

MAJOR: CIVIL ENGINEERING, B.S. (DRAFT program information – Program begins Fall 2008)

SWENSON COLLEGE OF SCIENCE AND ENGINEERING

The civil engineering major integrates topics from chemistry, physics, advanced mathematics and statistics, geology and core engineering science to prepare graduates to work professionally in both public and private organizations that design, develop and construct structures; design, build and maintain highway systems; and design, operate, and control water resource systems. Graduates will be rooted in safe and efficient design skills and will show respect for and strive to improve the environment wherever they work. The program emphasizes four of the core tracks in civil engineering: (1) transportation systems, (2) water resource engineering, (3) structural engineering, and (4) geotechnical engineering. Civil engineering graduates will be qualified for employment in a wide variety of organizations, both public and private, including design, material testing and manufacture, construction, transportation, natural resources development, and energy.

TYPICAL PROGRAM OF STUDY			
FIRST YEAR			
FALL SEMESTER		SPRING SEMESTER	
CE 1025 Intro to Civil Engineering	1 cr	CHEM 1152 General Chemistry II	5 cr
CHEM 1151 General Chemistry I	5 cr	Computer science course ¹	3-5 cr
WRIT 1120 College Writing	3 cr	MATH 1297 Calculus II	5 cr
MATH 1296 Calculus I [^]	5 cr	PHYS 2011 General Physics I	<u>4 cr</u>
Liberal education course	<u>3 cr</u>		Total: 17-19cr
	Total: 17 cr		
SECOND YEAR			
ENGR 2015 Statics	3 cr	CE 2026 Surveying & Geometrics	3 cr
MATH 3280 Differential Equations w/Linear Algebra	4 cr	ENGR 2016 Mechanics of Materials	3 cr
PHYS 2012 General Physics II	4 cr	ENGR 2026 Dynamics	3 cr
STAT 3411 Engineering Statistics	3 cr	MATH 3298 Calculus III	4 cr
ECON 1022 Principles of Economics: Macro		Liberal education course	<u>3 cr</u>
or ECON 1023 Principles of Economics: Macro	<u>3 cr</u>		Total: 16 cr
	Total: 17 cr		
THIRD YEAR			
CE 3015 CADD/Computational Tools for Civil Engineers	3 cr	CE 3025 Environmental Engineering	3 cr
CE 3115 Structural Engineering	4 cr	CE 3026 Project Management	3 cr
GEOL 1110 Geology & Earth Systems	4 cr	CE 3225 Hydrology	4 cr
IE 3125 Engineering Economic Analysis	3 cr	CE 3316 Transportation Engineering	4 cr
ME 3111 Fluid Mechanics ²	<u>3 cr</u>	CE 3426 Soil Mechanics	<u>4 cr</u>
	Total: 17 cr		Total: 18 cr
FOURTH YEAR			
CE 4155 Senior Design I	2 cr	CE 4255 Senior Design II	2 cr
WRIT 31xx Advanced Writing	3 cr	CE technical elective ³	3 cr
ME 3211 Thermodynamics	3 cr	CE technical elective ³	3 cr
CE technical elective ³	3 cr	CE technical elective ³	3 cr
Liberal education course	<u>3 cr</u>	Liberal education	<u>3 cr</u>
	Total: 14 cr		Total: 14 c

[^]First math course is determined by math placement exam. This schedule presupposes placement into Math 1296.

¹ Students must choose one computer science course from liberal education category 3.

² Students may take ChE 3111 in place of ME 3111.

³ Students must choose 4 courses (12 credits) of civil engineering technical electives from the Civil Engineering Focus Groups. To complete the required focus group, students must take at least two of their four elective courses from the listed electives in the focus group. Students may complete two focus groups, if desired. See the reverse side of this planner for focus group courses.

For additional information:

Swenson College of Science and Engineering Student Affairs
140 Engineering Building
218-726-7806
jwalker@d.umn.edu

CIVIL ENGINEERING, B.S.

