

B.S. Mining Engineering Degree (Fall 2025 and later)

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 (<i>Concurrent</i>)	3
CH1150 University Chemistry 1	CH1151 (<i>Corequisite</i>)	3
CH1151 University Chemistry Lab 1	CH1150 (<i>Corequisite</i>)	1
PH1100 Physics 1 Lab	MA1160 (<i>Concurrent</i>)	1
GE1100 Geo Eng & Sci Orientation		1
GE1200 Intro Data/Sci Earth Resc		1
UN1015 Composition		3
Total		17

Spring

Course	Prerequisites	Credit
MA 2160 Calculus with Technology 2	MA1160	4
ENG1102 Engineering Modeling & Design	MA1160 (<i>Concurrent</i>), ENG1101	3
PH2100 University Physics 1	MA1160, PH1100 (<i>Concurrent</i>)	3
GE2000 Understanding the Earth		3
<i>Essential Education - Foundations in the Human World</i>		3
Total		16

Second Year

Fall

Course	Prerequisites	Credit
MA2320 Elem Linear Algebra	MA2160	2
GE2300 Mineral Science	CH1150/51, GE2000	3
GE2020 Intro to Mining Eng	ENG1101	2
CM2200 Intro Minerals & Materials		3
SU2000 Surveying		2
<i>Essential Education - Communication Intensive</i>		3
<i>Essential Education - Activities for Well-Being and Success</i>		1
Total		16

Spring

Course	Prerequisites	Credit
MA3710 Engineers Statistics	MA2160	3
ENG2120 Statics, Strengths & Materials	MA2160, PH2100, ENG1102	4
CEE3200 Thermo/Fluids	MA2160, PH2100, CH1150/51, ENG1101	4
GE2320 Mining Methods & Systems	GE2020	2
<i>Essential Education – Intercultural Competency</i>		3
Total		16

Third Year

Fall

Course	Prerequisites	Credit
GE3440 Drill & Blast Eng (odd yrs)	GE2320	4
GE3870 Resource & Reserve Est	MA3710	3
GE3890 Engineering Geology	GE2000, ENG2120	3
GE4060 Adv Mining Methods	GE2320, GE3890 (<i>Concur</i>)	3
<i>Essential Education – Arts & Culture (3000+)</i>		3
Total		16

Spring

Course	Prerequisites	Credit
GE4290 Mine Ventilation	CEE3200, GE2020	3
GE4520 Strategic Mine Planning	GE3870	3
GE4360 Materials Handling	GE2020, ENG2120	4
GE3050 Structural Geology	GE2000	3
CM3830 Mineral Proc & Extract Lab	CM2200, CM2110	1
<i>Essential Education Experience (3000+)</i>		3
Total		17

Fourth Year

Fall

Course	Prerequisites	Credit
GE4900 Capstone I	GE3880	2
GE4220 Mine Systems & Enviro	CH1150	3
MA3520 Differential Eq	MA2320, MA2160	2
GE4010 Surface/UG Mine Design	GE3870, GE4520	
CEE3810 Soil Mech for Engineers	ENG2120, CEE3200	4
<i>Essential Education - Activities for Well-Being and Success</i>		1
Total		14

Spring

Course	Prerequisites	Credit
GE4910 Capstone II		2
Mining Engineering Tech Elective		3
Mining Engineering Tech Elective		3
EE3010 Circuits & Instrumentation		3
EC3400 Econ Decision Analysis	Junior Standing	3
<i>Essential Education - Activities for Well-Being and Success</i>		1
Total		15

Grand Total = 126 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. **Mining Engineering Technical Electives:** 6 total credits (Courses are 3 credits unless indicated otherwise)
 - CEE3503 Environmental Engineering
 - CEE3620 Water Resources Engineering (4cr)
 - CEE4504 Air Quality Engineering and Science
 - CEE4511 Solid & Hazardous Waste Eng.
 - CEE4820 Foundation Engineering
 - CEE4830 Geosynthetics Engineering
 - CEE4850 Rock Engineering for Civil Engineers
 - GE3200 Geochemistry (even yrs)
 - GE3850 Geohydrology
 - GE4610 Formation Evaluation & Petroleum Engineering
 - GE4680 Reliability & Optimization in Mining (even yrs)
 - GE4800 Groundwater Engineering
 - GE4860 Computational Methods in Geomechanics
3. **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.
4. **Engineering Fundamentals:** MA1160/1161 is a concurrent prerequisite for ENG1101 and ENG1102. ENG1102 project content varies by section number.
5. **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.
6. **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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