

MTUengineering

Michigan Tech
Department of
Mechanical &
Aerospace Engineering
Summer Orientation 2026

MAE Academic Advisors

maeadvise@mtu.edu

Ryan Towles

- Michigan Tech grad (1999)
- MAE advisor since 2010
- Copper Country Track Club & Keweenaw Ultra-Marathon Club Advisor

Sarah Sohlden

- Michigan Tech grad (2000)
- MAE advisor since Fall 2022
- Extensive CAD experience

Mark Provoast

- Michigan Tech grad (1987)
- MAE advisor since Fall 2022
- Long-time Admissions staff member

3M

Ford

CAT



gm

HUSCO

BEMIS



TESLA

BWI

ACM

BLATTNER ENERGY

bretting Est. 1890



BROKEN SPOKE BIKE STUDIO

CAPTIVEARE

AVL

BRUNSWICK

Kimberly-Clark

ANDRONACO INDUSTRIES

CLIFFS



Alithya

AO AMERICAN ORTHODONTICS

CENTURY A&E Facilities Design

ARCTIC CAT

BLACK & VEATCH

ArtiFlex

amcor

Pfizer

Accelerate Wind

Associated Spring A business of BARNES

BOEING

Consumers Energy

P&A GROUP EST. 1975

KOHLER



Papersystems

Calumet Electronics Corporation

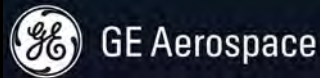
Collins Aerospace

AXIOM SPACE

DAKKOTA

Cummins

Milwaukee





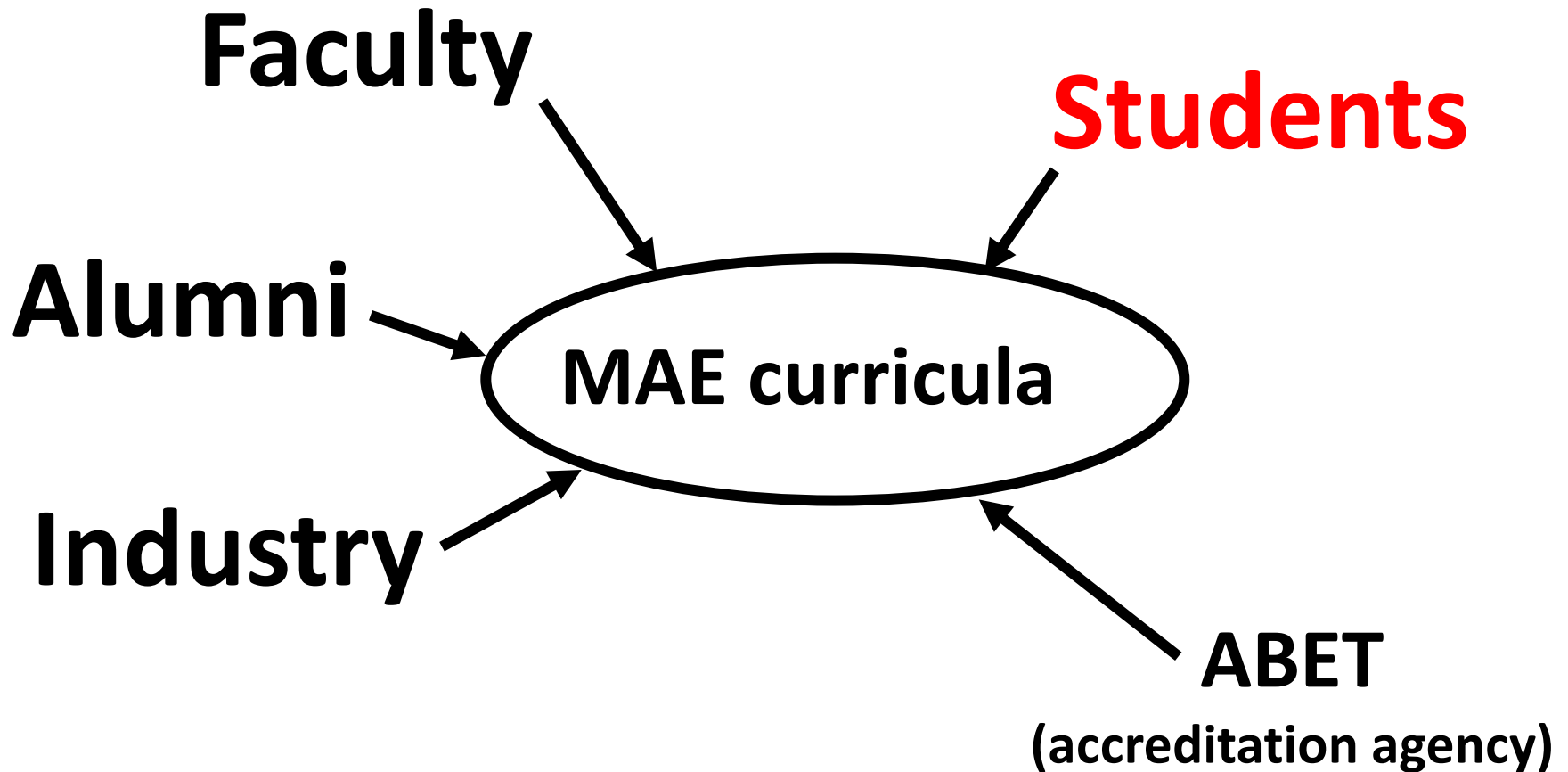


MAE Program Objectives

Your Mechanical and/or Aerospace Engineering Program will prepare you to attain recognition as engineers who:

