

CEGE

Civil, Environmental, and
Geospatial Engineering
Department



**Undergraduate
Academic Advising**

@Michigan Tech

Michigan Tech: Where engineering isn't just studied, it's practiced and perfected.

Welcome to the Department of Civil, Environmental, and Geospatial Engineering (CEGE)—and congratulations on a decision that will shape the rest of your life in the best way.

I mean that personally: like you, I'm new here. After 18 years as a professor and researcher in civil engineering, I chose Michigan Tech for the same reasons you did—a place where engineering isn't just studied, it's practiced and perfected. Our graduates prove it every year, going on to Fortune 500 companies, ENR Top 500 firms, and top graduate programs.

As a licensed professional engineer, I can tell you the work you'll do here matters. Civil, ecological, environmental, and geospatial engineers and construction managers build the world people rely on—the roads, water systems, structures, and data that hold communities together.

You won't do it alone. Our faculty want to see you in their office hours. And our advisors, Julie Ross and Matt Laird, are simply the best on campus—they'll know your name, your plan, and how to get you to graduation.

We're starting this chapter together. Let's make it count.



M. Emin Kutay, PhD, PE
CEGE Department Chair

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Alli Hummel, CE '23

Public Works Graduate Engineer II,
MSA Professional Services

In her role at MSA, Alli manages, designs, and inspects construction work on municipal road utility and park projects. Every spring and fall she looks forward to coming back to Michigan Tech to recruit students at Career Fair!

Advice: Try to get a good variety of internship experience, and make sure to take the FE exam around your last year of school.



Advising Syllabus

MISSION: Advisors and students working together to develop an individualized academic plan for accomplishing student goals.

ADVISING DEFINED: Academic Advising is a relationship and a process that results in benefits for student, advisor, and university as a whole. The advisor and student collaborate to develop, follow, and complete an academic plan. A productive advising relationship will help students envision, foster, and realize their goals here at Michigan Tech and for a lifetime.

Student Learning Outcomes

1. Knowledge of university student learning goals and degree requirements
2. A thorough understanding of your academic plan
3. Ability to find and use advising resources
4. Increased and improved self-awareness and decision-making skills

Student Responsibilities

(What you should do)

- Take responsibility for academic planning
- Understand learning goals and degree requirements
- Follow academic procedures and policies
- Communicate with your advisor: read all advising correspondence
- Attend advising meetings prepared
- Apply advising recommendations in order to achieve your academic plan
- Seek assistance from instructors, learning centers, and other university services
- Contact your advisor promptly when you have questions or concerns. When faced with a difficult question or challenging situation, your academic advisor is a good place to begin
- Problem-solve to revise and achieve your academic plan

Activities *(How advisors and students realize outcomes and goals)*

- Identify a degree program that aligns with your academic interests and abilities
- Create an educational plan that fulfills the academic plan
- Select appropriate classes to satisfy your evolving goals
- Learn the benefits of internships, co-ops, and study abroad
- Explore academic options: Enterprise program, undergraduate research, Pavlis Honors College, dual majors, secondary degrees, minors, and graduate study
- Locate and use resources and services
- Interpret university requirements, policies, regulations, and procedures
- Develop decision-making skills, self-awareness, and self-direction
- Clarify and evaluate progress toward academic and life goals

Need an advocate?

Advisors advocate for students, protect and ensure their privacy and their rights as advisees in compliance with University policies:

- mtu.edu/deanofstudents/disability
- mtu.edu/registrar/faculty-staff/ferpa
- mtu.edu/registrar/students/advising

Advising Checklist

Orientation Week

Preparing for your first semester

- ☐ Login to review your transcript
 - Are AP credit and transfer credits correct? - mtu.edu/experience
- ☐ Meet academic advisor
- ☐ Complete class registration and print class schedule
- ☐ Explore Campus Resources and visit these websites
 - Undergraduate Catalog - mtu.edu/catalog
 - Dean of Students - mtu.edu/deanofstudents
 - Registrar - mtu.edu/registrar
 - Advising - mtu.edu/registrar/students/advising
 - Library - mtu.edu/library - take a library tour
 - Wellness and Counseling - mtu.edu/well-being

Year 1

Transitioning and adjusting to college life

- ☐ Attend first year advising meeting with your major advisor. Unsure about your major? Meet with:
 - General sciences/arts undeclared advisor: mtu.edu/sciences-arts/undergraduate/gsa OR
 - General/undecided engineering advisor: mtu.edu/ef/degree/advising
- ☐ Review major requirements
 - Run interactive audit each semester after registration - mtu.edu/experience
- ☐ Review Academic Policies and Academic Integrity - mtu.edu/deanofstudents/policies-resources
- ☐ Visit Career Services - mtu.edu/career
- ☐ Create a resume and attend career fairs - mtu.joinhandshake.com/login
- ☐ Begin to explore Pavlis Honors College, internship, co-op, research, study abroad, minors
- ☐ Learn about campus activities and student organizations - involvement.mtu.edu/organizations

Year 2

Academic and career exploration, and personal development

- ☐ Meet with advisor, bring your academic plan
 - Run interactive audit each semester after registration - mtu.edu/experience
- ☐ Explore interests, strengths, and careers
 - Within your department and network with faculty in your major
 - Career Services - mtu.edu/career
- ☐ Update your resume and attend career fairs
- ☐ Explore/participate Pavlis Honors College, internship, co-op, research, study abroad, minors
- ☐ Consider joining an Enterprise - mtu.edu/enterprise

