Materials Science Engineering Technology B.S.

Materials Science Engineering Technology Major

The B.S. Materials Science Engineering Technology major requires a minimum of 120 total hours to graduate. This total includes UNIFI/ General Education requirements and the following specified major requirements, plus electives to complete the minimum of 120 hours.

The Materials Science Engineering Technology (MSET) major provides students with instruction and practical experience in the science and engineering of materials, with a focus on metals. Significant lab work and a senior design project allow students to build and test their technical and communication skills and ensure that graduates are prepared for the workplace.

Admission Requirements:

To be admitted to the B.S. in Materials Science and Engineering program, students must satisfy UNI's admission requirements and be prepared to take calculus. Mathematical preparation can be demonstrated with a satisfactory ALEKS score or MATH 1140 Precalculus or equivalent. ALEKS score of 61 is required for the math, chemistry and physics classes in the program.

Math and Science:		
CHEM 1110 & CHEM 1120 or CHEM 1130	General Chemistry I and General Chemistry II General Chemistry I-II	5-8
MATH 1420 or MATH 1150	Calculus I Calculus for Technology	4
PHYSICS 1511 or PHYSICS 1701	General Physics I ^ Physics I for Science and Engineering	4
PHYSICS 1512 or PHYSICS 1702	General Physics II Physics II for Science and Engineering	4
CHEM 2320	Chemical Analysis	3
CHEM 2330	Chemical Analysis Laboratory	2
Required Core:		
ENGLISH 1005	College Writing and Research	3
ENGLISH 3772/5772	Technical Writing for Engineering Technologists	3
PHIL 1560	Science, Technology, and Ethics (STE)	3
ENGR 1000	Introduction to Engineering & Professional Practice	3
ENGR 2080	Statics	2
ENGR 2089	Engineering Seminar: (Topic)	1
ENGR 2180	Strength of Materials	2
TECH 1024	Engineering Design with CAD	3
TECH 2072	Engineering Materials	3
TECH 3127	Applied Thermodynamics	3
TECH 3136	Principles of Metal Casting	3
TECH 3142	Statistical Quality Control	3
TECH 3164	Programmable Logic Controllers (PLCs)	3
TECH 3192/5192	Non-Destructive Evaluation of Materials/Scanning Electron Microscopy	3
TECH 3196	Industrial Safety	3
ENGR 4500	Senior Design @	3
Technical Electives - 12 credits of course work approved by your academic advisor.		12
Total Hours		**78-81**

^ Has prerequisite of satisfactory score on ALEKS exam or subsequent remediation.

@ENGR 4500 meets the Bachelor of Science degree undergraduate research course requirement.

Four-Year Plan

Materials Science Engineering Technology, B.S.

This is a sample plan of study with a suggested sequencing of classes for the major. University electives may be applied to earn additional academic majors, minors, or certificates. Students should regularly meet with their academic advisor to plan their specific semester schedule to include UNIFI/General Education program and/or university elective hours required.

Course	Title	Hour
Freshman		
Fall		
CHEM 1110	General Chemistry I	4
MATH 1420	Calculus I	4
PHYSICS 1701	Physics I for Science and Engineering	4
ENGR 1000	Introduction to Engineering & Professional Practice	3
	Hours	**15**
Spring		
UNIFI/General Education or University Electives		6
CHEM 1120	General Chemistry II	4
PHYSICS 1702	Physics II for Science and Engineering	4
	Hours	**14**
Sophomore		
Fall		
UNIFI/General Education or University Electives		3
CHEM 2320	Chemical Analysis	3
TECH 1024	Engineering Design with CAD	3
ENGR 2080	Statics	2
ENGR 2089	Engineering Seminar: (Topic)	1

ENGLISH 3772/5772	Technical Writing for Engineering Technologists	3
	Hours	**15**
Spring		
PHIL 1560	Science, Technology, and Ethics (STE)	3
TECH 2072	Engineering Materials	3
CHEM 2330	Chemical Analysis Laboratory	2
ENGR 2180	Strength of Materials	2
Technical Elective Course		3
UNIFI/General Education or University Electives		3
	Hours	**16**
Junior		
Fall		
UNIFI/General Education or University Electives		6
TECH 3142	Statistical Quality Control	3
TECH 3196	Industrial Safety	3
Technical Elective Course		3
	Hours	**15**
Spring		
UNIFI/General Education or University Electives		6
TECH 3127	Applied Thermodynamics	3
TECH 3164	Programmable Logic Controllers (PLCs)	3
TECH 3192/5192	Non-Destructive Evaluation of Materials/Scanning Electron Microscopy	3
	Hours	**15**
Senior		
Fall		
TECH 3136	Principles of Metal Casting	3
UNIFI/General Education or University Electives		9
Technical Elective Course		3
	Hours	**15**
Spring		
ENGR 4500	Senior Design	3
UNIFI/General Education or University Electives		9
Technical Elective Course		3
	Hours	**15**
	Total Hours	**120**

Learning Outcomes

Materials Science Engineering Technology, B.S.

Program goals:

- Provide an education in materials science & engineering consistent with the highest ABET (formerly Accreditation Board for Engineering and Technology) EAC (Engineering Accreditation Commission) accreditation standards.
- Prepare students to understand fundamental engineering principles with high-quality courses in mathematics, chemistry and physics.
- Provide rigorous courses in materials science and engineering that incorporate discussion of underlying physical and chemical principles, as well as applications relevant to current and future industries.
- Engage students in laboratory activities and project work to ensure that they obtain practical and direct experience with engineering design and practice.
- Enhance technical writing skills through detailed reports adhering to professional styles and standards.

Related Programs

- Applied Engineering M.S.
- Industrial Management B.A.