- **Make innovative contributions that positively impact society and the world**
- **Foster work environments that value diverse viewpoints and enable everyone to work at their highest potential**
- **Make good engineering, ethical, and financial decisions**
- **Pursue advanced studies in engineering or other fields**
- **Take on increasing responsibilities such as managing projects and leading teams**

Many stakeholders help ensure the quality of your MAE education



Your role in your MAE program

**Talk to us!
Faculty & Staff**

**Talk to your Peers!
MAE Student Advisory
Committee (MAESAC)**

**Course Evaluations
and Surveys**

MAE Practice Courses

Unique to Michigan Tech

- Discovery & Experiential Learning
- Other universities looking to adopt our program

Mechanical & Aerospace Engineering Practice (MAEP) Courses

- Hands-on application of engineering science
- Computer simulations and hardware testing
- Emphasize **teamwork, technical communication, critical thinking, open-ended problem solving, systems engineering, and leadership**

Two options for “capstone” experience

Senior Capstone Design:

Provides you with your “first job” to solve real-world problems sponsored by industry. The entire process flows from concept to development and fabrication to demonstration of a working prototype

- 2 semester requirement
- Teams of 4-6 students
- Direct interaction with industry

Enterprise:

Student-led organizations that work in a industry-like setting to solve real-world engineering problems. The projects can last for several semesters and may be industry sponsored.

- 4 semester (minimum) requirement
- Large teams of students (depending on Enterprise)
- Direct interaction with sponsors
- Current MAE-hosted or advised enterprises: Aeronautics and Rocketry, Aerospace, Blizzard Baja, BoardSport Technologies, Clean Snowmobile, Formula SAE, Multiplanetary Innovation, Robotic Systems, Strategic Education through Naval Systems Experiences (SENSE), Supermileage Systems, Velovations

Credit Distribution - ME

24	Essential Education
31	Math and Science
6	1 st Year Engineering
4	Senior Capstone Design
12	MAE Practice Courses
27	ME Core Courses
3	ME IPC Courses
3	Electrical Engineering
3	Materials Science
15	Technical Electives

128 total

Credit Distribution - AE

24	General Education
31	Math and Science
6	1 st Year Engineering
4	Senior Capstone Design
12	MAE Practice Courses
45	MAE Core Courses
6	Technical Electives

128 total

Bachelors of Science in Aerospace Engineering

- Program began Fall 2025
- 1st Year Courses are largely the same as BS Mechanical Engineering
- Developing new courses and first offerings through Spring 2027

AE2500 Principles of Aerospace Engineering – F/S

AE2550 Space Environment & Operations - S

AE3501 Aerospace Systems Eng. Practice – F26

AE3511 Spacecraft Engineering Practice – S27

AE3520 Aerodynamics (w/ Lab) - S

AE3570 Space Mechanics - F

AE4530 Compressible Flow - F

AE4540 Aerospace Propulsion (w/ Lab) – S27

AE4550 Spacecraft Thermal Engineering – F26

AE4560 Aerospace Materials & Structures – F26

AE4580 Spacecraft Dynamics & Controls – S27

Undergraduate Research

- Faculty hire undergraduate research assistants to help with projects funded by NASA, DoD, DoE, National Science Foundation, and industry, etc.
- Faculty interests/expertise, research projects, and new grants can be found on the MAE advising webpage
- Experience can include lab experiments, computational experiments, modeling, build and test, data analysis, authorship on professional publications, etc.
- Can be volunteer time, upper level students can count towards technical electives, or paid positions.
- Can give you a running start towards a graduate degree

Too early to think about Grad School?

- Masters degree is 30 credits beyond Bachelors.
- PhD is 30 credits beyond Masters degree.
- Why advanced degrees (MS,PhD) ?
 - Give you specialized knowledge and skills.
 - Opens up job markets and positions not available for Bachelors.
 - Expect ~+20% salary for MS vs BS.