Year 3

Academic enhancement and career goal setting

- ☐ Run interactive audit each semester after registration - mtu.edu/experience
- ☐ Meet with advisor to prepare for graduation
- ☐ Network with faculty in your major
- ☐ Attend Career Services and Graduate School workshops for career planning
 - Consider Accelerated Masters - mtu.edu/accelerated
 - Consider Senior Rule Classes - mtu.edu/registrar/students/registration/policies/senior-rule
- ☐ Explore/participate Pavlis Honors College, internship, co-op, research, study abroad, minors
- ☐ Develop career goals, update resume, and attend career fairs

Final Year

Transitioning out of college into career or graduate school

- ☐ Apply for graduation by 10th week of the semester prior to graduation
 - Must have earned 90 credits or more
 - mtu.edu/registrar/students/graduation/degree
- ☐ Meet with advisor for final degree audit one semester before graduation
 - Run interactive audit each semester after registration - mtu.edu/experience
- ☐ Network with faculty in your major
- ☐ Finalize career/graduate school plans
 - Complete the First Destination survey - mtu.joinhandshake.com/login
 - Complete Loan Exit Counseling for Financial Aid, if needed - (906) 487-2662
- ☐ Graduation
 - Check for your name on the Graduation Candidate List - mtu.edu/commencement
 - Order cap and gown, honor cords - optional - mtu.edu/commencement
 - Participate in commencement ceremony - optional



Tips for *Academic Success*

No. 1

Go to class...
and be present

The decisions you make today directly impact your future...so go to class, turn off your phone, and get ready to learn!

No. 2

Read and comply
with the syllabus

Each class comes with a "roadmap to success" (aka syllabus). Read it, follow it, and save it for future reference.

No. 3

Join a club
and get involved

Joining a group is a great way to make friends—and if it is engineering related—you'll get a jump-start on building your resume and network.

No. 4

Need help?
Just ask!

Visit your professors during office hours and check out the learning centers and CEGE Bernson Student Success Center. Online resources such as Coursera and Kahn Academy are great too! Check out these academic support resources:

mtu.edu/success/academic/support

No. 5

Balance school
and life activities

Your new friends invited you to go exploring, but you have a pile of work to do... Learn to make the most of your time between classes and get homework done or study for exams. This will help free up time at the end of each day, so you can relax or hang with friends.

No. 6

Remember, you
may not get all A's

You didn't choose Michigan Tech because you thought it would be a walk in the park. If you have a rough semester, don't let it get you down! Our courses are designed to be challenging, so you are prepared to hit the ground running the moment the diploma hits your hand.

Stressed or anxious? Not sure how to cope?

If you feel the stress is too much, or you are concerned about a friend or classmate, don't hesitate to reach out to the Center for Student Mental Health and Well-being:

906-487-2538

counseling@mtu.edu

mtu.edu/well-being



Tess Meyer, EEN '23

PhD Student, University of Vermont

As a graduate student, Tess conducts field and laboratory work to collect and analyze soil samples, performs statistical analysis of data using Excel/R/etc., writes scientific papers and reports, and presents results to diverse audiences (scientific and community members).

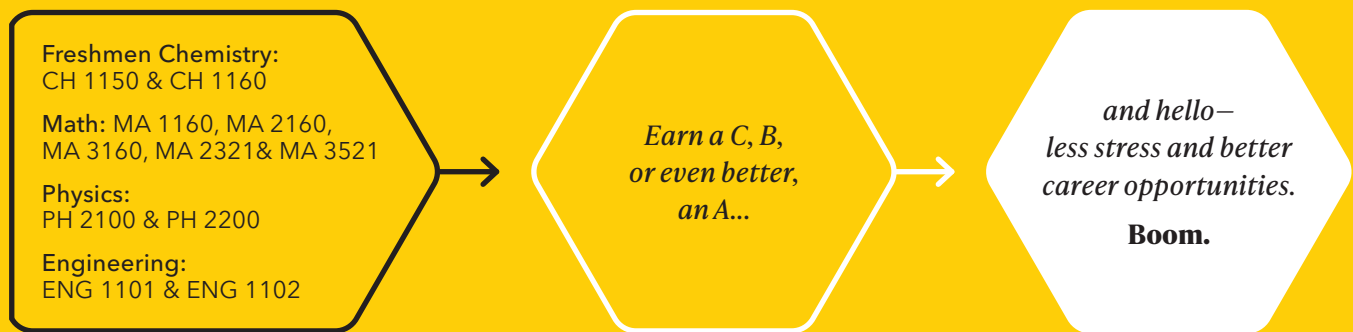
Advice from Tess: Know that the work you do in class is very similar to what you'll do in your career on a day-to-day basis. Even though I decided to pivot to work that I am more passionate about, CEGE gave me a great undergraduate base in math/science/critical thinking/etc. I've been able to leverage my engineering degree in a new direction, and I use what I learned at Michigan Tech every day!

Fun Facts: Tess lives in Vermont, and recently traveled to Japan with her mom. She's learning to watercolor paint and recently created and presented a set of two science communication pieces based on work she assisted with as a field tech in Alaska (the summer between her undergrad and masters) as a final project.

Since graduation she has visited Portland (ME), Boston, Montreal, and Quebec City. She enjoys hiking, mountain biking, snowboarding, and exploring Burlington (near the University of Vermont) and the rest of Vermont!

What can you do *now* to be successful in the *future*?

Make the grade.



What are the rules for repeating classes?

