B.S. Engineering Degree (*2026-27*)

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

First Year

Fall

Course	Prerequisites	Credit
MA1160 Calculus with Technology 1		4
ENG1101 Engineering Analysis & Problem Solving	MA1160 *(Concurrent)*	3
CH1150 University Chemistry 1	CH1151 *(Corequisite)*	3
CH1151 University Chemistry Lab 1	CH1150 *(Corequisite)*	1
PH1100 Physics 1 Lab	MA1160 *(Concurrent)*	1
UN1015 College Writing, Reading, & Research		3
Total		**15**

Spring

Course	Prerequisites	Credit
MA 2160 Calculus with Technology 2	MA1160	4
ENG1102 Engineering Modeling & Design	MA1160 *(Concurrent)*, ENG1101	3
PH2100 University Physics 1	MA1160, PH1100 *(Concurrent)*	3
Essential Education - Foundations in the Human World		3
Essential Education - Activities for Well-Being and Success		1
Total		**14**

Second Year

Fall

Course	Prerequisites	Credit
MA2320 Linear Algebra	MA1160	2
Math/Science Elective		4
Professional Elective		3
MSE2100 Intro to Material Science *OR* CEE3101 Civil Engineering Materials	CH1150, CH1151 OR ENG2120	3
Essential Education - Arts & Culture		3
Total		**15**

Spring

Course	Prerequisites	Credit
MA3520 Differential Equations	MA2160, MA2320	2
Math/Science Elective		4
ENG2505 Intro to Low Fidelity Systems Modeling	MA1160, ENG1101	3
ENG2120 Statics/Strength of Materials	MA2160, PH2100, ENG1101	4
Essential Education - Communication Intensive		3
Total		**16**

Third Year

Fall

Course	Prerequisites	Credit
MA3710 Eng Statistics	MA2160	3
Directed Elective		3
Professional Elective		3
CEE3200 Thermo/Fluids	MA2160, PH2100, CH1150 & CH1151, ENG1101	4
Essential Education - Intercultural Competency (3000+)		3
Total		**16**

Spring

Course	Prerequisites	Credit
Directed Elective		3
Professional Elective		3
EE3010 Circuits & Instrumentation	MA1160	3
ENG3525 Design for Sustainability *OR* ENG4600 Design Human-Ctr Sys	Junior Standing	3
ENG4525 Systems Analysis for Sustainability and Resilience	Junior Standing	3
Essential Education Experience (3000+)		3
Total		**18**

Fourth Year

Fall

Course	Prerequisites	Credit
Technical Elective		3
ENG4505 Systems Analysis Modeling & Design	ENG2505	3
ENG4900 Senior Design 1	CEE3200, EE3010, ENG2120, ENG2505, ENG3525 or ENG4600, ENG4505(C), MSE2100	2
ENG4300 Project Management	Junior Standing	3
Essential Education – SHAPE: EC3400 Economic Decision Analysis	Junior Standing	3
Essential Education - Activities for Well-Being and Success		1
Total		**15**

Spring

Course	Prerequisites	Credit
Directed Elective		3
Technical Elective		3
Technical Elective		3
ENG4910 Senior Design 2	ENG4505, ENG4900	2
OSM4650 Six Sigma Fundamentals *OR* MET4510 Lean Manufacturing and Production Planning	MA3710, Junior Standing	3
Essential Education - Activities for Well-Being and Success		1
Total		**15**

Minimum Required = 124 Credits

1. ***Essential Education Requirements:*** 24 total credits. Required courses are *UN1015-College Writing, Reading, & Research* (3 credits), a *Foundations in the Human World* course (3 credits), a *Communication Intensive* course (3 credits), an *Arts & Culture* course (3 credits), an *Intercultural Competency* (3000+) course (3 credits), a *SHAPE* course (EC3400, 3 credits), an *Essential Education Experience* (3000+) course (3 credits), and 3 credits of *Activities for Well-being and Success*. The Essential Education and Activities for Well-Being list is available online at: https://www.mtu.edu/registrar/faculty-staff/advisors/ess-ed/
2. ***Directed Electives:*** Select 9 credits in a coherent plan of study such as partial fulfillment of a university approved minor, (a maximum of 6 credits can count toward the Essential Education minor) or a self-defined program with approval from the BSE Academic Advisor. See advisor for preapproved options. Courses may be taken from any unit across campus.
3. ***Professional Electives:*** Select 9 credits in a coherent plan of study with approval from the BSE Academic Advisor. See advisor for preapproved options. Courses may be taken from any unit across campus.
4. ***Technical Electives:*** Select 9 engineering credits in a coherent plan of study with approval from the BSE Academic Advisor. See advisor for preapproved options.
5. ***Prerequisite*** (pre-req) course must be successfully completed ***PRIOR*** to taking the subsequent course.
   Concurrent Prerequisites (concurrent) may be taken at the same time, although it is not necessary if the prerequisite course is completed first.
   Required Corequisite (co-req) courses that ***MUST*** be taken together in the same semester.
6. ***Engineering Fundamentals:*** MA1160/1161 is a concurrent prerequisite for ENG1101 and ENG1102. ENG1102 project content varies by section number.
7. ***Math:*** Students are placed into an initial math course based on ACT/SAT math score, the online ALEKS assessment, or a math placement exam score for credit (AP, IB, CLEP). MA1160 (4 credits) or MA1161 (5 credits) satisfy the Calculus 1 requirement. Linear Algebra and Differential Equations are offered as full semester courses for students taking these courses in separate semesters (MA2320 – Linear Algebra, MA3520 – Differential Equations). The Math department also teaches Linear Algebra and Differential Equations as accelerated courses. In the first half of a given semester MA2321 – Linear Algebra, and MA3521 – Differential Equations, in the second half of the same semester (registration must be for the same section number of both MA2321 and MA3521 in that semester). MA2320, MA2321, and MA2330 are all equivalent and are approved prerequisites for MA3520 or MA3521. MA3530 and 3560 are also equivalent to MA3520/3521. MA2710, MA2720 and MA3715 are all acceptable in place of MA3710.
8. ***Free Electives are credits needed to fill the minimum credit requirement:*** Any credits that are 1000-level or above are acceptable towards free elective credits.
9. ***Transfer, Advanced Placement, or study abroad courses*** are not included in credit hours used for GPA calculations. Transfer credit is awarded for Michigan Tech equivalent course work 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 based on passing a course according to equivalent international standards. Advanced Placement credit is awarded according to published AP Exam score standards (also IB and CLEP).

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