You can complete your BSME and MSME

- Normally a MSME takes ~2 years to complete.
4 for BS + 2 for MS = 6 years
- Two programs can speed this up
 1. Accelerated Masters Program
 2. Sr Rule

Academic Advising Agenda

- ▣ **MAE Advising Center**
 - Roles and usage.
- ▣ **BSME curriculum details**
- ▣ **BSAE curriculum details**
 - Requirements/pre-reqs.
 - Double Major
 - AE Minor for ME Majors
- ▣ **Fall Registration**

MAE Advising Center

8:00 am - 5:00 pm (4pm Summer)

Monday - Friday

2nd Floor R.L. Smith (MEEM)

(Building 20)

within Engineering Learning Center

(Room 205, inside MEEM 203)

906.487.2564

<https://www.mtu.edu/mechanical-aerospace/undergraduate/advising/>

Walk-in or by email/phone

Academic advisor's role

- ▣ Advising Syllabus – use as a guide/checklist for advising
- ▣ Assist students with:
 - Developing an academic/educational plan
 - Course scheduling/registration
 - Interpreting University policies and procedures
 - Seeking out services/resources as needed
 - Opportunities: internships, co-op, curricula, honors, study abroad, etc.
 - Refer to faculty as needed for specific professional interests
 - Clarification of career and life goals

We are your primary contacts for questions and concerns and can refer you to the specialists you need if we are not the right resource.

Plan to meet with us at least before registration each semester, but anytime you need to also.

When faced with a difficult question or challenging situation, your academic advisor is always a good place to begin

Be prepared to meet with academic advisors...

- ▣ Know your M number which is not your social security number. It's 8 digits after an 'M'. It is on your Tech ID.
- ▣ Bring any previously marked-up flow charts, notes, forms, etc. when you meet with us
 - Create and maintain a personal academic records folder
 - Take notes during advising meetings
- ▣ Do not email advisors separately
 - Use maeadvise@mtu.edu
 - Use your Michigan Tech email account.
- ▣ Michigan Tech has an online directory and A2Z for looking up contact information:

<https://www.mtu.edu/directory/>

<http://www.mtu.edu/a2z/>

- This will save you time if you are just contacting us to find a location, phone number, or email address.

MAE Advising Web Page

<https://www.mtu.edu/mechanical-aerospace/undergraduate/advising/>

Lot's of FAQs, links, forms...

A good first stop for advising information, see an advisor with questions.

I heard that...

- ▣ If you hear things regarding curricular issues and/or academic policies from a friend, there is a good chance that you have incorrect information. Even though what they are saying may be correct **for them**.
- ▣ Verify with an MAE Academic Advisor or department responsible for the policy