1. You must retake any required class in which you receive an F; however, you can choose to repeat any course.
2. The most recent grade always replaces the previous grade. Retaking a class and receiving a better grade will improve both your semester and overall GPAs. However, you can retake a class and get a lower grade. For example if you have a D (a passing grade) and retake a course and receive an F (a failing grade), you now have a failing grade in the course and will have to retake the class a third time.
3. You may only take a class three times. You must receive permission from the Dean of Student's Office and your academic advisor to register for a class the third time. If the class that you are retaking is a required class for your program, and you do not pass the class during the third attempt then you may no longer continue in the program.

Review the Registrar's Office policy on retaking classes:

mtu.edu/registrar/students/registration/policies/repeat-course



If you receive an F in any required course, you have to retake it before moving on to the next class in the sequence. We strongly encourage you to retake any required courses if you receive a CD or D. Civils are required to receive a C or better in MA2160 (Calc II) before moving on.



Connor Worthington, CMG '24

Project Engineer II, Rockford Construction

Connor is in charge of construction quality, making sure all documents are being followed, assisting with on-site/trade management, creating submittal logs, all project RFI's, and owner project updates.

Advice from Connor: You don't always see the value of your education while you're going through it. It's important to grasp the big picture topics for each of your classes and create a lot of connections with fellow classmates and teachers. Looking back, the most valuable aspect of earning a degree at Michigan Tech was the ability to get a good internship and all of the connections that I made while in school.

Fun Fact: Connor was able to travel for work to Indianapolis for a year. He enjoyed exploring a new city and was able to go to his first Indianapolis 500!

Calling all creative, curious, analytical, and detail- oriented individuals:

Tackle growing
infrastructure
challenges as a
civil engineer.



Questions? Ask Julie Ross

Academic Advisor
(906) 487-3410
jzross@mtu.edu
Dillman 103

mtu.edu/cege/people/faculty-staff



→ At Michigan Tech you will have → unparalleled undergraduate → opportunities:

State-of-the-art facilities: Study asphalt and ultra-high-performance concrete and experiment in the pilot-scale environmental simulation lab.

Hands-on learning: From Senior Capstone and internships to having one of the highest co-op rates on campus, our students are in high demand.

Go global: Check out Engineers Without Borders or participate in the Study Abroad Program.

Be rail-ly innovative: The innovative Rail Transportation Program is one of the first in the nation. Its mission? To advance rail education and research across disciplines.

Civil Engineering Course Descriptions

mtu.edu/catalog/courses

Dylan Lane, CE '24

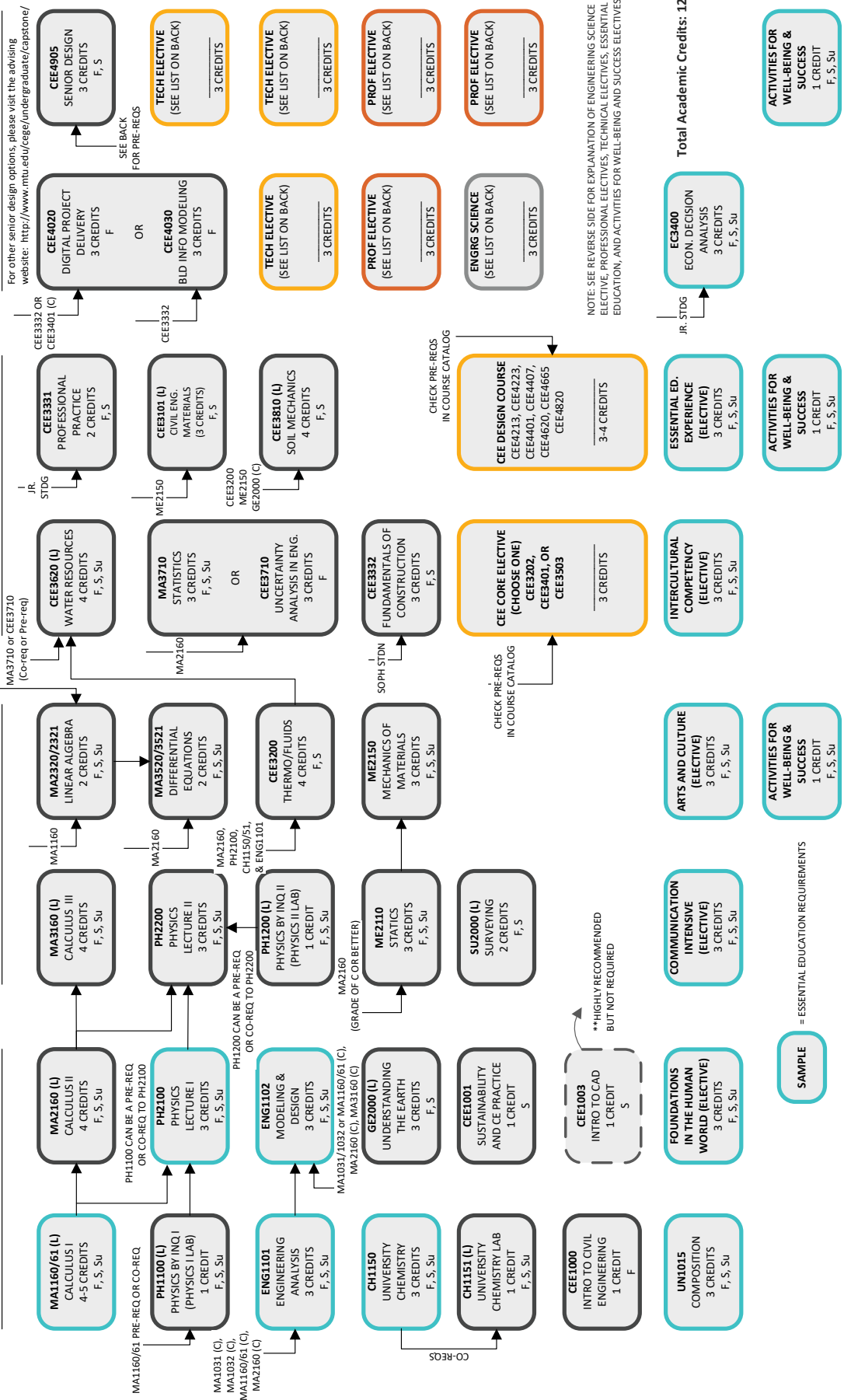
Civil & Structures Engineer, Blatter Company

