## Fall 2017

TOTAL Credit Hours = 129

≥ C for prerequisites (bold-face items)

ONLY 6 cr. for Tech Electives

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<th>SPRING SEMESTER</th>
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1. Approved sci. elective
2. Transportation Engr
3. CIE Elective
4. CIE Elective
5. Engr Sci Elect
6. Engineering Decisions
EXPLANATION OF REQUIREMENTS

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 (REQUIRED: CMJ 103 satisfies the other three credit hours).

2. General education requirements mandate two writing intensive courses. CIE 225 and CIE 413 are designated as writing intensive courses within the CIE major, while ECP 411 meets the outside-the-major writing intensive course. NOTE: CIE 225 must be taken concurrently with ECP 225 and CIE 413 must be taken concurrently with ECP 413 to count as writing intensive courses.

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

6. CIE 413 must be taken in the fall semester immediately preceding CIE 411.

7. 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

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 are as follows:

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- T = transportation; E = environmental; W = water resources; S = structures; G = geotechnical
University of Maine Courses Meeting CIE Technical Elective Requirements

1Biochemistry, Microbiology & Molecular Biology
BMB 322 Biochemistry

1Biological Engineering
BLE 462 Power Transmission and Control

Biology
BIO 100 Basic Biology
BIO 200 Biology of Organisms
BIO 222 Biology: The Living Science
BIO 319 General Ecology
BIO 468 Limnology

1Chemical 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

1Civil & 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 360 Construction Estimating and Bidding
CET 412 Sustainable Population and Environmental 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

1Electrical 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

1Mechanical Engineering
MEE 230  Thermodynamics I
MEE 270  Applied Mechanics: Dynamics

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

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. Refer to advisor for approval of courses in other engineering disciplines designated as 498 or 598.
2 Refer courses (including those for the Renewable Energy Minor) not listed to advisor for approval.
Updated 27 May 2016