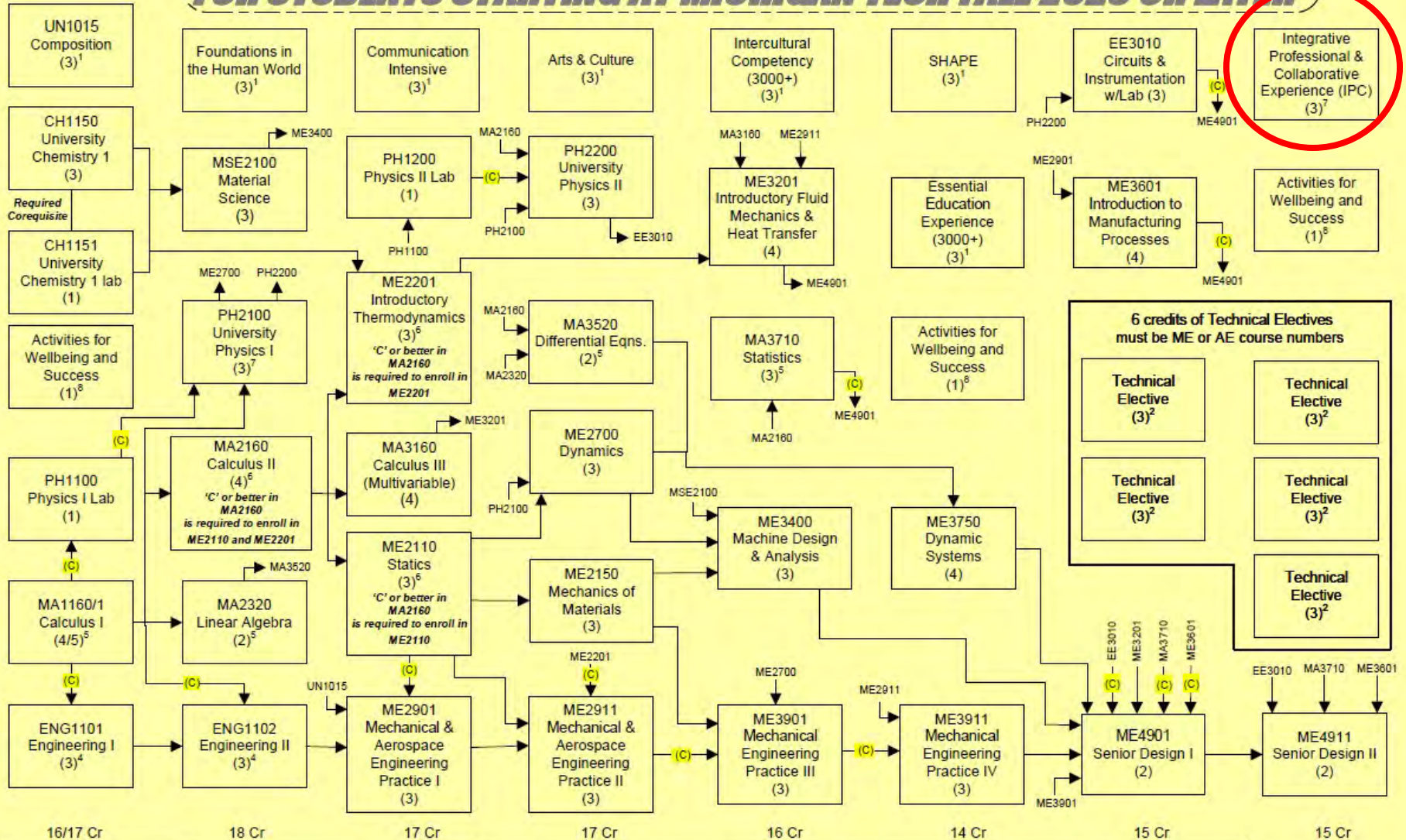
Michigan Tech

Bachelor of Science-Mechanical Engineering

Sample Course Plan: All required courses are offered each fall and spring semester.

Students may take courses in any semester as long as prerequisites are met.

FOR STUDENTS STARTING AT MICHIGAN TECH FALL 2026 OR LATER

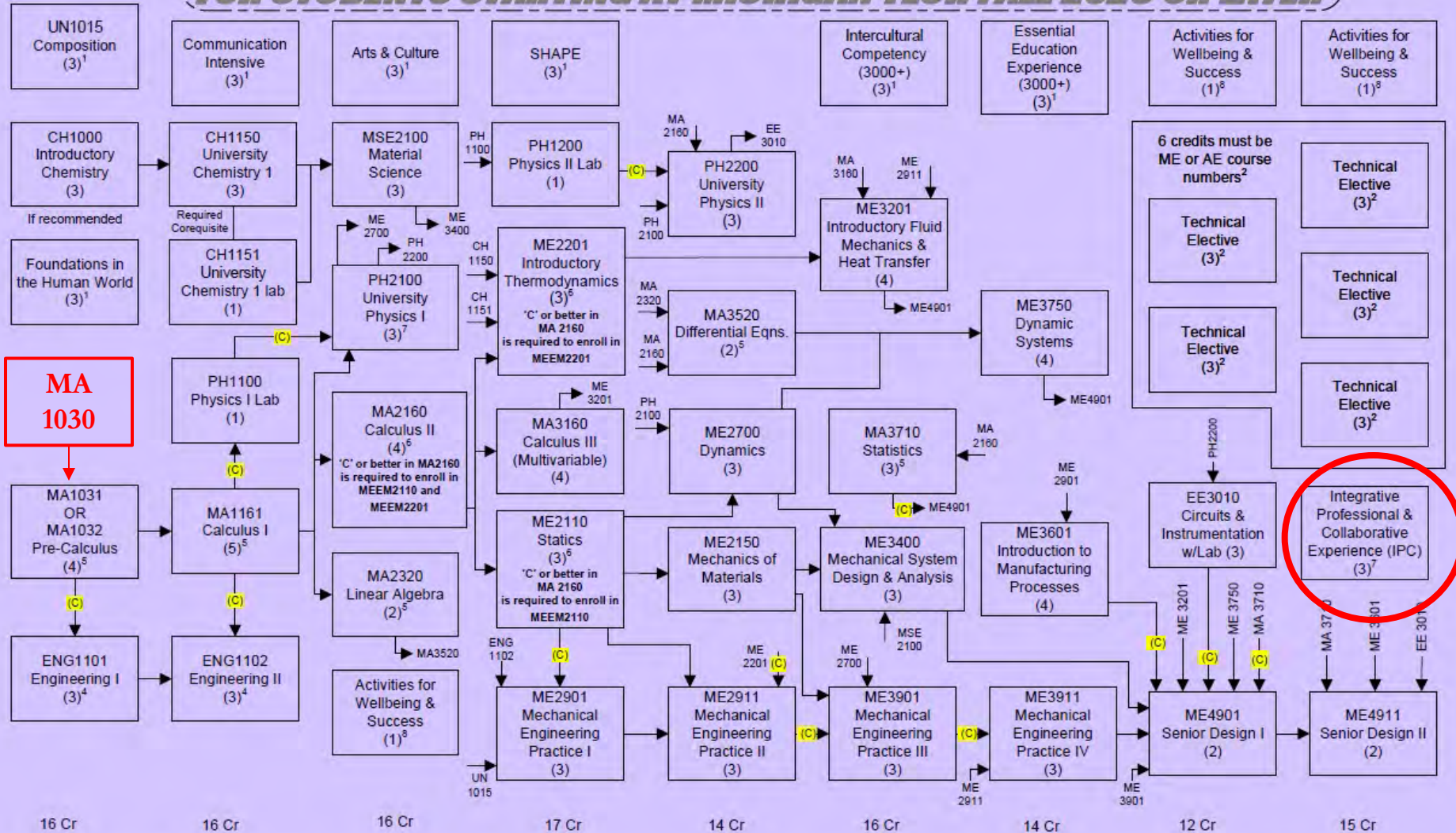


Prerequisite ³ (Course must be completed prior to enrollment) →
 Concurrent Prerequisite ³ (A prerequisite course that may be taken concurrently) (C) →
 Required Corequisite ³ (Courses must be taken together)
 (#) Course Credits
See cited notes on back