Dylan ensures that the civil, structural, and electrical engineers have their designs aligned for renewable energy projects. He also assists senior engineers with varying tasks, like creating maps based off of geotechnical reports.

Advice from Dylan: Take the Water Resources Engineering and Geotechnical Engineering (soil mechanics) classes very seriously. Those topics are a great resource for many jobs.

Fun Fact: As part of an on-site management team, Dylan was tasked with finding housing in the town where Mark Twain grew up—it reminded him of Houghton a lot.





TECHNICAL ELECTIVES (9 CREDITS)

- Any 2000 or higher level course in Construction Management (CMG)
- Any 2000 or higher level course in Geospatial Engineering (SU)
- Any 3000 or higher level course in Civil and Environmental Engineering (CEE)
- GE3850 (Geohydrology)
- GE4800 (Groundwater Engineering)

PROFESSIONAL ELECTIVES (9 CREDITS)

- Any 1000 or higher level course in Computer Science, Fine Arts or Forestry. (CS, ART, FW, MUS, SND, THEA)
- Any 2000 or higher level course in Biological Sciences, Chemistry, Construction Management, Geology, Physics or Geospatial Engineering. (BL, CH, CMG, GE, PH, SU)
- Any 2000 or higher level course in Business or Economics (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM).
- Any 3000 or higher level course in Mathematics, Humanities, Psychology, Social Sciences or University Wide (MA, HU, PSY, SS, UN).
- Any 3000 or higher level course in Civil and Environmental Engineering (CEE) or any other Engineering Dept.

NOTE: OTHER COURSES MAY BE USED TO SATISFY THE PROFESSIONAL ELECTIVES REQUIREMENT IF APPROVED BY THE DEPARTMENT OF CIVIL, ENVIRONMENTAL, AND GEOSPATIAL ENGINEERING ACADEMIC ADVISOR.

ENGINEERING SCIENCE ELECTIVE

BE2700 BIOMEDICAL SIGNALS & SYSTEMS
 CM2110 MATERIAL AND ENERGY BALANCES
 CM2200 INTRO TO MINERALS & MATERIALS
 EE3010 CIRCUITS AND INSTRUMENTATION
 MSE2100 INTRO TO MATERIALS SCI & ENGRG
 ME2201 INTRODUCTORY THERMODYNAMICS
 ME2700 DYNAMICS

CEE4905: SENIOR DESIGN PREREQS

REQUIRED: CEE3101 AND CEE3332
 PLUS TWO OF THE FOLLOWING: CEE3202, CEE3401, CEE3503, CEE3620, CEE3810
 AND: A CEE DESIGN COURSE (THIS CAN BE TAKEN CONCURRENTLY WITH CEE4905)

ESSENTIAL EDUCATION REQUIREMENTS

ESSENTIAL ED FOR CIVIL ENGINEERING

1. Core: (16 credits min)

Seminar ENG1101
 Composition-focused Course UN1015
 Math MA1160/61
 Science PH2100
 STEM ENG1102
 Foundations in the Human World _____

2.a. Distribution Pathway: (18 credits)

Communication Intensive _____
 Intercultural Competency _____
 SHAPE Course EC3400 _____
 Arts and Culture List _____
 STEM CH1150 _____
 Essential Ed Experience (E3) _____

OR

2.b. Minor Pathway: (18 credits)

Minor Course _____
 Minor Course _____
 Minor Course _____
 Minor Course _____
 Minor Course _____
 Minor Course _____

3. Activities for Well-Being: (3 credits)

ESSENTIAL ED:

<https://www.mtu.edu/registrar/essential-education/overview/>

UNDERGRADUATE CATALOG (COURSE DESCRIPTIONS):

www.mtu.edu/catalog/courses/

CIVIL ENGINEERING FOCUS AREAS

Course Suggestions

Focus Area	CEE Core Elective	CEE Design Elective	CEE 4020 or CEE 4030	Tech Elective	Tech Elective	Tech Elective	Prof Elective
<u>General</u>	CEE 3202	Any CEE Design Course	CEE 4020 or CEE 4030	CEE 3503	CEE 3401	Choose a Tech Elective	Open
<u>Transportation</u>	CEE 3401	CEE 4401 or CEE 4407	CEE 4020 or CEE 4030	Choose a Transp. Tech Elect	Choose a Transp. Tech Elect	Choose a Transp. Tech Elect	Open
<u>Structures</u>	CEE 3202	CEE 4213	CEE 4030	CEE 4201	CEE 4223	Choose a Structural Elective	Open
<u>Water Resources</u>	CEE 3503	CEE 4620 or CEE 4665	CEE 4020	Choose a Water Res. Elect	Choose a Water Res. Elect	Choose a Water Res. Elect	Open
<u>Geotech</u>	CEE 3202	CEE 4820	CEE 4020	CEE 4850	CEE 5840	CEE 5850	CEE 4213

