B.S. Engineering Degree – Individualized Pathway (*2025-26*)

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 Composition		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
MA3160 Multivariable Calculus 3	MA2160	4
Engineering Core Elective		3
Math/Science Elective		1-2
Math/Science Elective		3
Essential Education - Communication Intensive		3
Essential Education - Activities for Well-Being and Success		1
Total		**15-16**

Spring

Course	Prerequisites	Credit
MA2320 Linear Algebra	MA1160	2
ENG2120 Statics/Strength of Materials	MA2160, PH2100, ENG1101	4
Professional Elective		2
Design Implementation Elective		3
Essential Education - Arts & Culture		3
Essential Education - Activities for Well-Being and Success		1
Total		**15**

Third Year

Fall

Course	Prerequisites	Credit
MA3710 Statistics	MA2160	3
EE3010 Circuits & Instrumentation	MA1160	3
Professional Elective		3
Technical Elective 3000+ level		3
Essential Education - Intercultural Competency (3000+)		3
Total		**15**

Spring

Course	Prerequisites	Credit
OSM4650 Six Sigma Fundamentals or MET4510 or MEEM4650	MA3710, Junior Standing	3
Professional Elective		3
ENG4525 Systems Analysis for Sustainability and Resilience	Junior Standing	3
CEE3200 Thermo/Fluids	MA2160, PH2100, CH1150 & CH1151, ENG1101	4
Essential Education Experience (3000+)		3
Total		**16**

Fourth Year

Fall

Course	Prerequisites	Credit
Essential Education – SHAPE: EC3400 Economic Decision Analysis	Junior Standing	3
Directed Elective		3
Professional Elective		3
Technical Elective 3000+ level		3-4
Technical Elective 4000+ level		3
Total		**15-16**

Spring

Course	Prerequisites	Credit
ENG4905 Senior Design	EE3010, ENG1101, ENG1102, ENG2120, CEE3200, Eng Core, Design Imp, ENG3830(C)	3
ENG3830 Engineering Professionalism	EE3010, ENG1101, ENG1102, ENG2120, CEE3200, Eng Core, Design Imp	1
Directed Elective		3
Directed Elective		3
Technical Elective 4000+ level		3
Technical Elective 4000+ level		3
Total		**16**

Minimum Required = 122 Credits

1. ***Essential Education Requirements:*** 24 total credits. Required courses are *UN1015-Composition* (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/pdfs/essential-education-course-lists-2025-2026.pdf
2. ***Engineering Core Elective:*** Select 3 credits from the following: ___ CEE3101 ___ CS1121 ___ ENG2505 ___ GE2300 ___ MSE2100
3. ***Math/Science Electives:*** Select 4 credit (if taking MSE2100) or 5 credits (if not taking MSE2100) approved by the Academic Advisor for Bachelor of Science in Engineering program. Math and Science courses that are lower than the required level (i.e. MA1030, MA1032, MA1032, CH1000) are not allowed.
4. ***Professional Electives:*** Select 9 credits in a coherent plan of study that is approved by the Academic Advisor for Bachelor of Science in Engineering program, Department Chair of Engineering Fundamentals, and Academic Dean for the College of Engineering. Courses may be taken from any unit across campus.
5. **Engineering Design Implementation:** Select 3 credits from the following: ___ CEE3332 ___ ENG2525 ___ ENG4505 ___ GE3880 ___ ME3600
6. ***Directed Electives:*** Select 12 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.
7. ***Technical Electives***: And select 15 engineering credits (if not taking MSE2100) or 16 engineering credits (if taking MSE2100) at the 3000+ level in a coherent plan of study that is approved by the Academic Advisor for the Bachelor of Science in Engineering program, Department Chair of Engineering Fundamentals, and Academic Dean for the College of Engineering. 6 credits must be 4000+ level.
8. ***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.
9. ***Engineering Fundamentals:*** MA1160/1161 is a concurrent prerequisite for ENG1101 and ENG1102. ENG1102 project content varies by section number.
10. ***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, 2720 and 3715 are all acceptable in place of MA3710.
11. ***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.
12. ***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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