.library.umaine.edu/)

COMPUTERS AND COMPUTING

MAINE.EDU EMAIL

As a UMaine student, you have been assigned a maine.edu email address. The format is typically firstname.lastname.maine.edu. ***It is essential that you check this email address often, and ideally use it as your primary address.*** It is a very important method of communication that will be used extensively by the University, the College of Engineering, and the Department of Civil and Environmental Engineering. Professors will contact you with information about your classes using this email address, your faculty advisor will contact you using this email address, internship and coop opportunities will be sent to you using this email address, and myriad other important items will be sent to this email address.

COMPUTING FACILITIES AND LAPTOP COMPUTER REQUIREMENT

There are public computer clusters in the Fogler Library. While these clusters may be useful for occasional use or printing documents, we require that all of our incoming students arrive with their own laptop computer. The laptop is necessary for use in several required Civil Engineering laboratory courses. A satisfactory system meeting most of your needs during your four-year stay in college is easily obtainable for $1,000 to $1,500. The Department of Civil and Environmental Engineering recommends a laptop computer running Windows 10 or Mac OSX. Specific recommendations for a computer that will ensure you are fully productive in the required second-semester course CIE 101 Civil Engineering Guidelines on graphics requirements may be found at https://knowledge.autodesk.com/support/civil-3d/troubleshooting/caas/sfdcarticles/sfdcarticles/System-requirements-for-Autodesk-Civil-3D-2019.html.

Microsoft Office is available to UMaine students free of charge, although other office productivity suites are also acceptable. More specific software will be introduced in courses throughout the curriculum, and as versions change frequently and free student versions are used in courses whenever possible, there is no reason to purchase these packages ahead of time. In general, while you will not need a particularly high-powered computer, we recommend that you do buy a high-quality computer with sufficient memory and storage so that you can continue to comfortably use the same computer during your entire undergraduate career. **If you choose a Mac computer, be aware that you will need to be able to run some Windows-only software. This may require**

installing a Windows operating system.

Academic discounts are available at the Computer Connection located in the University Bookstore at the Memorial Union. For software, the discounts are significant, so we recommend you always check the Computer Connection before you purchase any software.

STUDENT ACTIVITIES

STUDENT CHAPTERS OF ASCE, AGC and EWB

Many civil and environmental engineering students join the University of Maine Student Chapter of the American Society of Civil Engineers (ASCE), the Associated General Contractors (AGC), or Engineers without Borders (EWB). The ASCE Chapter is oriented towards all branches of civil engineering, while the AGC Chapter focuses on construction. Both groups carry out service projects, bring in speakers of interest to students, arrange field trips, and hold social functions. EWB works primarily on environmental- or water-resources-related projects in developing nations. New students are encouraged to join and become involved in activities, as the organizations provide many educational and recreational opportunities. Both are good organizations for meeting other people with the same academic and career goals as yourself and gaining from their insights. Notices of meetings are regularly posted in Boardman Hall. The Chapters also have mailboxes in 102 Boardman Hall. The faculty advisor for ASCE is Professor Luis Zambrano Cruzatty (581-1277). The advisor for AGC is Professor Phil Dunn (581-2336). The advisor for EWB is Professor Jean MacRae (581-2137). There will be organizational meetings for each of the Chapters in early September. Please keep an eye out for notice of place and time. For more information, please visit https://civil.umaine.edu/undergraduate/student-activities/.

CHI EPSILON/CIVIL ENGINEERING HONOR SOCIETY

In 1980 the University of Maine Civil and Environmental Engineering Department became the ninety-third National Chapter of Chi Epsilon. Membership in Chi Epsilon is based upon scholastic performance with the top one third of the senior class qualifying and juniors who are in the top quarter of their class and also have a GPA of 3.0 or better. The faculty advisor is Xenia Rofes (581-2266). For more information, see https://civil.umaine.edu/undergraduate/student-activities/.

