

Civil Engineering

Department Information

- **Department Location:**
Civil & Industrial Engineering
- **Department Phone:**
701-231-7244
- **Department Web Site:**
www.ndsu.edu/ce/
- **Degrees Offered:**
B.S.C.E.
- **Official Program Curriculum:**
bulletin.ndsu.edu/undergraduate/program-curriculum/civil-engineering/

Civil Engineering Major

The Civil Engineering curriculum is designed to give students a strong mathematical, scientific and engineering background in all of the areas of the field. At the same time it provides students with an opportunity to place further emphasis on his/her chosen areas through technical electives. The Bachelor of Science degree in Civil Engineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Twelve credits of technical electives are required. Students are required to choose three technical electives from the five major areas, while at the same time satisfying the ABET design requirement. All Civil Engineering students must take a capstone design course, CE 489 Senior Design, which is designed to bring concepts learned in different courses to culminate in a major design experience.

Students interested in structural engineering may choose courses such as finite element analysis, advanced steel design, timber design, pre-stressed concrete, foundation engineering, bridge evaluation and rehabilitation, stability of structures, and dynamics of structures.

Students interested in water resources, or environmental engineering may choose courses such as solid waste management, applied hydrology, watershed modeling, ground water and seepage, water and wastewater engineering, open channel flow, hazardous waste management, and water quality management.

Students interested in transportation engineering may choose courses such as transportation planning, airport planning and design, railway planning and design, geometric highway design, or traffic engineering and pavement design.

Students interested in geotechnical engineering may choose courses in foundation engineering, earth slopes, and geosynthetics, earthquake engineering and advanced soil mechanics.

The curriculum includes a core of social humanistic subjects to provide the student with a background essential to a proper understanding of the role of engineering in society.

Students in Civil Engineering are strongly encouraged to participate in internships to enhance their classroom education with practical experience in engineering-related positions in industry.

Students transferring into Civil Engineering from other departments or institutions are encouraged to do so no later than the beginning of the junior year if they plan to complete the degree requirements within two academic years.

All Civil Engineering students at NDSU are required to have a minimum cumulative grade-point average of 2.0 for graduation and have received a grade of 'C' or better in the following courses and all prerequisites in sequence for these courses, before enrolling in any civil engineering courses that utilize these courses as prerequisites.

| Code | Title | Credits |
|----------|--|---------|
| MATH 165 | Calculus I | 4 |
| MATH 166 | Calculus II | 4 |
| MATH 128 | Introduction to Linear Algebra | 1 |
| MATH 259 | Multivariate Calculus | 3 |
| MATH 266 | Introduction to Differential Equations | 3 |
| ME 221 | Engineering Mechanics I | 3 |
| ME 222 | Engineering Mechanics II | 3 |
| ME 223 | Mechanics of Materials | 3 |

Graduate programs leading to Master of Science and Doctor of Philosophy degrees are available in specialized fields. For more complete details, see the Graduate Bulletin (<http://bulletin.ndsu.edu/past-bulletin-archive/2018-19/graduate>) online.

Plan of Study

Please note this is a sample plan of study and not an official curriculum. Actual student schedules for each semester will vary depending on start year, education goals, applicable transfer credit, and course availability. Students are encouraged to work with their academic advisor on a regular basis to review degree progress and customize an individual plan of study.

| Freshman | | | |
|--|----------------|------------------------------|----------------|
| Fall | Credits | Spring | Credits |
| CHEM 121 | 3 | CE 111 | 2 |
| CHEM 121L | 1 | CHEM 122 | 3 |
| ENGL 110 | 4 | CHEM 122L | 1 |
| ENGL 120 | 3 | COMM 110 | 3 |
| MATH 165 | 4 | MATH 166 | 4 |
| GEN ED HUMANITIES CATEGORY "A" | 3 | ME 221 | 3 |
| | 18 | | 16 |
| Sophomore | | | |
| Fall | Credits | Spring | Credits |
| CE 204 | 4 | IME 460 | 3 |
| CE 212 | 3 | MATH 266 | 3 |
| GEOL 105 | 3 | ME 223 | 3 |
| MATH 128 (129) | 1 | PHYS 252 | 4 |
| MATH 259 (265) | 3 | GEN ED WELLNESS CATEGORY "W" | 2 |
| ME 222 | 3 | | |
| | 17 | | 15 |
| Junior | | | |
| Fall | Credits | Spring | Credits |
| CE 309 | 3 | CE 303 | 2 |
| CE 316 | 3 | CE 303L | 1 |
| ENGL 321 | 3 | CE 343 | 4 |
| ENGR 402 | 1 | CE 370 | 3 |
| ME 350 | 3 | CE 371 | 1 |
| ENGR 311 (FULFILLS GEN ED CATEGORY "A") | 3 | CE 408 | 3 |
| | | CE 418 | 4 |
| | 16 | | 18 |
| Senior | | | |
| Fall | Credits | Spring | Credits |
| CE 310 | 1 | CE 483 | 3 |
| CE 404 | 3 | CE 489 | 3 |
| CE 444 | 3 | IME 440 | 2 |
| ENGR 312 (FULFILLS GEN ED CATEGORY "B") | 3 | Technical Elective | 3 |
| GEN ED SOCIAL SCIENCES CATEGORY "B" | 3 | Technical Elective | 3 |
| Technical Elective | 2 | Technical Elective | 2 |

| | | |
|--------------------|----|----|
| Technical Elective | 2 | |
| <hr/> | | |
| | 17 | 16 |
| <hr/> | | |

Total Credits: 133