

## B.S. Mechanical Engineering Degree (Precalculus ~ 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
CH1000 Introductory Chemistry	<i>(If recommended)</i>	3
MA1031 or MA1032 Precalculus <i>(Used as Free Elective)</i>		4
ENG1101 Engineering Analysis & Problem Solving	MA1031 or MA1032 <i>(Concurrent)</i>	3
UN1015 Composition		3
<i>Essential Education - Foundations in the Human World</i>		3
<b>Total</b>		<b>16</b>

### Second Year

Fall

Course	Prerequisites	Credit
MSE2100 Material Science	CH1150 & CH1151	3
PH2100 University Physics 1	MA1161, PH1100 <i>(Concurrent)</i>	3
MA2160 Multivariable Calculus 3	MA1161	4
MA2320 Linear Algebra	MA1161	2
<i>Essential Education - Arts &amp; Culture</i>		3
<i>Essential Education - Activities for Well-Being and Success</i>		1
<b>Total</b>		<b>16</b>

### Third Year

Fall

Course	Prerequisites	Credit
PH2200 University Physics 2	MA2160, PH2100, PH1200 <i>(Concurrent)</i>	3
MA3520 Differential Equations	MA2160, MA2320	2
ME2700 Dynamics	PH2100, ME2110	3
ME2150 Mechanics of Materials	ME2110	3
ME2911 Mechanical & Aerospace Engineering Practice 2	ME2110, ME2901, ME2201 <i>(Concurrent)</i>	3
<b>Total</b>		<b>14</b>

### Fourth Year

Fall

Course	Prerequisites	Credit
ME3750 Dynamic Systems	MA3520, ME2700	4
ME3601 Intro to Manufacturing Processes	ME2901	4
ME3911 Mechanical Engineering Practice 4	ME2911, ME3901 <i>(Concurrent)</i>	3
<i>Essential Education - Experience (3000+)</i>		3
<b>Total</b>		<b>14</b>

### Fifth Year

Fall

Course	Prerequisites	Credit
Technical Elective		3
Technical Elective		3
Technical Elective		3
ME4911 Senior Design 2	EE3010, MA3710, ME3601, ME4901	2
<i>Essential Education - Activities for Well-Being and Success</i>		1
<b>Total</b>		<b>12</b>

Spring

Course	Prerequisites	Credit
CH1150 University Chemistry 1	CH1000, CH1151 <i>(Corequisite)</i>	3
CH1151 University Chemistry Lab 1	CH1150 <i>(Corequisite)</i>	1
PH1100 Physics 1 Lab	MA1161 <i>(Concurrent)</i>	1
MA1161 Calculus with Technology 1	MA1031 or MA1032	5
ENG1102 Engineering Modeling & Design	MA1161 <i>(Concurrent)</i> , ENG1101	3
<i>Essential Education - Communication Intensive</i>		3
<b>Total</b>		<b>16</b>

Spring

Course	Prerequisites	Credit
PH1200 Physics 2 Lab	PH1100	1
ME2201 Intro Thermodynamics	CH1150 & CH1151, MA2160 (C or better)	3
MA3160 Multivariable Calculus 3	MA2160	4
ME2110 Statics	MA2160 (C or better)	3
ME2901 Mechanical and Aerospace Engineering Practice 1	UN1015, ENG1102, ME2110 <i>(Concurrent)</i>	3
<i>Essential Education - SHAPE</i>		3
<b>Total</b>		<b>17</b>

Spring

Course	Prerequisites	Credit
ME3201 Intro Fluid Mechanics & Heat Transfer	MA3160, ME2201, ME2911	4
MA3710 Statistics	MA2160	3
ME3400 Machine Design & Analysis	MSE2100, ME2150, ME2700	3
ME3901 Mechanical Engineering Practice 3	ME2150, ME2901, ME2911 <i>(Concurrent)</i>	3
<i>Essential Education - Intercultural Competency (3000+)</i>		3
<b>Total</b>		<b>16</b>

Spring

Course	Prerequisites	Credit
Technical Elective		3
Technical Elective		3
EE3010 Circuits & Instrumentation	PH2200	3
ME4901 Senior Design 1	ME3201, ME3400, ME3601 <i>(Concurrent)</i> , ME3750, ME3901, ME3911, MA3710 <i>(Concurrent)</i> , EE3010 <i>(Concurrent)</i>	2
<i>Essential Education - Activities for Well-Being and Success</i>		1
<b>Total</b>		<b>12</b>