CIVIL & ENVIRONMENTAL ENGINEERING DEPARTMENTAL SCHOLARSHIPS

To apply for scholarships, go to the following link:

https://umaine.scholarshipuniverse.com/school/dashboard

Scholarships administered by the CIE Department

Elizabeth M. and Allan F. McAlary
Bancroft and Martin
Ralph G. Knowlton
Weston S. Evans

Jacob W. Jr. & Martha Jane Bishop
William R. Gorrill
Sheldon D. Smith
H. Walter Leavitt
Blackwell Family
Robert V. Cullinan
Eric W. Cobb
George K. Wadlin II Memorial
Maine Section ASCE
ASCE Student Chapter Recognition
Lucius Barrows (MBTA)
American Public Works
Ray M. Boynton
Winston C. Robbins '32
George W. & Abbie M. Greenwood
Carl Whitcomb Meinecke
MBTA/ASCE Transportation Conference
Frank Sleeper Sawyer ’10 Memorial
J. J. Nissen
Edward B. Morrison PaCEsetter
Russell S.Bodwell PaCEsetter
Malcolm D. Hardy PaCEsetter
Margaret Chase Morrill ’43
Arbour Fox PaCEsetter
Jeanette and Paul Praderio ’49
Michael and Jana Cote
John D. and Regina M. Buckley PaCEsetter
Susan Bodwell Willis
Joanne Bodwell Ferreira
William R. Bodwell
Herbert E. Sargent Construction Management
William J. McConnell ’92 and Kelley Simpson McConnell PaCEsetter
PC Construction Company
Matthew and Esther McNeary
Calen B. ’85 and Sarah Emily Colby
William J. Hannigan III Memorial
William L. Nickels, Jr. PaCEsetter
Gorrill Palmer
Kiewit
PaCEsetter Endowed
Humphrey PaCEsetter
Christine Born ’82 and William C. Johnson PaCEsetter

MINORS AND DUAL MAJORS

Common minors are described below. In all cases, the department or unit issuing the minor (***not*** the Civil Engineering Department) specifies the minor requirements, which do change over time.

Do not assume that the information below is 100% accurate, and be sure to verify the minor requirements using the UMaine catalog and/or with the unit issuing the minor.

MINOR IN INNOVATION ENGINEERING

The Minor in Innovation Engineering teaches students from any major to create, communicate, and commercialize or otherwise realize meaningfully unique ideas in any field. The Minor in Innovation Engineering is a university-wide program; courses in Innovation Engineering have been developed by faculty in the colleges of Liberal Arts & Sciences, Engineering, Business Public Policy and Health, Education, Natural Sciences Forestry and Agriculture, and the Division of Lifelong Learning

Objectives of the Minor in Innovation Engineering: to give students the tools and confidence to create their own opportunities, and to realize a prosperous and sustaining future within or outside organizations, businesses, or institutions.

Outcomes of the Minor in Innovation Engineering: students will be able to lead change within their education, their careers, their affiliations, their communities, and their personal lives.

The Minor in Innovation Engineering consists of a minimum 18 credit hours in INV courses, including:

- INV 121, INV 282, INV 405
- 7 credits of 400-level INV courses or cross-listed course.

Possible pathways for 7 credit hours to complete Innovation Minor:

INV 471 Special Topics in Innovation (3-4 cr.) or capstone in a major academic department with innovation skill requirements. This can be easily adapted to any capstone project.
INV 480 Internship in Innovation (1-6 cr.) Innovation internship or this can be an internship in Major academic department and easily adapted to include innovation skills.
INV 490 Independent Study in Innovation (3 cr.) Innovation related project or it could be adapted to experiential learning opportunities with inclusion of Innovation skills.

Students that complete INV 121, INV 282 and INV 405 will receive level 1-3 and micro-credential in Innovation.

GPA requirements to earn minor: Minimum GPA of 2.9 in courses that count toward the minor.

Minimum Grade requirements for courses to count toward minor: C-

Contact information: uminnovation@maine.edu

CONSTRUCTION ENGINEERING TECHNOLOGY MINOR: (18 credit hours)

Contact information: Philip Dunn, Philip.dunnjr@maine.edu, 581-2326, 132 Boardman Hall.

A minor in Construction Engineering Technology requires at least 18 credit hours in construction management program courses. The courses must include three credits of estimating and planning and three credits in planning and scheduling. The remaining courses must be selected from construction management (CET) courses required in the Construction Engineering Technology curriculum. Approval of a course of study by a Construction Engineering Technology faculty advisor is required.