128 Total Credits
May 2026



FOR STUDENTS STARTING AT MICHIGAN TECH FALL 2026 OR LATER



→ Prerequisite ³
 (Course must be completed prior to enrollment)

(C) → Concurrent Prerequisite ³
 (A prerequisite course that may be taken concurrently)

→ Required Corequisite ³
 (Courses must be taken together)

(#) Course Credits

See cited notes on back

136 Total Credits (including CH 1000) May 2026

Mechanical Engineering Integrative Professional & Collaborative Experience (ME IPC) Courses - 3 credits

☆ No published list as of yet. Advisors have a working list.

☆ Some examples of courses that will definitely count:

AE2500/2550

MSE2110

BUS1100

BL1400

PH1600/1610

CEE3331

CH1160

PH2400

OSM3000

CS1121/1131

SU2000

OSM4650

EE3160

UN2600

UN3002

GE2000

ACC2000

GE2020

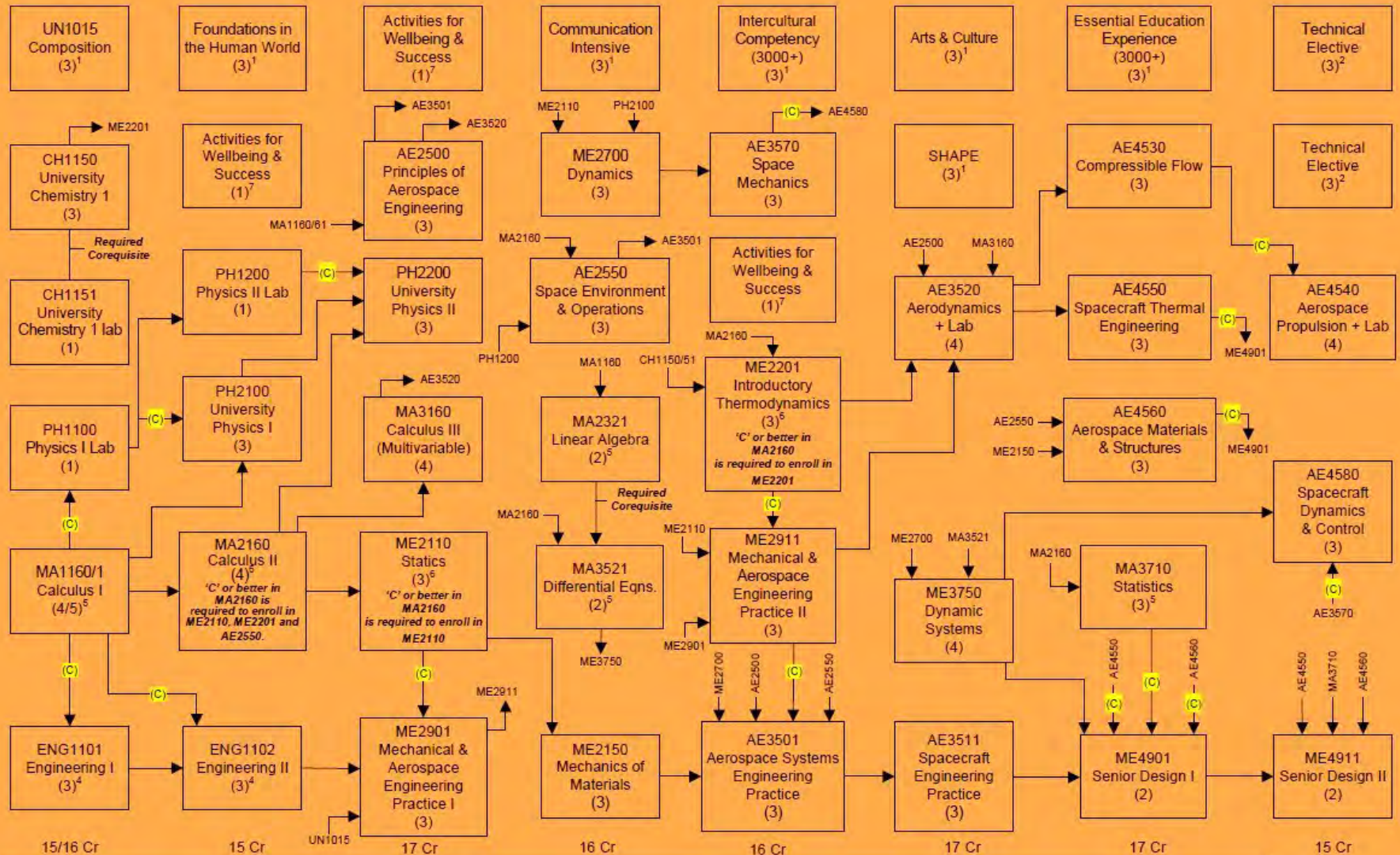
AR2011/2012

MA3210

BL3001

☆ Others could be approved on a case-by-case basis.