MAJOR COURSE REQUIREMENTS	CREDITS	PREREQUISITES	SEMESTER TO BE COMPLETED	GRADE
FIRST YEAR				
CE 1025 Introduction to Civil Engineering	1			
CHEM 1151 General Chemistry I	5	HS chemistry, HS algebra		
CHEM 1152 General Chemistry II	5	CHEM 1151		
WRIT 1120 College Writing	3			
CS programming course ¹	3-5			
MATH 1296 Calculus I [^]	5	Math placement or MATH 1250		
MATH 1297 Calculus II	5	MATH 1296 with C- or better		
PHYS 2011 General Physics I	4	MATH 1296 or 1596		
SECOND YEAR				
CE 2026 Surveying and Geometrics	3	Math 1297, Engr 2015		
ECON 1022 Principles of Economics: Macro or ECON 1023 Principles of Economics: Macro	3	15 credits or department consent 15 credits or department consent		
ENGR 2015 Statics	3	MATH 1297, PHYS 2011		
ENGR 2016 Mechanics of Materials	3	ENGR 2015, MATH 3280 (concurrent reg. OK)		
ENGR 2026 Dynamics	3	ENGR 2015, MATH 3280 (concurrent reg. OK)		
MATH 3280 Differential Equations w/Linear Algebra	4	MATH 1297 with a C- or better		
MATH 3298 Calculus III	4	MATH 1297 with a C- or better		
PHYS 2012 General Physics II	4	MATH 1297, PHYS 2012		
STAT 3411 Engineering Statistics	3	MATH 1297		
THIRD YEAR				
CE 3015 CADD/Computational Tools for Civil Eng.	3	ENGR 2026, MATH 3280, MATH 3298		
CE 3025 Environmental Engineering	3	CHEM 1152, GEOL 1110		
CE 3026 Project Management	3	3015, IE 3125, STAT 3411		
CE 3115 Structural Engineering	4	ENGR 2015, ENGR 2016, MATH 3298		
CE 3225 Hydrology	4	3015, ME 3111 or ChE 3111		
CE 3316 Transportation Engineering	4	3015, MATH 1297, STAT3411		
CE 3426 Soil Mechanics	4	3015, ENGR 2016, GEOL 1110		
GEOL 1110 Geology & Earth Systems	4			
IE 3125 Engineering Economic Analysis	3	STAT 3411 (or concurrent), BCSE, BSME or BSIE		
ME 3111 Fluid Mechanics	3	Engr 2026, BSME or BSCHE cand		
FOURTH YEAR				
CE 4155 Senior Design I	2	BSCE, 3026, 3115, 3225, 3316, 3426, WRIT 31xx		
CE 4255 Senior Design II	2	4155		
CE technical elective ³	3			
CE technical elective ³	3			
CE technical elective ³	3			
CE technical elective ³	3			
WRIT 31xx Advanced Writing	3	WRIT 1120, 60 credits		
ME 3211 Thermodynamics	3	Phys 2012, ME 3111, BSME		

[^]First math course is determined by math placement exam. This schedule presupposes placement into Math 1296.

¹ Students must choose one computer science course from liberal education category 3.

² Students may take ChE 3111 in place of ME 3111.

³ Students must choose 4 courses (12 credits) of civil engineering technical electives from the Civil Engineering Focus Groups. To complete the required focus group, students must take at least two of their four elective courses from the listed electives in the focus group. Students may complete two focus groups, if desired.

Structures Focus Group

Take 0 - 2 course(s) from the following:

- CE 4115 - Design of Steel Structures (3.0 cr)
- CE 4126 - Concrete Design (3.0 cr)

Water Resources Focus Group

Take 0 - 2 course(s) from the following:

- CE 4215 - Coastal and Marine Engineering (3.0 cr)
- CE 4226 - Ground Water Development and Management (3.0 cr)

Transportation Engineering Focus Group

Take 0 - 2 course(s) from the following:

- CE 4315 - Traffic Systems Operations and Safety (3.0 cr)
- CE 4326 - Highway Planning and Design (3.0 cr)

Geotechnical Engineering Focus Group

Take 0 - 2 course(s) from the following:

- CE 4415 - Geotechnical Design (3.0 cr)
- CE 4426 - Rock Mechanics (3.0 cr)