Core courses: 6 Credits
CET 228 - Introduction to Construction Estimating and Planning Credits: 3
CET 462 - Construction Planning and Scheduling Credits: 3

Examples of Optional Courses (minimum of 12 credits)
CET 101 - Plane Surveying Credits: 3 or
SVT 102 – Surveying Principles for Civil Engineers Credits: 3
CET 202 - Construction Surveying Credits: 3
CET 224 – Construction Safety Credits: 3
CET 356 - Construction Project Administration Credits: 3
CET 412 – Sustainable Population and Environmental Design and Construction Credits: 3
CET 425 – Virtual Design and Construction Credits:3
CET 426 – Heavy Construction QA Credits: 3
CIE 110 – Materials Credits: 3
CIE 111 – Materials Laboratory Credits: 1

ENGINEERING ENTREPRENEURIAL MINOR: (18 credit hours)

Minimum number of credits required to earn minor: 18
GPA requirements to earn minor: 2.0
Minimum Grade requirements for courses to count toward minor: No more than one grade less than a C-
Contact Information: School of Engineering Technology, 119 Boardman, 207-581-2340

The Engineering Entrepreneurial Minor provides engineering students with a "big-picture" perspective on business and how to approach non-technical issues in today's work environments. Initially requested by several key industry advocates, this minor shows engineering students how their skills may be best utilized in a business situation. With a focus on such coursework as project management, business law, economics, and small business management, students are provided with a unique business perspective that makes them highly valuable in today's workforce.

Number	Course	Credits
ACC 201	Principles of Financial Accounting	3
ECO 120 or	Principles of Microeconomics	3
ECO 121	Principles of Macroeconomics	
EET 486	Project Management (see footnote 2)	3
EET 484	Engineering Economics (see footnote 3)	3
MGT 220	The Legal Environment of Business (see footnote 1)	3
SVT 475	Small Business Management	3

[1]SVT 451 – Survey Business Law Credits: 3 has been approved by Maine School of Business to substitute for MGT 220
[2]Students may substitute CET 462 - Construction Planning and Scheduling Credits: 3 or CIE 413 - Project Management Credits: 2 (plus one credit), for this course
[3]Students may substitute CIE 412 - Engineering Decisions Credits:3

SURVEYING ENGINEERING TECHNOLOGY MINOR

The objective of the minor in Surveying Engineering Technology is to provide majors in a related discipline with the necessary knowledge for licensure as a land surveyor in Maine. As an example, an engineer could perform design, boundary survey, and construction survey in a development. A forester could survey a wood lot's boundary lines as part of a forestry function. A minor in Surveying Engineering Technology requires at least 18 credit hours in surveying program courses. The courses must include three credits of plane/basic surveying, three credits in advanced or construction surveying, and three credits in boundary law. The remaining courses must come from surveying, engineering, engineering technology, technical, legal, or ethical courses approved as program electives in the Surveying Engineering Technology curriculum. Approval of a Surveying Engineering Technology minor course of study by a surveying engineering technology faculty is required.

Total 18 Credits

A 2.0 average in all minor courses is required to receive the minor in SVT with no more than one grade less than C-

Contact Information: Ray Hintz, Coordinator, Surveying Engineering Technology, 316 Boardman Hall, ray.hintz@maine.edu

Core Courses: 9 credits

- SVT 101 - Basic Surveying Field and Office Processes **Credits:** 3
- or
- CET 101 - Plane Surveying **Credits:** 3
- (See Footnote 1)
- SVT 202 - Route & Site Surveying **Credits:** 3
- or
- CET 202 - Construction Layout **Credits:** 3
- (See Footnote 2)
- SVT 221 - Boundary Law **Credits:** 3
-

[1]SFR 208 may be substituted with permission of advisor
[2]CET 202 is highly recommended, but SVT 341 may be substituted
Electives: 9 credits

- CET 332 - Civil Infrastructure **Credits:** 3
- SFR 400 - Applied Geographic Information Systems **Credits:** 4

- Any SVT Course (excluding SVT 100)

MINOR IN BUSINESS ADMINISTRATION: (27 credit hours)

GPA requirements to earn minor: Must earn a minimum overall GPA of 2.0 in the required Business and Economics courses.
Minimum Grade requirements for courses to count toward minor: Must earn a minimum of a C- in all required courses for the minor.
Contact Information: Patti Miles, Associate Dean, 211 DP Corbett, (2070 581-1968

A 2.0 cumulative GPA is required at the time the student declares a business minor.
A business minor may be declared, at the earliest, in the semester of a student's enrollment.
Must earn at least 50% of the Business and Economics credit hours at UMaine
All Business classes must be taken for credit (no pass/fail permitted)

Complete the following Required Courses:

