

Engineering
Associate of Science (AS) Degree | 60 credits

Campus: Itasca-Grand Rapids, Mesabi Range-Virginia

Required Engineering Courses (6 credits)

ENGR 1220 Introduction to Engineering, 3 cr. ENGR 2101 Static Mechanics, 3 cr.

Core Engineering - Restricted Elective Courses (choose 6 credits)

 ENGR 2102 Dynamics, 3 cr. ENGR 2104 Fluid Mechanics, 3 cr.
 ENGR 2103 Mech of Materials, 3 cr. ENGR 2105 Thermodynamics, 3 cr.

Required MnTC Courses (25 credits)
Goal 3 Natural Sciences (12 cr. minimum)

 CHEM 1521 General Chemistry 1, 4 cr.
 PHYS 2261 General Physics 1, 4 cr.
 PHYS 2262 General Physics 2, 4 cr.

Goal 4 Mathematics/Logical Reasoning (13 cr. minimum)

 MATH 1300 Precalculus, 5 cr.
 MATH 1311 Calculus 1, 5 cr.
 MATH 1312 Calculus 2, 4 cr.
 MATH 2313 Calculus 3, 4 cr.
 MATH 2321 Differential Equations-Linear Algebra, 4 cr.

Engineering Electives (choose an additional 17 credits)

BIOL 1561 General Biology of Cells, 4 cr.	ENGR 2103 Mech of Materials, 3 cr.
CHEM 1522 General Chemistry 2, 4 cr.	ENGR 2104 Fluid Mechanics, 3 cr.
CHEM 2311 Organic Chemistry 1, 5 cr.	ENGR 2105 Thermodynamics, 3 cr.
CSCI 1525 C++ Programming, 3 cr.	ENGR 2106 Circuits 1, 4 cr.
ENGR 1105 Careers in Engineering, var cr.	ENGR 2107 Circuits 2, 4 cr.
ENGR 1115 Digital Logic, 3 cr.	ENGR 2233 Engineering Design 3, 2 cr.
ENGR 1232 Engineering Design 2, 2 cr.	ENGR 2234 Engineering Design 4, 3 cr.
ENGR 2001 Fundamentals of Solid Modeling, 3 cr.	GEOL 1215 Physical Geology, 4 cr.
ENGR 2011 Solid Modeling 1, 1 cr.	MATH 2313 Calculus 3, 4cr.
ENGR 2012 Solid Modeling 2, 1 cr.	MATH 2321 Differential Eq-Linear Algebra, 4cr
ENGR 2013 Solid Modeling 3, 1 cr.	PHYS 2263 General Physics 3, 4 cr.
ENGR 2102 Dynamics, 3 cr.	

MnTC Electives (choose an additional 6 credits)

Choose electives from MNTC Goals 1-10, excluding MNTC Goals 3 and 4, as they are fulfilled by the required courses listed above. Courses cross-listed from Goals 1, 5, and 6 to Goals 7-10 are strongly recommended. Students must select courses in at least **six** of the ten goal areas.

Graduation Requirements

- Complete all required content area courses.
- 2.0 minimum GPA required for both the MNTC and AS degree.
- Transfer courses with grades of A-D will be included in the GPA calculation for MNTC.

Program Description

Minnesota North College features the most comprehensive two-year engineering program in the state. This nationally recognized program provides the first full two years of engineering coursework in an engaging, project-based learning environment. Students completing the program graduate with an A.S. Degree in Engineering and are prepared for a seamless transfer to their chosen university.

Program Outcomes

- Apply knowledge of mathematics, science, or engineering.
- Perform engineering analysis.
- Design, conduct, and evaluate experiments.
- Design a system, component, or process to meet a need subject to constraints.
- Work effectively in teams and learning communities.
- Understand and appreciate professional and ethical responsibilities.
- Communicate effectively and professionally in a variety of media.
- Use the techniques, technologies, skills and modern engineering tools necessary for engineering practice.
- Develop a recognition of the need for, and an ability to engage in life-long learning.

Program Coordinators

Crystal Smith

crystal.smith@minnesotanorth.edu

218-322-2408

Katy Ulseth

katherine.ulseth@minnesotanorth.edu

218-248-2505

AASC APPROVED: 12.13.21; DOC REV: 03.18.26

MISSION: Minnesota North College prepares lifelong learners and engaged citizens through inclusive, transformative experiences reflecting the character and natural environment of the region.

Minnesota North College is a member of Minnesota State and is an affirmative action, equal opportunity employer and educator. This document is available in alternate formats upon request by going to MinnesotaNorth.edu to obtain the contact information of your home campus Accessibility Services Coordinator.