CIVIL ENGINEERING FOCUS AREAS

Course Suggestions With Minors Included

Minor	CEE Core Elective	CEE Design Elective	CEE 4020 or CEE 4030	Tech Elective	Tech Elective	Tech Elective	Prof Elective	Prof Elective
<u>Construction Management</u>	CEE 3202 or CEE 3401 or CEE3503	Any CEE Design Course	CEE 4020 or CEE 4030	CEE 4333	CEE 4344	CMG 4200	CMG 4210	CMG 4300 or CMG4400
<u>Humanitarian</u>	CEE 3202 or CEE 3401 or CEE3503	Any CEE Design Course	CEE 4020	CEE 4993	Minor Engineering Elective	Open	Minor Elective	Minor Elective
<u>Municipal Engineering</u>	CEE 3503	CEE 4407, CEE 4620, or CEE 4665	CEE 4020	CEE 4333	CEE 4402	CEE 4502, CEE 4502, CEE 4507, or CEE 4511	CEE 3401	Open
<u>Rail Transportation</u>	CEE 3401	CEE 4407	CEE 4020	CEE 4333	CEE 4404	Open	OSM 4700	Minor Leadership Elective
<u>Surveying</u>	CEE 3401	CEE 4407	CEE 4020	SU 2050	SU 3600	SU 4060	Minor Elective	Open
<u>Ecological</u>	CEE 3503	CEE 4620 or CEE 4665	CEE 4020	Group B Elective Choose CEE course	Open	Open	BL1400	FW 4220
								Group B Elective

CIVIL ENGINEERING ELECTIVE LISTS

CEE TECHNICAL ELECTIVES & CEE DESIGN ELECTIVES

TECHNICAL ELECTIVE RULES

- Any 2000 or higher level course in Construction Mgt (CMG)
- Any 2000 or higher level course in Geospatial Engineering (SU)
- Any 3000 or higher level course in Civil or Env Engrg (CEE)
- GE3850 (Geohydrology)
- GE4800 (Groundwater Engineering)

CONSTRUCTION

- CEE4333 - Estimating, Planning, Construction (Fall) 3 cr.
- CEE4344/CMG4120 - Construction Scheduling (Sp) 3 cr.
- CMG2110 - Building Utility Systems (Fall) 4 cr.
- CMG2140 - Building Materials & Methods (Sp) 3 cr.
- CMG3200 - Site Planning and Development (Sp) 4 cr.
- CMG3265 - Construction Cost Estimating (Sp) 4 cr.
- CMG4100 - Construction Equipment Management (On Demand) 3 cr.
- CMG4200 - Construction Contracts (Fall) 3 cr.
- CMG4210 - Construction Project Management (Fall) 4 cr.
- CMG4300 - Construction Finance and Accounting (Fall) 3 cr.
- CMG4400 - Construction Safety Management (Fall) 3 cr.
- CMG4800 - Sustainable Construction (Sp) 3 cr.

GEOTECH

- **CEE4820 - Foundation Engineering (Fall) 3 cr.**
- CEE4830 - Geosynthetics (Sp) 3 cr.
- CEE4850 - Rock Engineering (Sp) 3 cr.
- CEE5840 - Advanced Soil Mechanics (Fall) 3 cr.
- CEE5850 - Ground Engineering (Sp) 3 cr.

TRANSPORTATION/MATERIALS

- CEE4101 - Bituminous Materials (Fall) 3 cr.
- **CEE4401 - Pavement Design (Fall) 3 cr.**
- CEE4402 - Traffic Engineering (Fall) 3 cr.
- CEE4404 - Railroad Engineering (Fall) 3 cr.
- CEE4406 - Airport Planning (Sp) 3 cr.
- **CEE4407 - Transportation Design (Sp) 3 cr.**
- CEE4410 - Transportation Planning (Fall) 3 cr.
- CEE5402 - Traffic Flow Theory (Sp) 3 cr.

DEPARTMENT WIDE COURSES

- CEE4020 - Digital Project Delivery (Fall) 3 cr.
- CEE4030 - Building Information Modeling (Fall) 3 cr.
- CEE4760 - Optimization Methods (Sp) 3 cr.
- CEE4993 - Engrg with Developing Comm. (Fall) 3 cr.

ENVIRONMENTAL

- CEE4502 - Waste Treatment (Fall) 3 cr.
- CEE4503 - Water Treatments (Sp) 3 cr.
- CEE4504 - Air Quality (Fall) 3 cr.
- CEE4505 - Surface Water Quality (Fall) 3 cr.
- CEE4506 - Sustainable Engineering (Sp) 3 cr.
- CEE4507 - Water Distribution & Collection (Sp) 3 cr.
- CEE4511 - Solid & Haz. Waste Eng. (Sp) 3 cr. (Odd years, i.e. 23-24)
- CEE4521 - Bioremediation Eng. (Sp) 3 cr. (Even years, i.e. 23-24)

STRUCTURES

- CEE4201 - Matrix Structural Analysis (Fall) 3 cr.
- **CEE4213 - Structural Concrete Design (Sp) 4 cr.**
- **CEE4223 - Steel Design I (Fall) 4 cr.**
- CEE4233 - Structural Timber Design (Sp) 3 cr.
- CEE4244 - Loads for Civil Structures (Sp) 3 cr.
- CEE5212 - Prestressed Concrete Design (Fall) 3 cr.
- CEE5213 - Concrete/Masonry Building Sys. (Fall) 3 cr.

