

**MINNESOTA NORTH COLLEGE**  
**PROGRAM PLANNER 2022-23**  
**Associate of Science (AS) Degree**  
**Engineering**  
**60 Credits**

**Required Engineering Courses (13 credits)**

ENGR 1220	Introduction to Engineering, 3 cr.
ENGR 1232	Engineering Design 2, 2 cr.
ENGR 2101	Static Mechanics, 3 cr.
ENGR 2233	Engineering Design 3, 2 cr.
ENGR 2234	Engineering Design 4, 3 cr.

**Required MnTC Core Courses (25 credits)**

**Goal 3**

**Natural Sciences** (12 credits 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 credits 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 16 credits)**

BIOL 1561	General Biology of Cells, 4 cr.
CHEM 1522	General Chemistry 2, 4 cr.
CHEM 2311	Organic Chemistry 1, 5 cr.
CSCI 1525	C++ Programming, 3 cr.
ENGR 1115	Digital Logic, 3 cr.
ENGR 2001	Fundamentals of Solid Modeling, 3 cr.
ENGR 2011	Solid Modeling 1, 1 cr.
ENGR 2012	Solid Modeling 2, 1 cr.
ENGR 2013	Solid Modeling 3, 1 cr.
ENGR 2102	Dynamics, 3 cr.
ENGR 2103	Mech of Materials, 3 cr.
ENGR 2104	Fluid Mechanics, 3 cr.
ENGR 2105	Thermodynamics, 3 cr.
ENGR 2106	Circuits 1, 4 cr.
ENGR 2107	Circuits 2, 4 cr.
MATH 2313	Calculus 3, 4 cr.
MATH 2321	Differential Equations & Linear Algebra, 4 cr.
PHYS 2263	General Physics 3, 4 cr.

**MnTC Electives (6 credits)**

Choose electives from MnTC Goals 1-10, excluding MnTC Goals 3 and 4 as they are fulfilled by required courses listed above. Courses from Goals 1, 5, and 6 that are cross-listed in 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

### Derek Fox

[derek.fox@minnesotanorth.edu](mailto:derek.fox@minnesotanorth.edu)

218-322-2425

### Crystal Smith

[crystal.smith@minnesotanorth.edu](mailto:crystal.smith@minnesotanorth.edu)

218-322-2408



**Minnesota North College, a member of Minnesota State, is an affirmative action, equal opportunity employer and educator.**  
*This document is available in alternate formats upon request by going to [www.MinnesotaNorth.edu](http://www.MinnesotaNorth.edu) to obtain the contact information of your home campus Accessibility Services coordinator.*

**AASC Approval Date: 12-13-2021**  
**Document Updated: 07-07-2022**