☆ Could be an extra tech elective.



Prerequisite ³ (Course must be completed prior to enrollment)
 Concurrent Prerequisite ³ (A prerequisite course that may be taken concurrently)
 Required Corequisite ³ (Courses must be taken together)
 (#) Course Credits
See cited notes on back



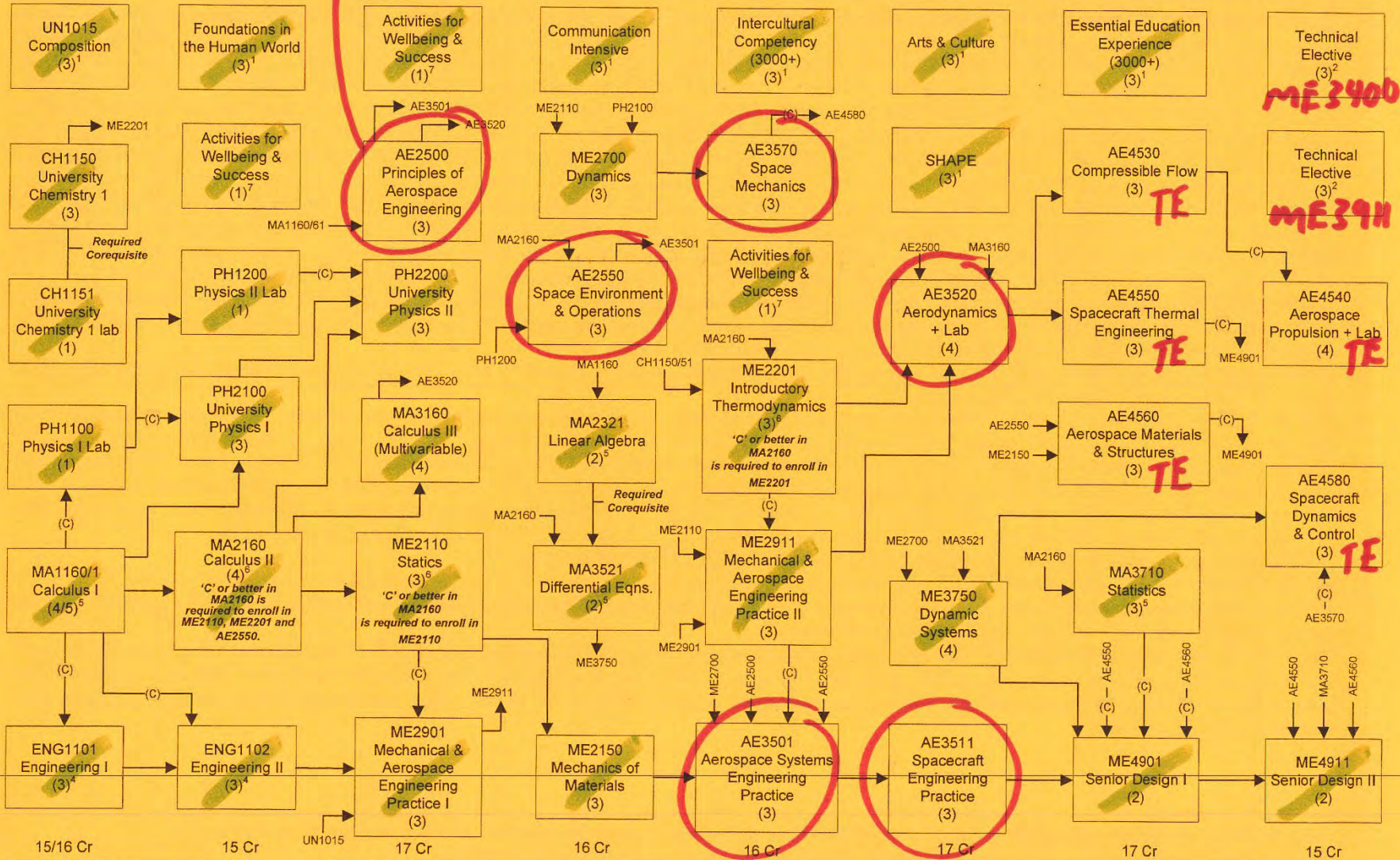
Michigan Tech

Bachelor of Science-Aerospace Engineering

Sample Course Plan.

ME PRIMARY DOUBLE MAJOR

IPC?