ACC 201 - Principles of Financial Accounting **Credits:** 3
FIN 350 - Business Finance **Credits:** 3
ECO 120 - Principles of Microeconomics **Credits:** 3
ECO 121 - Principles of Macroeconomics **Credits:** 3
MAT 115 - Applied Mathematics for Business and Economics **Credits:** 3
or
MAT 116 - Introduction to Calculus **Credits:** 3
or
MAT 126 - Calculus I **Credits:** 4
MGT 101 - Introduction to Business **Credits:** 3
MGT 325 - Principles of Management and Organization **Credits:** 3
MKT 270 - Introduction to Marketing **Credits:** 3
PSY 100 - General Psychology **Credits:** 3

Students wishing to pursue the MBA

Students applying for admission to the MBA program in their fifth year should take:
ACC 201 - Principles of Financial Accounting **Credits:** 3
ACC 202 - Principles of Managerial Accounting **Credits:** 3
ECO 120 - Principles of Microeconomics **Credits:** 3
ECO 121 - Principles of Macroeconomics **Credits:** 3

In addition, the student should take the GMAT (Graduate Management Admissions Test) during the senior year

MINOR IN ECONOMICS: (18 credits)

Minimum number of credits required to earn minor: 18

GPA requirements to earn minor: 2.0

Minimum Grade requirements for courses to count toward minor: None.
Contact Information: Shelly Rollins, srollins@maine.edu School of Economics, 206 Winslow Hall, (207) 581-3150.

Students must obtain a minimum 2.0 grade point average in ECO courses taken pursuant to the requirements of the minor. Also, at least 9 of the required 18 credits must be taken at UMaine.

Required Courses:

ECO 120 - Principles of Microeconomics **Credits:** 3
ECO 121 - Principles of Macroeconomics **Credits:** 3

And one of the following:

ECO 221 - Intermediate Macroeconomics **Credits:** 3
ECO 220 - Intermediate Microeconomic Theory **Credits:** 3

Economics Elective Courses

Economic courses of the student's choosing, totaling nine (9) credits, with six (6) credits at the 300 level or higher.

MINOR IN RENEWABLE ENERGY ENGINEERING: (18 credit hours)

GPA requirements to earn minor: 2.0

Minimum Grade requirements for courses to count toward minor: None.

Contact Information: David Dvorak, Coordinator, Professor of Mechanical Engineering Technology, 119 Boardman Hall

---

The Renewable Energy Engineering minor provides students an introduction to the wide-ranging issues concerning the production, distribution, consumption, and impacts of energy, with a particular focus on the design and implementation of existing and emerging technologies. This program complements numerous engineering majors and helps to prepare students for careers in this innovative field. The minor includes 18 credit hours of coursework, 9 hours of which are required core courses.

Required Core Course (9 credits)

ECO 405 - SL: Sustainable Energy Economics & Policy **Credits:** 3
ECE 498 - Selected Topics in Electrical and Computer Engineering **Credits:** 1-3
Topic: Electrical Circuits, Power and Machinery
(NOTE: Students may substitute ECE 498 with either EET 321 or ECE 427)
INT 489 - Advanced Topics in Interdisciplinary Studies **Credits:** 1-99

Topic: Introduction to Renewable Energy Engineering
(NOTE: Students may substitute INT 489 with EET 460, Renewable Energy and Electricity Production, and one of the following: MET 236, MEE 230, MET 433 or CHE 385)
Elective Courses (at least 9 credits)

CHE 498 - Special Topics in Chemical Engineering **Credits:** 1-3
Topic: Lignocellulosic Biorefinery
CIE 455 - Hydrology **Credits:** 3
ECE 427 - Electric Power Systems **Credits:** 3
or
EET 422 - Power Systems Analysis **Credits:** 4
ECE 498 - Selected Topics in Electrical and Computer Engineering **Credits:** 1-3
Topic: Photovoltaic Devices and Systems
EET 498 - Selected Topics in Electrical Engineering Technology **Credits:** 1-4
Topic: Renewable Energy and Electricity Production
MEE 433 - Solar-Thermal Engineering **Credits:** 3
MEE 480 - Wind Energy Engineering **Credits:** 3
MEE 486 - Refrigeration and Air Conditioning System Design **Credits:** 3
or
MET 391 - Heating, Ventilating and Air Conditioning **Credits:** 3
MET 475 - Fuel Cell Science and Technology **Credits:** 3
or
MEE 475 - Fuel Cell Science and Technology **Credits:** 3
MEE 484 - Power Plant Design and Engineering **Credits:** 3
Other courses with permission

5 YEAR BSCE/MBA

The UMaine Business School has developed a 5-year MBA program designed to provide students with the ability to complete an undergraduate degree plus an MBA in five years. For details, you are referred to http://umaine.edu/business/mba/graduate-programs/5-year-mba/, where you will find the declaration of intent form, details of the curriculum, and instructions for enrolling in the program. It is important to get started early.

