B.S. Materials Science & Engineering Degree - Enterprise Concentration

This is not an official list of degree requirements. Adjustments may be required due to curriculum changes.

First Year

Fall

Course	Prerequisite	Credit
CH 1150 University Chemistry I	CH 1151 (Corequisite)	3
CH 1151 University Chemistry Lab I	CH 1150 (Corequisite)	1
MA 1160 Calculus w/ Technology I		4
PH 1100 Physics by Inquiry I	MA 1160 (Concurrent)	1
ENG 1101 Engineering Analysis and Problem Solving	MA 1160 (Concurrent)	3
UN 1015 Composition		3
Essential Education – Activities for Well-being and Success		1
Total		**16**

Spring

Course	Prerequisite	Credit
MSE 2100 Introduction to Materials Science & Engineering	CH 1150	3
MA 2160 Calculus w/ Technology II	MA 1160	4
PH 2100 Univ Physics I-Mechanics	MA 1160, PH 1100 (Concurrent)	3
PH 1200 Physics by Inquiry II	PH 1100	1
ENG 1102 Engineering Modeling and Design	ENG 1101	3
Essential Education – Foundations in the Human World		3
Total		**17**

Second Year

Fall

Course	Prerequisite	Credit
CH 1160 University Chemistry II	CH 1161 (Corequisite)	3
CH 1161 University Chemistry Lab II	CH 1160 (Corequisite)	1
ME 2110 Statics	MA 2160 (C or better)	3
MA 2321 Linear Algebra	MA 1160, MA 3521 (Corequisite)	2
MA 3521 Differential Equations	MA 2160, MA 2321 (Corequisite)	2
PH2200 University Physics II-Elec & Magnet	PH 1200 (Concurrent), PH 2100, MA 2160	3
Essential Education OR Approved Elective	*varies*	3
Total		**17**

Spring

Course	Prerequisite	Credit
MA 3160 Multivariable Calculus	MA 2160	4
MSE 2110 Introduction to Materials Science & Engineering II	MSE2100	3
MSE 2130 Materials Characterization I	MSE 2110 (Concurrent)	4
Essential Education OR Approved Elective	*varies*	3
Essential Education OR Approved Elective	*varies*	3
Total		**17**

Third Year

Fall

Course	Prerequisite	Credit
MSE 3130 Materials Characterization II	MSE 2130	4
MSE 3100 Materials Processing I	MSE 2100	3
MSE 3160 Elec, Mag, Opt, & Thermal Properties of Materials	MSE 2100, PH 2200	3
MSE 3170 Material Selection in Mechanical Design	MSE 2110, ME 2110	3
ENT 3950 Enterprise Project		1
Enterprise Module		1
Essential Education – Activities for Well-being and Success		1
Total		**16**

Spring

Course	Prerequisite	Credit
MSE 3110 Materials Processing II	MSE 3100, MA 3521	4
MSE 3140 Design of Microstructure	MSE 2110, MSE 3100	3
MSE 3190 Materials Design	MSE 3130	3
ENT 3960 Enterprise Project		1
Enterprise Module		1
Essential Education OR Approved Elective	*varies*	3
Essential Education – Activities for Well-being and Success		1
Total		**15**

Fourth Year

Fall

Course	Prerequisite	Credit
ENT 4950 Capstone Project I	MSE 3190	2
Enterprise Module		1
MSE 4100 Mechanical Behavior of Materials	MSE 3170 (Concurrent)	3
Essential Education OR Approved Elective	*varies*	3
Essential Education OR Approved Elective	*varies*	3
Essential Education* OR Approved Elective*	*varies*	3
Total		**15**

Spring

Course	Prerequisite	Credit
ENT 4960 Capstone Project II	MSE 3190	2
MSE 4110 Introduction to Polymer Engineering	CH1160	3
Essential Education OR Approved Elective	*varies*	3
Essential Education OR Approved Elective	*varies*	3
Essential Education OR Approved Elective	*varies*	3
Total		**14**

Grand Total = 126 Credits

* **Essential Education Requirements** - Students must earn 24 total credits of *Essential Education* courses. Besides UN 1015 - Composition, students get to choose the course for each of the following Essential Education requirements from the course list:

- UN 1015 Composition (3 credits),
- Foundations in the Human World course (3 credits),
- Communication Intensive course (3 credits),
- Arts and Culture course (3 credits),
- Intercultural Competency (3000+) course (3 credits),
- SHAPE course (3 credits),
- Essential Education Experience (3000+) course (3 credits),
- Activities for Well-being and Success (3 credits)

**Students must earn a total of 13 credits of *Approved MSE Electives*. These courses may be any STEM course at or above the 2000 level.

- MSE 2000-5000, AE 2000-5000, BE 2000-5000, BL 2000-5000, CM 2000-5000, CH 2000-5000, CS 1000-5000, EE 2000-5000, EET 2000-5000, FW 2000-5000, GE 2000-5000, MFGE 2000-5000, MA 2000-5000, MAE 2000-5000, MET 2000-5000, PH 2000-5000, SAT 2000-5000

Enterprise

- All four required Enterprise project semesters (ENT 3950/3960/4950/4960) must be completed on the same Enterprise team.
- To enroll in ENT 4950 and begin Enterprise capstone project work, the project must be approved by the MSE Department.
- Three credits of *Enterprise Modules* must be completed. Modules may not be offered every semester and may have prerequisites and/or restrictions:
  - CEE 3490, ENT 2950, ENT 2960, ENT 2961 (2 CR), ENT 2962, ENT 3953, ENT 3954, ENT 3955, ENT 3956, ENT 3958, ENT 3959, ENT 3961, ENT 3962, ENT 3963, ENT 3964, ENT 3965, ENT 3966, ENT 3967, ENT 3969, ENT 3971, ENT 3972, ENT 3973, ENT 3974, ENT 3975, ENT 3976, ENT 3979, ENT 3980, ENT 3981, ENT 3982, ENT 3983, ENT 3984, ENT 3985, ENT 3987 (2 CR), ENT 4951, ENT 4954, ENT 4955, ENT 4961, and ENT 4962.

Definitions
Prerequisite - The prerequisite course must be successfully completed prior to taking the subsequent course.
Concurrent Prerequisites - Courses that may be taken at the same time, although it is not necessary if the prerequisite course is completed first.
Corequisites - Courses must be taken together in the same semester.

For 2026 – 2027 Revised 12/19/2025

Transfer, Advanced Placement, or Study Abroad Courses

- Not included in credit hours used for GPA calculations.
- Transfer credit is awarded for Michigan Tech equivalent coursework only if a grade of 'C' or better (2.00/4.00) or equivalent is earned at a transfer institution.
- Study abroad credit will be awarded for passing a course that meets equivalent international standards.
- Advanced Placement credit is awarded according to published AP Exam score standards (as well as IB and CLEP).