Prerequisite³
(Course must be completed prior to enrollment)

(C) Concurrent Prerequisite³
(A prerequisite course that may be taken concurrently)

Required Corequisite³
(Courses must be taken together)

(#) Course Credits

See cited notes on back

128 Total Credits
May 2026

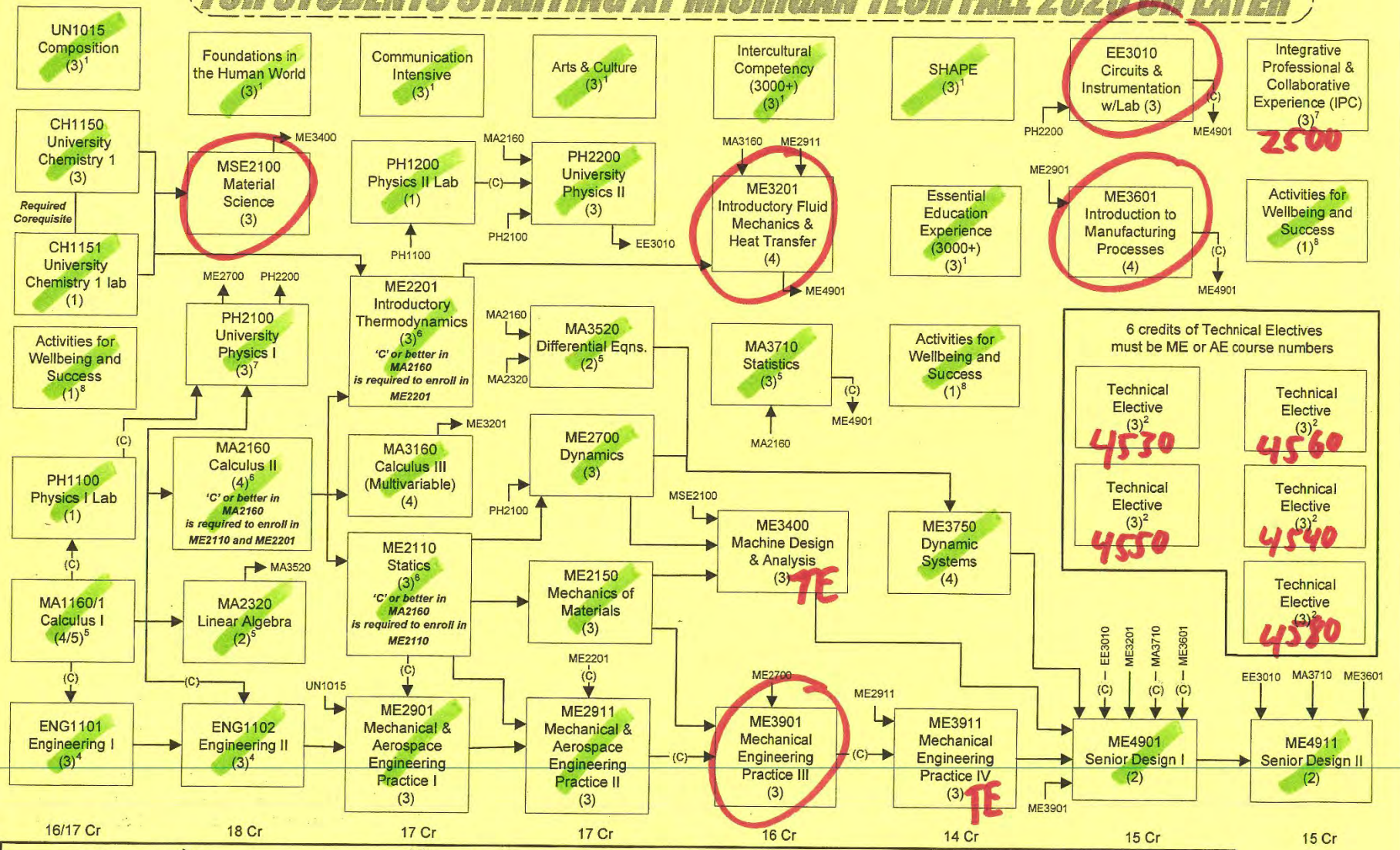


AE PRIMARY DOUBLE MAJOR Michigan Tech

Bachelor of Science-Mechanical Engineering

Sample Course Plan: All required courses are offered each fall and spring semester.
Students may take courses in any semester as long as prerequisites are met.

FOR STUDENTS STARTING AT MICHIGAN TECH FALL 2026 OR LATER



16/17 Cr 18 Cr 17 Cr 17 Cr 16 Cr 14 Cr 15 Cr 15 Cr

Prerequisite³
(Course must be completed prior to enrollment)

(C) Concurrent Prerequisite³
(A prerequisite course that may be taken concurrently)

Required Corequisite³
(Courses must be taken together)

(#) Course Credits

See cited notes on back

**128 Total Credits
May 2026**

Scheduling

If you need to take the ALEKS math placement assessment and have not yet, then you may have no class schedule generated.

Math Placement:

- ▣ AP (min score 2 on Calc AB exam)
- ▣ ACT/SAT Math
- ▣ Transfers
- ▣ ALEKS

If needed, please be sure to take ALEKS as soon as possible.

Offered today at 1:30pm in this room.