The program requires the following classes to be taken during completion of a BS degree in Civil and Environmental Engineering: ECO 120, ECO 121, AAC 201, AAC 202, FIN 350, BUA 370, MGT 325, and a 500-level MBA course. ECO 120 and 121 will count toward your CIE degree as HVSC electives, and your required statistics course (STS 332) will satisfy the statistics requirement of the MBA program. Ultimately, you will need to take six classes beyond what is required for your BS in Civil and Environmental Engineering to prepare for the fifth year in the Business School.

EXAMINATIONS TO BECOME LICENSED AS AN ENGINEER

State Board of Registration for Professional Engineers
Old Federal Building
295 Water Street, Suite 207
Augusta, ME 04333
www.**maine**.gov/**professionalengineers**

FUNDAMENTALS OF ENGINEERING (FE) EXAMINATION

The Fundamentals of Engineering (FE) Exam is a computer-based test with several opportunities throughout the year to sit for the exam. Passing the FE exam is the first step towards becoming a licensed Professional Engineer. The exam topics include the core mathematics and science and basic engineering you are taught while a student at UMaine. It is, therefore, critical that you take the FE exam while still a student and this material is fresh.

Eligibility
The Maine Engineering Board does not require examinees to submit an application or an additional fee before registering with NCEES and scheduling an exam.

Examinees will be provided one attempt per testing window and no more than three attempts in a 12-month approval period, beginning with the examinee's first attempt. Examinees who require more than three attempts or allow their 12-month approval period to expire must contact the board directly to obtain additional approvals.

Results
Exam results for the computer-based FE exams are typically available within 7–10 business days. Examinees will receive an email notification from NCEES with instructions to view their results in their My NCEES account. Results will include a link to your licensing board for additional state-specific information or instructions as appropriate.

More information is available at http://www.maine.gov/professionalengineers/ and or the licensing board in any state. For Maine, write to:

State Board of Licensure for Professional Engineers
State House Station #92
Augusta, ME 04333
Phone: 207-287-3236
Email: professional.engineers@maine.gov

A booklet explaining the engineer in training examination procedure and containing typical questions may be obtained from:

National Council of Examiners for Engineering and Surveying (NCEES)
280 Seneca Creek Road
Seneca, SC 29678
Phone: 864/654-6824 or 800-250-3196

EXAM PREPARATION

Refresher texts are widely available for taking any of the professional licensing exams. We recommend you review one or more such manuals before taking a licensing exam. However, the best source of review information is the wide range of material covered throughout your degree program in college.

After passing the FE examination and gaining four years of professional level experience, you qualify to take the second portion of the professional examination. (Exact requirements may vary from state to state.) Information on this second exam may be acquired from the same sources noted above.

PROCESS FOR PERIODIC REVIEW OF PROGRAM OUTCOMES

Feedback on the curriculum is regularly gathered from various constituencies – including our industrial advisory board, alumni, current students, and graduating seniors – via surveys, interviews and course evaluations administered by the college and the department. Individual faculty members perform independent outcome assessments for each undergraduate course they teach.

The results of the surveys, interviews, and course and outcome assessments are compiled annually by the chair and presented to the faculty. The department meets regularly to review the current program outcomes and objectives to determine if changing internal or external conditions require revision. These revisions can consist of additions, subtractions, and clarifications to the current objectives and outcomes. This process is also vital for ensuring that ABET and University-wide General Education Requirements are being met.

COMMONLY ASKED QUESTIONS BY STUDENTS

QUESTION: **In choosing the engineering design elective courses in my program of study, will I benefit my career most by trying to specialize in one specific area or by spreading the electives through several areas?**

ANSWER: The answer to this question depends upon your interests, future plans for employment and/or graduate study, and the philosophy by which you choose to approach your program of study. Basically, there is no need for you to become highly specialized at the undergraduate level. In fact, most professionals agree that specialization can only be obtained with post-baccalaureate study. Many of you may go on to graduate school and this would provide ample opportunity to focus in one area. We believe there are advantages to making sure your background is general in your undergraduate work. This is the basis for the department's offering of four concentrations that give you a range of core competency in a targeted area (environmental, structural, transportation, or water resources engineering) while requiring you to take at least one elective in three of the five areas in which electives are offered. More discussion is below.