WATER RESOURCES

- CEE4610 - Water Resource Stream Modeling (Sp) 3 cr.
- **CEE4620 - River & Floodplain Hydraulics (Fall) 3 cr.**
- CEE4640 - Stormwater Mgt & LID (Su) 3 cr.
- CEE4650 - Hydraulic Structures (Variable) 3 cr.
- **CEE4665 - Stream Restoration (Sp) 3 cr.**
- CEE5620 - Stochastic Hydrology (Sp) 3 cr.
- CEE5666 - Water Res. Planning & Mgt (Variable) 3 cr.
- GE3850 - Geohydrology (Sp) 3 cr.
- GE4800 - Groundwater Engineering (Sp) 3 cr.

PROFESSIONAL ELECTIVES

- Any 1000 or higher level course in Computer Science, Fine Arts or Forestry. (CS, ART, FW, MUS, SND, THEA)
- Any 2000 or higher level course in Biological Sciences, Chemistry, Construction Management, Geology, Physics or Geospatial Engineering. (BL, CH, CMG, GE, PH, SU)
- Any 2000 or higher level course in Business or Economics (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM).
- Any 3000 or higher level course in Mathematics, Humanities, Psychology, Social Sciences or University Wide (MA, HU, PSY, SS, UN).
- Any 3000 or higher level course in Civil and Environmental Engineering (CEE) or any other Engineering Dept.



Morgan Barnhart, CE '23, MBA '26

Civil Engineer III, Fleis & VandenBrink Engineering

Morgan serves as a municipal civil engineer, where she designs utilities, parks, roads, and more. She also manages construction administration—running progress meetings, reviewing shop drawings, and evaluating pay applications. Her responsibilities include municipal utility design, funding assistance and applications, field inspection, construction administration, business development, and intern supervisor.

Fun Fact: Morgan and her husband traveled to Utah in March for a honeymoon ski trip. She enjoys working on Beaver Island.

Advice: Work hard in school and it definitely pays off! Make time for yourself and your family no matter what school and work are throwing at you—you and your family come first. And never say no to opportunities!

If you like the outdoors, sustainable design, and protecting the environment...

you may have what it takes to be an ecological engineer.



Questions? Ask Julie Ross

Academic Advisor
(906) 487-3410
jzross@mtu.edu
Dillman 103

mtu.edu/cege/people/faculty-staff



→ The Ecological Engineering degree at Michigan Tech prepares students to:

Design sustainable solutions that work with natural systems across a range of applications such as water resources, ecosystem restoration, stormwater management, habitat conservation, and environmental protection.

Apply engineering principles while considering ecological processes and long-term sustainability.

Analyze and solve complex environmental challenges using engineering, biology, and environmental science.

Ecological Engineering Course Descriptions

mtu.edu/catalog/courses

Jess Kozarek

Assistant Professor, Ecological Engineering

Dr. Kozarek is excited to help students develop the necessary interdisciplinary skills to collaborate with ecologists and environmental scientists to tackle global challenges including environmental degradation and biodiversity loss.

Research Snippet: She uses her Ecological Engineering experience to work with Departments of Transportation to guide design of more resilient and environmentally friendly road-stream crossings that allow for both safe vehicular travel, but also fish migration.

