CIVIL ENGINEERING, BS

REQUIREMENTS

REQUIREMENTS UNIVERSITY GENERAL **EDUCATION REQUIREMENTS**

All undergraduate students at the University of Wisconsin-Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (http://guide.wisc.edu/undergraduate/ #requirementsforundergraduatestudytext) section of the Guide.

General Education

- Breadth-Humanities/Literature/Arts: 6 credits
- · Breadth-Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- Breadth-Social Studies: 3 credits
- Communication Part A & Part B *
- Ethnic Studies *
- Quantitative Reasoning Part A & Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

SUMMARY OF REQUIREMENTS

The following curriculum applies to students admitted to the civil engineering degree program.

Code Title	Credits
Introduction to Engineering	3
Mathematics and Statistics	19
Basic Science	16
Engineering Mechanics	10
Civil Engineering Mechanics	6
Civil Engineering Tools	6
Civil Engineering Breadth	21
Civil Engineering Design	10
Engineering Electives	13
Communications	8
Liberal Studies	16
Total Credits	128

INTRODUCTION TO ENGINEERING

Code	Title	Credits
INTEREGR 170	Design Practicum	3
Total Credits	3	

MATHEMATICS AND STATISTICS REQUIREMENT

Code	Title	Credits
MATH 221	Calculus and Analytic Geometry 1	5
or MATH 217	Calculus with Algebra and Trigonometry II	
MATH 222	Calculus and Analytic Geometry 2	4
MATH 234	CalculusFunctions of Several Variables	4
One of the following o	pptions:	
STAT 324	Introductory Applied Statistics for Engineers	3
or		
STAT 311 & STAT 312	Introduction to Theory and Methods of Mathematical Statistics I and Introduction to Theory and Methods of Mathematical Statistics II	
One of the following a	dvanced mathematics courses:	3
MATH 319	Techniques in Ordinary Differential Equations	
MATH 320	Linear Algebra and Differential Equations	
Total Credits		19

Total Credits

BASIC SCIENCE REQUIREMENT

Code	Title	Credits
One of the following:		5-9
CHEM 103 & CHEM 104	General Chemistry I and General Chemistry II	
CHEM 109	Advanced General Chemistry	
One of the following:		5
PHYSICS 202	General Physics	
PHYSICS 208	General Physics	
One of the following:		3
GEOSCI 100	Introductory Geology: How the Earth Works	
GEOSCI/ ENVIR ST 106	Environmental Geology	
One of the following:		3
ZOOLOGY/ BIOLOGY/ BOTANY 151	Introductory Biology	
ZOOLOGY 153	Introductory Biology	
ZOOLOGY/ BOTANY/ ENVIR ST 260	Introductory Ecology	
MICROBIO 101	General Microbiology	
Total Credits		16-20

ENGINEERING MECHANICS REQUIREMENT

Code	Title	Credits
E M A 201	Statics (with a grade of C or better)	3
E M A 202	Dynamics	3
E M A 303	Mechanics of Materials	3
EMA/ME 307	Mechanics of Materials Lab	1
Total Credits		10

Total Credits

CIVIL ENGINEERING MECHANICS REQUIREMENT

Code	Title	Credits
CIV ENGR 310	Fluid Mechanics	3
CIV ENGR/ E M A 395	Materials for Constructed Facilities	3
Total Credits		6

CIVIL ENGINEERING TOOLS REQUIREMENT

Code	Title	Credits
CIV ENGR 159	Civil Engineering Graphics (was ME 170 before Fall 2023)	2-3
or M E 231	Geometric Modeling for Design and Ma	nufacturing
CIV ENGR/G L E 291	l Problem Solving Using Computer Tools	4
Total Credits		6-7

CIVIL ENGINEERING BREADTH REQUIREMENT

Code	Title	Credits
CIV ENGR 311	Hydroscience	3
CIV ENGR 320	Environmental Engineering	3
CIV ENGR/ G L E 330	Soil Mechanics	3
CIV ENGR 340	Structural Analysis I	3
CIV ENGR 370	Transportation Engineering	3
CIV ENGR 494	Civil and Environmental Engineering Decision Making	3
CIV ENGR 498	Construction Project Management	3
Total Credits		21