Scheduling

Generated schedule may not be complete if you are not in at least 4 courses (plus labs and PE, etc) and at least 12 credits

If needed, add:

UN 1015 (email schedule@mtu.edu)

or, Essential Education (email schedule@mtu.edu)

and/or, Activity Course (email schedule@mtu.edu)

and/or, contact maeadvise@mtu.edu

If you are in University Chemistry (CH 1150 & 1151):

You are encouraged to add optional recitation:

CH 1153 - 1 credit (email schedule@mtu.edu)

Foundations in the Human World List

☆ Over 50 classes on the Foundations list

☆ Common AP Courses (3 or higher mostly)

- ← Economics – Macro & Micro (both at 4+) EC2001
- ← English Literature & Composition HU2503*
- ← European History SS2502*
- ← Government and Politics - US SS2600
- ← Government and Politics - Comp. SS2635
- ← Human Geography SS2400
- ← Psychology PSY2000
- ← US History SS2500*
- ← World History SS2504*

*Also on the Arts & Culture list. All are also on SHAPE list.

Typical Fall Schedule

MA1030 - College Algebra I

Course	Credits
MA1030 College Algebra 1	3
CH1000 Intro to Chem	3
UN1015 Composition	3

May Need to Add:

Essential Ed (Foundations, etc)	3
Activity Course	1

Total: 12-13

No ENG 1101/1102 based on Math Placement

Typical Fall Schedule

MA1031 - College Alg 2 w/ Trig or MA1032 - PreCalc

Course	Credits
MA1031 or MA1032	3-4
ENG1101 Eng Analysis & Problem Solving	3
CH1000 (scheduled) or CH1150/1151	3-4
UN1015 Composition or Ess Ed	3

May Add:

CH1153 (optional)	1
Activity	1

Total: 12-16

Typical Fall Schedule

MA1160/1, MA2160, or MA3160 - Calculus I, II, III

Course	Credits
MA1160/1, MA2160 (AP), or MA3160 (AP)	4-5
ENG1101 Engineering	3
CH1150/1151 Univ Chem/Lab (scheduled)	4
UN1015 Composition or Ess Ed	3
PH1100 Physics Lab (<i>maybe</i>)	1

May Add

CH1153 (optional)	1
Activity	1

Total: 14-18

Scheduling

If you are in Prep Chemistry (CH 1000) and earned a 'B' or better in high school Algebra and Chemistry (and at least in MA 1031/1032 for this fall), then you may change from CH 1000 to CH 1150/1151.

You may contact Susan Liebau
(206A Chem Sci, sliebau@mtu.edu) to discuss.

Email schedule@mtu.edu to change chemistry.

Likewise you might need to change from CH 1150/1151 to CH 1000.

Track B Summer 2026 CH 1000 online starts June 22nd.

www.mtu.edu/chemistry/undergraduate/first-year/

Scheduling

- ▣ You can move back in the math sequence (e.g., MA 2160 or 3160 to MA 1160/1161 or MA 1160/1161 to MA 1032), but once this decision is made it is final.
- ▣ You may have already elected this on the BYCS form.
 - Must get waive placement credit form from MAE advisors and submit to schedule@mtu.edu by July 1st.
- ▣ Cohort classes stay together (MA/ENG).
- ▣ Contact the Registrar's Office (schedule@mtu.edu) for possible changes (with good reason).

Do this ASAP if you need changes.

- Athletics (3pm)
- ROTC
- Changing Math or Chemistry courses

Scheduling

Success Courses:

- ▣ You may not drop UN 1010 this fall unless you are in UN 1000 also (Learning Communities requirement).
- ▣ You may not drop UN 1000 (ExSEL requirement).
- ▣ Contact Wahtera Student Success Center for possible section changes if needed (success@mtu.edu).

Scheduling

Other Courses:

- You may not drop HON 1150 (Pavlis Honors College requirement).
- You may not drop KIP 1900 (Athletics requirement).
- ▣ If you are declared for an associate's degree in Engineering, that means you have a TIP scholarship.

efadvise@mtu.edu

Scheduling

CH1150/1151 credit and scheduled for CH1160/1161 or MSE2100?

- See an MAE Academic Advisor

Initial math sequence is:

[(MA 1030 & 1031) or MA 1032]

and then MA 1161

Calculus lab sections (online) are weekly software assignments.

If you transferred ENG 1101 (ENG 1101T credits), then you need to be in either the UN 1013 or UN 2013 seminar course, 1 cr. Unless you have fulfilled MTA.

Scheduling

ENG 1101 - Class times: 2 days for 2 hours and 1 day for

1 hour, different locations

- ▣ **2 days a week with large group**
- ▣ **1 day a week with small LEAP group - mentor**

PH 1100 - Physics 1 Lab, can be taken before or with Physics 1 Lecture (PH2100)

Essential Ed science preference section of the BYCS is not needed for engineering students. Your science requirements are built into your major. Maybe other science for IPC requirement.

Modern Languages

- ▣ German or Spanish
- ▣ Online Placement Test
 - Offered at 1:30pm today in Dow 642
- ▣ Test instructions and placement/credit cutoffs

<https://www.mtu.edu/humanities/undergraduate/modern-languages/placement/>

Transfer Credits/Test Scores

- ▣ Official transcripts should be sent to Michigan Tech Transfer Services as soon as the course has been completed. A grade of 'C' (2.00/4.00) or better is required for a course to transfer.
- ▣ Test scores need to be sent directly to Michigan Tech from College Board, etc.

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MAE Advising Center

Room 205 – Inside MEEM 203

906/487-2564

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