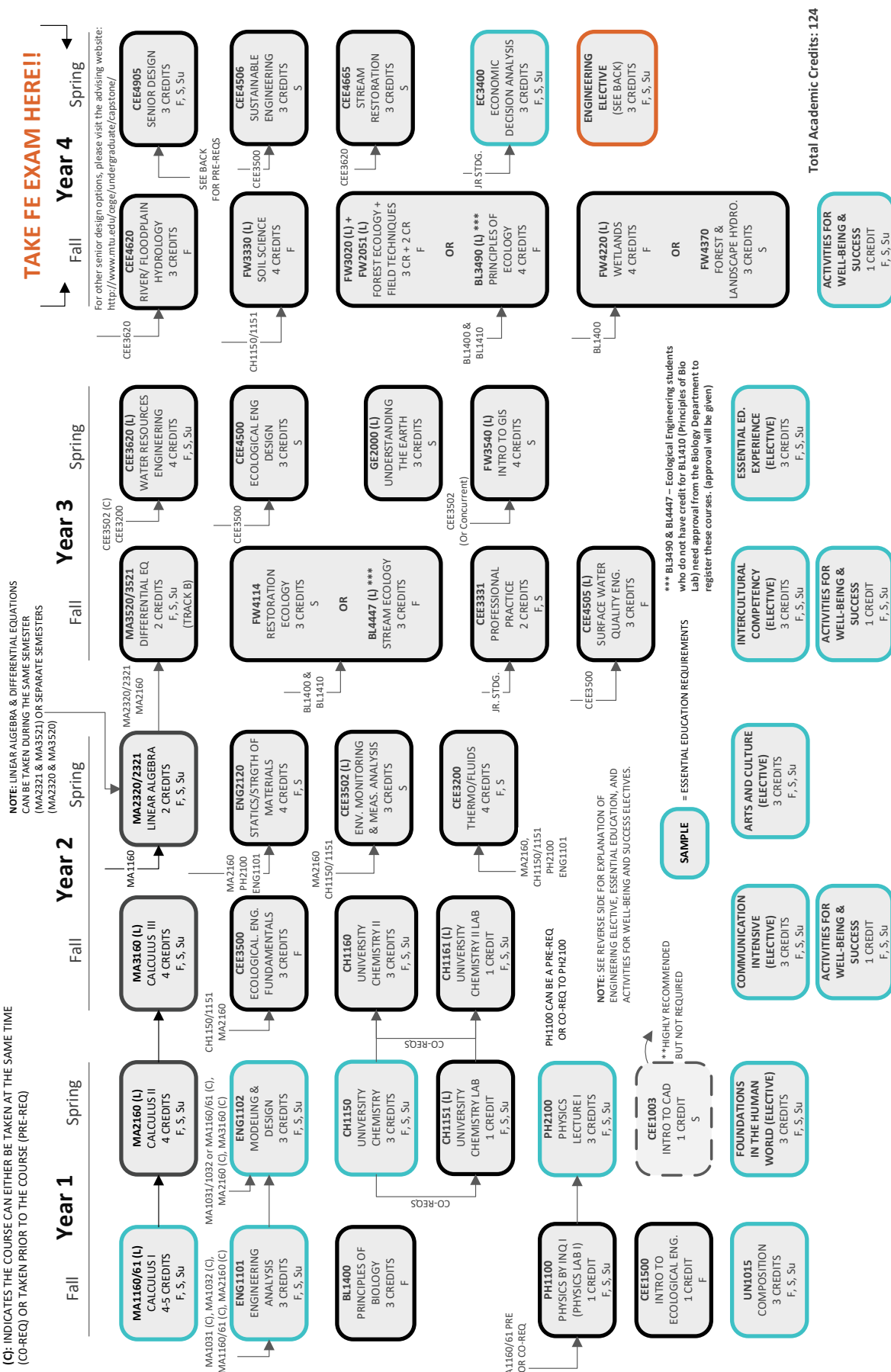


ECOLOGICAL ENGINEERING FLOWCHART

Academic Year 2026-27

KEY:
F: INDICATES COURSE IS OFFERED FALL SEMESTER
S: INDICATES COURSE IS OFFERED SPRING SEMESTER
Su: INDICATES COURSE IS OFFERED SUMMER SEMESTER

(L): INDICATES A COURSE WHICH INCLUDES A LAB MUST BE SCHEDULED IN ADDITION TO THE LECTURE
(C): INDICATES THE COURSE CAN EITHER BE TAKEN AT THE SAME TIME OR CO-REQ OR TAKEN PRIOR TO THE COURSE (PRE-REQ)



Total Academic Credits: 124

ENGINEERING ELECTIVES (3 cr)

CEE 4502 – Wastewater Treatment Principles
 CEE 4503 – Drinking Water Treatment Principles
 CEE 4507 – Water Dist. & Wastewater Collection
 CEE 4640 – Stormwater Management and LID
 CEE 4650 – Hydraulic Structures
 CEE 4993 – Engineering w/ Dev. Communities
 CM 2110 – Material and Energy Balances
 GE 3850 – Geohydrology

SENIOR DESIGN PREREQUISITES

Complete the following courses:
 CEE 3620 – Water Resources
 CEE 4500 – Ecological Engineering Design
 CEE 4505 – Surface Water Quality Engineering
 CEE 4620 – River and Floodplain Hydraulics (can be taken concurrently with CEE4905)
 FW 3330 – Soil Science
 FW 4220 – Wetlands

ESSENTIAL EDUCATION REQUIREMENTS

ESSENTIAL ED FOR ENVIRONMENTAL ENGINEERING

1. Core: (16 credits min)

Seminar ENG1101
 Composition-focused Course UN1015
 Math MA1160/61
 Science PH2100
 STEM ENG1102
 Foundations in the Human World

2.a. Distribution Pathway: (18 credits)

Communication Intensive
 Intercultural Competency
 SHAPE Course EC3400
 Arts and Culture List
 STEM CH1150
 Essential Ed Experience (E3)

OR

2.b. Minor Pathway: (18 credits)

Minor Course
 Minor Course
 Minor Course
 Minor Course
 Minor Course
 Minor Course

3. Activities for Well-Being: (3 credits)

• _____
 • _____
 • _____

UNDERGRADUATE CATALOG (COURSE DESCRIPTIONS):

www.mtu.edu/catalog/courses/

ESSENTIAL ED:

<https://www.mtu.edu/registrar/essential-education/overview/>

Safe drinking water. Air quality. Waste manage- ment.

Turn your passion
into a career as an
environmental
engineer.



Questions? Ask Julie Ross

Academic Advisor
(906) 487-3410
jzross@mtu.edu
Dillman 103

mtu.edu/cege/people/faculty-staff



→ What can you do as an → EEN at Michigan Tech? → Here's the short answer:

Participate in Engineers without Borders, which provides education, research, and service opportunities.

Design water systems in rural Panama.

Master state-of-the-art equipment in labs, assignments, research, and projects such as our pilot-scale environmental simulation lab.

Get involved with the Green Campus Enterprise and design and implement projects to improve the sustainability of the Tech campus.

Environmental Engineering
Course Descriptions

mtu.edu/catalog/courses

Autumn Sanford, EEN '22

Effluent Applications Engineer
Voith Meri Environmental Solutions, Inc.

As an effluent applications engineer, Autumn works across a solution driven sales and technology services team to collaborate with other engineer teams and managers to complete projects related to industrial effluent treatment plants (ETP). Her sales role has her creating ETP design layouts, process flow diagrams, environmental benefits lists, project proposals, and machine sizing and pricing with suppliers.

Fun Fact: She took an international trip to Munich, Germany, where she partnered with German and Chinese colleagues to exchange ETP knowledge and best practices.