CIVIL ENGINEERING DESIGN REQUIREMENT

Code	Title	Credits
CIV ENGR 578	Senior Capstone Design	4
Every student mus the following CEE of the two classes CIV ENGR 578 Ser Water Resources	it take at least one class in at least two of disciplines, for a total of 6 credits. One MUST be completed BEFORE taking nior Capstone Design.	6

	CIV ENGR 414	Hydrologic Design
E	nvironmental	
	CIV ENGR 426	Design of Wastewater Treatment Plants
	CIV ENGR 427	Solid and Hazardous Wastes Engineering
	CIV ENGR 428	Water Treatment Plant Design

Tota	al Credits		10
Note abovengi will of belo	e: If a student take ve list, two of thos ineering design re- count towards the ow).	es three or more courses from the e courses will count toward this civil quirement and the other classes electives requirement (see section	
C	CIV ENGR 576	Advanced Pavement Design	
C	CIV ENGR 574	Traffic Control	
Tran C	NV ENGR 573	Geometric Design of Transport Facilities	
C G	CIV ENGR/ GLE 532	Foundations	
Ċ	CIVENGR/ GLE 530	Seepage and Slopes	
Geo	ological		
C	CIV ENGR 447	Concrete Structures I	
C	CIV ENGR 445	Steel Structures I	
Stru	ictural		
C	CIV ENGR 522	Hazardous Waste Management	

ENGINEERING ELECTIVES REQUIREMENT

- 1. Students must take at least 3 credits of coursework from an ABETaccredited degree-granting program outside of the Bachelor of Science in Civil Engineering program. INTEREGR and E P D courses do not qualify for meeting this requirement; any courses cross-listed with Civil Engineering (CIV ENGR) do not qualify for meeting this requirement.
- 2. Students must take at least 3 credits of CEE coursework in addition to the civil engineering design requirement. Note: Students in the Construction Engineering Management or Environmental Engineering option programs must select from a set of CIV ENGR courses approved for those options. $^{1\!,\!2,\!3}$
- 3. Students must take at least 7 credits of coursework that meets at least one of the following 1,2,3 :
 - a. Any course offered by an engineering department, including but not limited to CIV ENGR.
 - b. Any Intermediate or Advanced level course with a breadth designation of Biological Sciences, Physical Sciences and/or Natural Sciences. These courses cannot also carry a breadth designation of Social Sciences, Humanities or Literature.
 - c. Any of the following business courses: INTEREGR 303 Applied Leadership Competencies in Engineering, ACCT IS 300 Accounting Principles, FINANCE/ECON 300 Introduction to Finance, GEN BUS 301 Business Law, M H R 300 Managing Organizations, REAL EST/A A E/ECON/URB R PL 306 The Real Estate Process

Total Credits: 13

- Up to three credits of CIV ENGR1 Cooperative Education Program may be used towards Item 2 or 3.
- ² Up to six credits of research work (CIV ENGR 299 Independent Study, CIV ENGR 489 Honors in Research, and/or CIV ENGR 699 Independent Study) may be used towards Item 2 or 3.
- ³ CIV ENGR 150 Introduction to Architectural Theory, CIV ENGR 151 Architectural Making I, CIV ENGR 152 Architectural Making II,

CIV ENGR 155 Architectural Thinking, and CIV ENGR 250 Architectural Visualization cannot be used in Items 2 or 3 above.

COMMUNICATIONS

Code	Title	Credits
Communications A (c	hoose one)	3
ENGL 100	Introduction to College Composition	
LSC 100	Science and Storytelling	
COM ARTS 100	Introduction to Speech Composition	
ESL 118	Academic Writing II	
Speech-Related Cour	rse (choose one)	2
E P D 275	Technical Presentations ¹	
COM ARTS 105	Public Speaking	
COM ARTS 181	Elements of Speech-Honors Course	
COM ARTS 262	Theory and Practice of	
	Argumentation and Debate	
COM ARTS 266	Theory and Practice of Group	
	Discussion	
Writing-Related Cour	ses (choose one)	3
INTEREGR 397	Engineering Communication	
Total Credits		8

¹ E P D 275 Technical Presentations and INTEREGR 397 Engineering Communication strongly recommended to satisfy these requirements.