First, what are the merits of following a general track at the undergraduate level?

1. You have a chance to see more of what each area is about before you choose to specialize.
2. Many of the projects you will see in the "real" world will require you to communicate with numerous types of specialists, and having a general background will facilitate this interaction.
3. If you go into general practice, you will encounter a variety of problems, and a broad background will be of benefit.
4. Few people follow a single-track focus throughout their careers, and change to new areas is common. A broad education will help you adapt to changing conditions.

Having made the points for a general background, let's look at the advantages of specialization. Specialization fits well under the following circumstances:

1. You have been able to clearly define you career goals, and you feel that having a sharp focus for your courses is appropriate.
2. Graduate school is not in the picture for you in either the short or long term, and the only opportunity for you to specialize will be at the undergraduate level.

The choice of general or specialized electives should be made following careful consideration of all of your options, and discussions with your advisor. Keep in mind too, that no one advocates that you take a random hodge-podge of courses. Some focus is desirable, and it should be based on rational choices.

QUESTION: **Where can I get an up-to-date transcript of all my courses and grades?**

ANSWER: Official transcripts can only be obtained from the Office of Student Records in Wingate Hall. Unofficial transcripts are available on MaineStreet. The department keeps a separate hard copy of your degree progress on our curriculum sheet. https://studentrecords.umaine.edu/home/records/transcript-requests/

QUESTION: **How do I go about getting a summer job in civil and environmental engineering and preparing a resume?**

ANSWER: Announcement for summer jobs in civil engineering and closely related fields and permanent jobs will be sent to your maine.edu email address and compiled by the UMaine Career Center. You can access the Career Center job database to search for openings. The College of Engineering also hosts a Career Fair every fall, usually in October, which 80-100 companies typically attend to recruit graduating seniors and interns. The Career Center in the Memorial Union provides materials and free workshops on how to find a summer job, resume writing, interviewing techniques, job-seeking strategies, etc.

QUESTION: **What are the benefits to be gained by going to graduate school? How do I apply?**

ANSWER: As a general rule, people with graduate degrees tend to move up faster in private

industry and in government than those without them. They tend to become leaders in the firms they are associated with and generally have more challenging and interesting careers. Further, the lifetime earnings of an engineer with a masters' degree is far greater than those with bachelors' degrees.

Most graduate programs require the graduate record exam (GRE) in order to be admitted. Information on the GRE and applications for graduate school at the University of Maine may be obtained online at the UMaine graduate school website. Applications for graduate school should be submitted before January if at all possible.

Students with a high GPA have the option of taking additional, graduate-level courses during their senior year to enable completion of a coursework-based MS with an additional year of study beyond the BS degree. A 4+1 Master and Engineering in Water and the Environment is also offered that, upon approval, allows up to 9 credit hours from the BS to be counted toward a Master of Engineering (ME) degree.

Professor Eric Landis (landis@maine.edu) is the Graduate Coordinator for the Department of Civil and Environmental Engineering. If you have any questions regarding graduate school, please feel free to contact them.

APPENDIX I

GRADUATION REQUIREMENTS

APPLYING FOR GRADUATION

In order to be considered for graduation, a student must complete an Application for Degree form during the final semester. These forms are automatically sent to most students in their senior year but are also available in the Office of Student Records. Although every effort is made to include all potential degree recipients on graduation lists, failure to file an application for degree with the Office of Student Records may result in no degree being awarded.

To graduate, you must have all the required courses of the civil and environmental engineering program on your transcript and also must have the required number of total credits. It is possible to have all course requirements fulfilled for the program but not have enough credits to graduate. This can happen when students transfer courses from other schools or have substituted a course for a required course.

Normally all courses taken in the senior year must be taken on the Orono campus. Special permission must be received to take a course elsewhere. Avoid this situation if at all possible!

Seniors in the Civil and Environmental Engineering Program are obligated to adhere to the following procedure:

IN THE FIRST WEEK OF THE SEMESTER IN WHICH YOU EXPECT TO GRADUATE:

(a) Review your degree progress in MaineStreet to verify that upon successful completion of the current semester's courses, you will have met all degree requirements. Be sure to verify all expected transfer credits, if any, are included.