**Grand Total = 133 Credits**  
*(Including CH1000)*

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 (3 credits), an *Essential Education Experience* (3000+) course (3 credits), and 3 credits of *Activities for Wellbeing and Success* (see note 8).
2. **Technical Electives: At least 6 credits of tech electives must be ME or AE 4000+ course numbers (exceptions below).** Otherwise, any 4000+ level courses in the College of Engineering except MET courses are acceptable for ME technical electives; **with the exception of MET4377.** These prefixes – AE, BE, CM, CEE, EE, ENG, GE, ME, MSE and may be used by BSME students for technical elective credits (if allowed to enroll in the course by the offering department) with the following exceptions: BE4000, BE4900, BE4901, BE4910, BE4930, BE5000, BE5900, BE5930, CEE4510, CEE4900, CEE4905, CEE4910, CEE4915, CEE4916, CEE4920, CEE4930, CEE4990, CEE5190, CEE5250, CEE5390, CEE5490, CEE5560, CEE5561, CEE5562, CEE5563, CEE5590, CEE5690, CEE5890, CEE5920, CEE5930, CEE5990, CEE5991, CEE5992, CEE5994, CEE5997, CEE5998, CEE5999, CM4000, CM4020, CM4040, CM4060, CM4080, CM4855, CM4860, CM4861, CM4900, CM4910, CM4990, CM5900, CM5950, CM5990, EE4000, EE4800, EE4805, EE4870, EE4901, EE4910, EE5290, EE5805, EE5900, EE5990, EE5991, EE5992, EE5994, ENG4060, ENG4070, ENG4900, ENG4905, ENG4910, ENG4990, ENG5060, ENG5100, ENG5200, ENG5300, ENG5400, ENG5990, ENG5998, GE4000, GE4900, GE4910, GE4916, GE4930, GE4931, GE4933, GE4934, GE4961, GE4962, GE4970, GE5187, GE5930, GE5940, GE5950, GE5960, GE5970, GE5994, GE5995, GE5998, GE5999, ME4990, ME4901, ME4911, ME4999, ME5010, ME5990, ME5994, ME5995, ME5999, ME6000, MSE4130, MSE4131, MSE4140, MSE4141, MSE4970, MSE4990, MSE5100, MSE5900, MSE5970, and MSE5990 or any other research/special topics/seminar/senior design/etc. credits (courses without a specific course description and/or syllabus). Undergraduate students cannot typically enroll in 6000-level courses. Special topics courses (4990, 5990, etc.) may be approved on an individual section/semester basis if a student/faculty member submits or creates a course syllabus for evaluation. OSM 4300 is also acceptable.
3. **Prerequisite** courses are noted by a plain arrow. The prerequisite course must be successfully completed **PRIOR** to taking the subsequent course.  
**Concurrent Prerequisites ~ (C) ~** may be taken at the same time, although it is not necessary if the prerequisite course is completed first.  
**Required Corequisite** 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. MA2320 and MA3520 are offered as full semester courses for students taking these courses in separate semesters. The Math department also teaches MA2321 as an accelerated course (equivalent to MA2320) in the first half of a given semester and MA3521 as an accelerated course (equivalent to MA3520) 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. Taking both MA1030 & MA1031 is equivalent to MA1032. The prerequisite for MA1161 can be either MA1031 **OR** MA1032.
6. **A grade of 'C' or better in MA2160 is required as a prerequisite for ME2110 and ME2201.**
7. **Free Electives:** Any credits that are 1000-level or above, not on the *Activities for Well-being and Success* list, and not non-repeatable duplicated or equivalent courses, are acceptable towards free elective credits. UN3002, UN3003, etc. (Cooperative Education credits) can be used as free elective credits in the BSME curriculum.
8. **Activities for Well-being and Success:** Mainly physical education courses with some additions. Three credits are required for graduation. These credits will be included as earned hours and may be used to determine full-time enrollment status. The *Activities for Wellbeing and Success* list is available in the MAE Advising Center and is linked on the MAE Advising web page.
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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**MAE Advising web page: <https://www.mtu.edu/mechanical-aerospace/undergraduate/advising/>**