LIBERAL STUDIES REQUIREMENTS

Code	Title	Credits
College of Engineering Liberal Studies Requirements		
complete requirem undergraduate/en engineering/requir	nents/ (http://guide.wisc.edu/ gineering/civil-environmental- rementstext/) ¹	16
Requirements sp	ecific to Civil Engineering:	
An economics cour list:	rse must be selected from the following	
ECON 101	Principles of Microeconomics	
ECON 102	Principles of Macroeconomics	
ECON 111	Principles of Economics- Accelerated Treatment	
A minimum of three course that meets literature, and/or s breadth designatio Sciences, or Physic requirement.	e credits of environmental studies the breadth designations of humanities, ocial science. Courses that also carry ns of Biological Sciences, Natural cal Sciences will not count towards this	

Total Credits

¹ All liberal studies credits must be identified with the letter H, S, L, or Z. Language courses are acceptable without the letter and are considered humanities. An economics elective and an environmental studies elective are required.

Note: See a CEE advisor for additional information.

HONORS IN RESEARCH

Students in civil engineering that have completed at least two semesters on the Madison campus with a cumulative GPA of **at least** 3.5 may apply

to participate in the Honors in Research program. Students may register for 1 to 3 credits per semester. A grade of P (Progress) will be assigned each semester until the student completes the honors in research program or drops out of the program, at which time a final grade is assigned (based on research progress and the written thesis, if completed). This becomes the grade for all credits taken in CIV ENGR 489 Honors in Research.

A senior thesis worth 3 credits of CIV ENGR 489 is required. The senior thesis is a written document reporting on a substantial piece of work that is prepared in the style of a graduate thesis. The thesis advisor determines the grade which the student receives for the thesis. A bound copy of the thesis must be submitted to the Department of Civil and Environmental Engineering office to complete the program.

The designation "Honors in Research" will be recorded on the student's transcript if the following criteria are met:

- 1. Satisfaction of requirements for an undergraduate degree in Civil Engineering.
- 2. A cumulative grade-point average of at least 3.3.
- 3. Completion of a total of at least 8 credits in CIV ENGR 489.
- 4. Completion of a senior honors thesis with a final grade of B or better.

Students interested in the Honors in Research program should contact their advisor or the BSCE chair for more information. Applications to the program are to be submitted to the BSCE chair with a supporting letter from the student's academic and thesis advisors. Decisions regarding acceptance are made by the BSCE chair.

NAMED OPTIONS

Note: Beginning Fall 2023, admission to the Environmental Engineering named option for the Civil Engineering, BS is suspended. Students interested in Environmental Engineering and planning to graduate in 2023-24 or later may apply for the Environmental Engineering, BS (http://guide.wisc.edu/ undergraduate/engineering/civil-environmental-engineering/ environmental-engineering-bs/) program. Please consult your academic advisor.

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- · CIVIL ENGINEERING: CONSTRUCTION ENGINEERING AND MANAGEMENT (HTTP://GUIDE.WISC.EDU/ UNDERGRADUATE/ENGINEERING/CIVIL-ENVIRONMENTAL-ENGINEERING/CIVIL-ENGINEERING-BS/CIVIL-ENGINEERING-CONSTRUCTION-ENGINEERING-MANAGEMENT-BS/)
- CIVIL ENGINEERING: ENVIRONMENTAL ENGINEERING (HTTP://GUIDE.WISC.EDU/ UNDERGRADUATE/ENGINEERING/CIVIL-ENVIRONMENTAL-ENGINEERING/CIVIL-ENGINEERING-BS/CIVIL-ENGINEERING-ENVIRONMENTAL-ENGINEERING-BS/)

UNIVERSITY DEGREE REQUIREMENTS

Total Degree	To receive a bachelor's degree from UW–Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.
Residency	Degree candidates are required to earn a minimum of 30 credits in residence at UW–Madison. "In residence" means on the UW–Madison campus with an undergraduate degree classification. "In residence" credit also includes UW–Madison courses offered in distance or online formats and credits earned in UW–Madison Study Abroad/Study Away programs.
Quality of Work	Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.