Materials Science Eng. Technology

- Bachelor of Science (B.S.)
- Program Curriculum

University of Northern Iowa

Mathematics/Science coursework — 17-20 cr.

CHEM 1110 - General Chemistry I ***&***
CHEM 1120 - General Chemistry II ***or*** — 8 cr.
CHEM 1130 - General Chemisty I & II — 5 cr.
- *course also satisfies UNIFI Elective requirement.*

MATH 1420 - Calculus I — 4 cr.
- *course also satisfies UNIFI Quantitative Reasoning requirement.*

PHYSICS 1511 - General Physics I ***or***
- *course also satisfies UNIFI Scientific Reasoning requirement.*

PHYSICS 1701 - Physics I for Science & Engineering — 4 cr.
- *course also satisfies UNIFI Scientific Reasoning requirement.*

PHYSICS 1512 - General Physics II ***or***
PHYSICS 1702 - Physics II for Science & Engineering — 4 cr.

Materials Science & Engineering Core — 43 cr.

CHEM 2320 - Chemical Analysis	3 cr.
CHEM 2330 - Chemical Analysis Laboratory	2 cr.
ENGR 1000 - Introduction to Eng. & Professional Practice	3 cr.
ENGR 2080 - Statics	2 cr.
ENGR 2089 - Engineering Seminar	1 cr.
ENGR 2180 - Strength of Materials	2 cr.
ENGR 4500 - Senior Design	3 cr.
PHIL 1560 - Science, Technology & Ethics • *course also satisfies UNIFI Responsibility requirement.*	3 cr.
TECH 1024 - Engineering Design with CAD	3 cr.
TECH 2072 - Engineering Materials	3 cr.
TECH 3127 - Applied Thermodynamics	3 cr.
TECH 3136 - Principles of Metal Casting	3 cr.
TECH 3142 - Statistical Quality Control	3 cr.
TECH 3164 - Programmable Logic Controllers	3 cr.
TECH 3192 - Non-Destructive Evaluation of Materials	3 cr.
TECH 3196 - Industrial Safety	3 cr.

Technical Writing requirement — 3 cr.

ENGLISH 3772 - Technical Writing for Eng. Technologists — 3 cr.

Technical Electives — 12 cr.

Students are required to complete 12 credits of coursework approved by their academic advisor.

UNI Foundational Inquiry — 37 cr.

Written Communications	**3 cr.**
Oral Communications	**3 cr.**
Quantitative Reasoning • *requirement completed with MATH 1420.*	**3 cr.**
Human Condition (Domestic)	**3 cr.**
Human Condition (Global)	**3 cr.**
Scientific Reasoning • *requirement completed with PHYSICS 1701.*	**4 cr.**
Human Expression	**3 cr.**
Responsibility • *requirement completed with PHIL 1560.*	**3 cr.**
UNIFI Elective • *requirement completed with CHEM 1110 or CHEM 1130.*	**3 cr.**
UNIFI Elective	**3 cr.**
UNIFI Elective	**3 cr.**
UNIFI Elective	**3 cr.**

Inspired by the University of Northern Iowa mission to engage students in high-quality and high-impact learning experiences within a challenging and supportive environment, UNI's new general education requirements are designed to ensure that students' foundational learning experiences lead to a lifetime full of potential. For more information, visit **unifi.uni.edu**.

Credit Totals

Math/Science coursework	17 cr.
Materials Science & Engineering Core	43 cr.
UNI Foundational Inquiry (UNIFI)	37 cr.
Technical Writing requirement	3 cr.
Technical Electives	12 cr.
Credits counted twice (major & UNIFI)	-13 cr.
Total	**99 cr.**
University Electives needed	21 cr.
Grand Total	**120 cr.**

Department of Applied Engineering
University of Northern Iowa
Applied Engineering Building
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Important ALEKS Test Information

The ALEKS test is a math placement test that all UNI students must complete prior to enrolling in certain math & science courses. Below are the scores required for the math & science requirements in this program:

• PHYSICS 1511: 45 • CHEM 1110: 55 • MATH 1420: 76

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University of Northern Iowa

Example course sequence for ***first-year, freshmen*** students

Fall 1		Spring 1	
CHEM 1110 - General Chemistry I^	4 cr.	UNIFI Written Communication course	3 cr.
MATH 1420 - Calculus I^	4 cr.	UNIFI Human Condition (Global) course	3 cr.
PHYSICS 1511 - General Physics I^	4 cr.	CHEM 1120 - General Chemistry II^	4 cr.
ENGR 1000 - Introduction to Engineering & Professional Practice	3 cr.	PHYSICS 1512 - General Physics II^	4 cr.
	Total: 15 cr.		*Total: 14 cr.*
Fall 2		**Spring 2**	
UNIFI Oral Communication course	3 cr.	PHIL 1560 - Science, Technology & Ethics	3 cr.
CHEM 2320 - Chemical Analysis^	3 cr.	TECH 2072 - Engineering Materials^SO	3 cr.
TECH 1024 - Engineering Design with CAD^FO	3 cr.	CHEM 2330 - Chemical Analysis Lab^	2 cr.
ENGR 2080 - Statics^	2 cr.	ENGR 2180 - Strength of Materials^	2 cr.
ENGT 2089 - Engineering Seminar^	1 cr.	Technical elective course	3 cr.
ENGLISH 3772 - Technical Writing for Engineering Technologists^	3 cr.	University elective course	3 cr.
	Total: 15 cr.		*Total: 16 cr.*
Fall 3		**Spring 3**	
UNIFI Human Condition (Domestic) course	3 cr.	UNIFI Human Expression course	3 cr.
TECH 3142 - Statistical Quality Control^	3 cr.	TECH 3127 - Applied Thermodynamics^SO	3 cr.
TECH 3196 - Industrial Safety	3 cr.	TECH 3164 - Programmable Logic Controllers	3 cr.
Technical elective course	3 cr.	TECH 3192 - Non-Destructive Evaluation of Materials^	3 cr.
University elective course	3 cr.	University elective course	3 cr.
	Total: 15 cr.		*Total: 15 cr.*
Fall 4		**Spring 4**	
UNIFI Elective course	3 cr.	UNIFI Elective course	3 cr.
TECH 3136 - Principles of Metal Casting^FO	3 cr.	ENGR 4500 - Senior Design^	3 cr.
Technical elective course	3 cr.	Technical elective course	3 cr.
University elective course	3 cr.	University elective course	3 cr.
University elective course	3 cr.	Univerisity elective course	3 cr.
	Total: 15 cr.		*Total: 15 cr.*

Example course sequence for ***transfer students with an A.A. or A.S.*** degree

Fall 1		Spring 1	
CHEM 1110 - General Chemistry I^	4 cr.	CHEM 1120 - General Chemistry II^	4 cr.
MATH 1420 - Calculus I^	4 cr.	PHYSICS 1512 - General Physics II^	4 cr.
PHYSICS 1511 - General Physics I^	4 cr.	TECH 2072 - Engineering Materials^SO	3 cr.
ENGR 1000 - Introduction to Engineering & Professional Practice	3 cr.	ENGLISH 3772 - Technical Writing for Engineering Technologists^	3 cr.
	Total: 15 cr.		*Total: 14 cr.*
Fall 2		**Spring 2**	
CHEM 2320 - Chemical Analysis^	3 cr.	CHEM 2330 - Chemical Analysis Lab^	2 cr.
ENGR 2080 - Statics^	2 cr.	ENGR 2180 - Strength of Materials^	2 cr.
ENGT 2089 - Engineering Seminar^	1 cr.	TECH 3127 - Applied Thermodynamics^SO	3 cr.
TECH 1024 - Engineering Design with CAD^FO	3 cr.	TECH 3164 - Programmable Logic Controllers	3 cr.
TECH 3142 - Statistical Quality Control^	3 cr.	TECH 3192 - Non-Destructive Evaluation of Materials^	3 cr.
Technical elective course	3 cr.	Technical elective course	3 cr.
	Total: 15 cr.		*Total: 16 cr.*
Fall 3			
PHIL 1560 - Science, Technology & Ethics	3 cr.		
TECH 3136 - Principles of Metal Casting^FO	3 cr.		
TECH 3196 - Industrial Safety	3 cr.		
ENGR 4500 - Senior Design^	3 cr.		
Technical elective course	3 cr.		
Technical elective course	3 cr.		
	Total: 18 cr.		

Legend
^ - course requires a prerequisite.
% - course requires a co-requisite.
FO - course is only offered in the fall.
SO - course is only offered in the spring.

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