

Engineering Broad Field (AS)

60 Credits

Engineers identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics in fields as diverse as computer hardware and software, assistive technology, medical technology, infrastructure, and defense systems. They produce solutions that consider public safety and welfare, as well as environmental and economic factors. They develop and conduct experiments and analyze the results. Engineers work effectively on teams and communication with a broad range of audiences. The Associate of Science in Engineering Broad Field from Normandale ensures that students have the foundation and prerequisites to complete a bachelor's degree at a transfer institution in wide range of engineering disciplines. Our students transfer to four year programs regionally and nationwide.

To complete the AS in Engineering Foundations at Normandale, students must:

1. Select the university to which you plan to transfer and select an engineering specialty offered at that university (such as Civil, Chemical, Mechanical, etc.).
2. Develop a coursework plan that includes all the requirements listed below.
3. Apply to graduate during their final semester at Normandale.

Core Courses – 47 Credits

MATH 1510	Calculus 1	5 cr
MATH 1520	Calculus 2	5 cr
MATH 2510	Calculus 3: Multivariable Calculus	5 cr
MATH 2520	Calculus 4: Differential Equations with Linear Algebra	5 cr
PHYS 1121	Physics 1 for Scientists and Engineers	5 cr
PHYS 1122	Physics 2 for Scientists and Engineers	5 cr
CHEM 1061	Principles of Chemistry 1	5 cr

Select a minimum of 4 courses and 12 credits from a single Engineering Specialty (12 Credits)

(e.g. civil, computer, electrical, general, mechanical, etc.) from the table below:

Course #1 _____

Course #2 _____

Course #3 _____

Course #4 _____

Key for Engineering Degrees:

CIV	Civil Engineering
COM	Computer Engineering
ELEC	Electrical Engineering
ENV	Environmental Engineering
GEN	General Engineering
MECH	Mechanical Engineering
MANU	Manufacturing Engineering
COMP	Composite Engineering

Key for Engineering Specialty Table:

- A See advisor/counselor to confirm course transfer to a university program
- R Required university program course

C	C	E	E	G	M	M	C	COUR	C
I	O	L	N	E	E	A	O	SE	R
V	M	E	V	N	C	N	M		
		C	*		H	U	P		
A	A	A	R	R	R	A	R	ENGR 1020 Intro to Engineering Design	4
		R	R	R	R	A	R	Computer Programming *	3
R		A	R	R	R	R	R	ENGR 2235 Statics	3
R		A	R	R	R	R	R	ENGR 2236 Dynamics	3

R				R	R	R	R	ENGR 2331 Deformable Body Mechanics	3
R	A	A	A	R	A	A		ENGR 2231 Thermodynamics	3
	R	R		R	R	R	R	ENGR 2015 Linear Circuit Analysis	4
	R	R		R	R	R	R	ENGR 2016 Steady-state Circuit Analysis	1
	R	R						ENGR 2115 Introduction to Analog & Digital Electronics	5
	R	R			A			ENGR 2301 Intro to Digital Systems Design A	2
	R	R			A			ENGR 2302 Intro to Digital Systems Design	2

								B	
A		A		A		A	A	MATH 2400 Probability & Statistics w/Calculus	4
A	A	A	R	A	A	A	R	CHEM 1062 Principles of Chemistry 2	5

*CSCI 1113 is recommended for all specialties except Computer Engineering. Consult an advisor or counselor for Computer Science courses required for baccalaureate Computer Engineering programs.

Additional Required Courses – 13 Credits

Required
 ENGC 1101 College Writing 4 cr

Complete two courses that satisfy MnTC Goals 5 and 6. (6 Credits)

One of these courses must also satisfy at least one of the following MnTC Goal areas: 7, 8, 9 or 10.

Complete elective course to reach a minimum of 60 credits selected from courses that fulfill requirements at the desired transfer institution.

Some transfer programs have specific course requirements. Electives can be additional required engineering courses (recommended) or additional general education courses. Consult with an advisor or counselor for guidance on course selection.

Other Degree Requirements

- Earn a minimum cumulative grade point average (GPA) of 2.0 for college-level coursework (courses numbered 1000 and above) completed at Normandale.
- Earn a minimum cumulative grade point average (GPA) of 2.0 in the MnTC.

- Earn a minimum of 15 college-level credits at Normandale.

Coursework in this degree program satisfies a portion of the Minnesota Transfer Curriculum (MnTC). Please see MnTC Degree Audit Report.

University Admissions and Graduation Requirements

This degree has an articulation agreement with Minnesota State University, Mankato; St. Cloud State University; Winona State University; University of Minnesota; University of Minnesota, Duluth and any System college approved to offer the Associate of Science in Engineering Broad Field degree program. These schools have agreed that:

- All MnTC courses listed above and required (R) Engineering Specialty courses below will transfer and count toward university baccalaureate degree program requirements.
- Completion of the Associate of Science in Engineering Broad Field degree does not guarantee admission to a baccalaureate degree program.
- Students must meet university admission requirements and degree program admission requirements.
- Baccalaureate engineering degree programs may have limited enrollment capacity with seats available on a competitive basis.
- Students accepted into a university must fulfill the baccalaureate program graduation requirements.