(b) If you believe there is an error in your MaineStreet record, and that you will have met all degree requirements by the end of the semester, see Brenda Collamore in 105 Bordman as soon as possible. She and/or the department chair will review your record in detail, and can resolve or explain any issues.

APPENDIX II

GENERAL UNIVERSITY REQUIREMENTS

All students are required to meet general education requirements in addition to the college requirements.

The General Education Requirements cover five broad areas:

1. SCIENCE -- two courses with laboratories in basic or applied sciences. *This is met by CHY 131/133 & PHY 121.*

2. HUMAN VALUES AND SOCIAL CONTEST --18 credits that in total cover each of the five sub-categories.
   a. Western Cultural Tradition
   b. Social Context and Institutions (CMJ 103)
   c. Cultural Diversity and International Perspectives
   d. Population and the Environment
   e. Artistic and Creative Expression

3. MATHEMATICS -- at least six credits in mathematics. *This is met by MAT 126/127.*

4. DEMONSTRATED WRITING COMPETENCY -- must complete College Composition (ENG 101) with a grade of C or better and at least two writing-intensive courses, one of which must be within the academic major. *This is met by ENG 320 and CIE 412.*

5. SENIOR CAPSTONE EXPERIENCE -- All students must complete a capstone experience within their major during their senior year. The course must be one in which the student draws upon and integrates the formal components of the undergraduate experience to perform at a professional level. *This is met by CIE 411 and 413.*

APPENDIX III

NON-DISCRIMINATION NOTICE

In complying with the letter and spirit of applicable laws and in pursuing its own goals of diversity, the University of Maine System shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, national origin or citizenship status, age, disability, or veteran's status in employment, education, and all other areas of the University. The University provides reasonable accommodations to qualified individuals with disabilities upon request.

Questions and complaints about discrimination in any area of the University should be directed to the Office of Equal Opportunity, The University of Maine, Room 101, 5754 North Stevens Hall, Orono, ME 04469-5754, telephone (207) 581-1226 (voice and TDD).

Dear First Year Civil Engineering Student,

We are the UMaine Student Chapter of the American Society of Civil Engineers (ASCE) and we would like to invite you to join us for the upcoming school year! We offer many opportunities for students in Civil Engineering and it is a great way to get involved.

Who are we?

Students, just like you, using our resources to network with future employers, learn more about our future careers, and above all make friends with our classmates!

When do we meet?

Meetings are Wednesdays at noon, in 309 Boardman Hall (pizza provided). Civil Engineer professors and professionals come to talk with us about their REAL experiences in the field, what suggestions they have for us as students, and what they're looking for in US, the students, as potential employees.

What do we do?

Aside from the Wednesday meetings, we schedule CIE 1000 on Friday afternoons at Pats Pizza to socialize with classmates, get to know our professors, and to get off campus for a bit and relax. We've also hosted and participated in many events around campus, including renovating a statue, spring cleaning of Boardman Hall, food drives, and car washes. We are also are the sponsor organization for the Concrete Canoe, Sustainable Doghouse, and Steel Bridge teams!

What's coming up this year?

Along with our regularly scheduled events we're planning bowling nights, several student outreach and service events, as well as our **KICK OFF BBQ**on the mall in front of Boardman Hall scheduled in September!

How can you participate in all this?

It's easy! To become a member of ASCE, just fill out the form on the back of this letter and send it to a chapter officer. Dues are $20.00 per semester or $30.00 for the year. Please make checks payable to American Society of Civil Engineers. You can also show up to our meetings and become a member then. If you have any questions, please e-mail a chapter officer.

We hope you join ASCE!

Sincerely,

ASCE Student Chapter Officers
President: Ethan Shell - ethan.shell@maine.edu
Vice President: Kelly Nguyen - kelly.t.nguyen@maine.edu
Treasurer: Megan Twombley – megan.twombley@maine.edu
Secretary: MacKenna Homa – mackenna.homa@maine.edu
Outreach officer: Brooke Toole – brooke.toole@maine.edu

I would like to become a member of the UMaine Student Chapter ASCE!

NAME:_____

Address (PO Box or Street accepted, please include city/state/zip):

_____

_____

Telephone:_____

Preferred Email:_____

Send to:

ASCE Student Chapter
102 Boardman Hall
University of Maine Campus
Orono, ME 04469-5711

Please makes checks payable to “UMaine American Society of Civil Engineers”