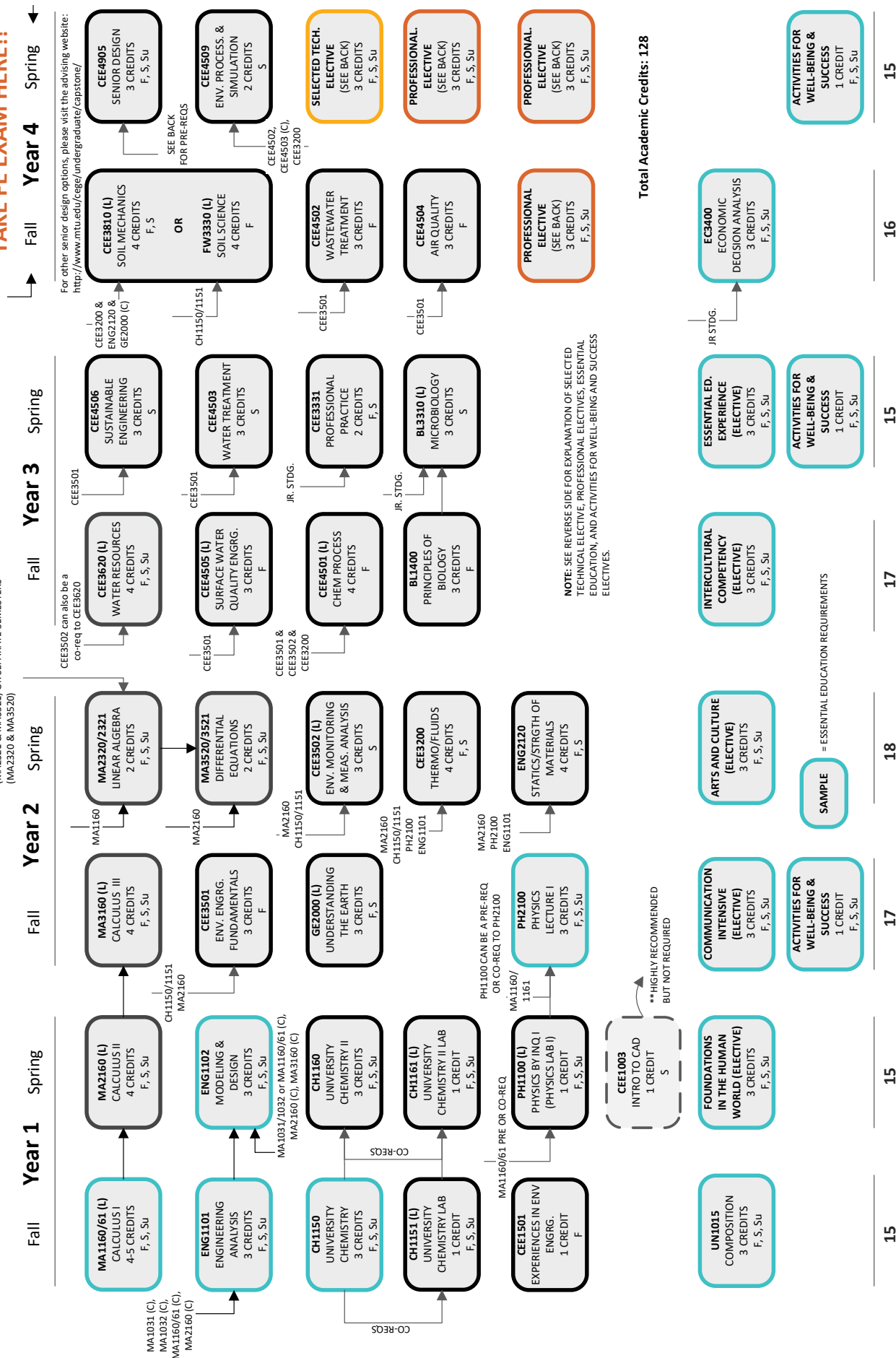
ENVIRONMENTAL ENGINEERING FLOWCHART

Academic Year 2026-27

(U): INDICATES A COURSE WHICH INCLUDES A LAB MUST BE SCHEDULED IN ADDITION TO THE LECTURE

(C): INDICATES THE COURSE CAN EITHER BE TAKEN AT THE SAME TIME OR PRIOR TO THE COURSE (CO-REQ) OR TAKEN PRIOR TO THE COURSE (PRE-REQ)

NOTE: LINEAR ALGEBRA & DIFFERENTIAL EQUATIONS CAN BE TAKEN DURING THE SAME SEMESTER (MA2321 & MA3521) OR SEPARATE SEMESTERS (MA2320 & MA3520)



PROFESSIONAL ELECTIVES (9 cr)

- ANY 1000 OR HIGHER LEVEL COURSE IN BIOLOGY, CHEMISTRY, COMPUTER SCIENCE, CONSTRUCTION MANAGEMENT, GEOLOGY, FORESTRY, OR PHYSICS (BL, CH, CS, CMG, GE, FW, PH)
- ANY 2000 OR HIGHER LEVEL COURSE IN BUSINESS OR ECONOMICS. (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM)
- ANY 2000 OR HIGHER LEVEL COURSE IN GEOSPATIAL ENGINEERING (SU)
- ANY 3000 OR HIGHER LEVEL COURSE IN CIVIL AND ENVIRONMENTAL ENGINEERING OR IN ANY OTHER ENGINEERING DEPARTMENT
- ANY 3000 OR HIGHER LEVEL COURSE IN HUMANITIES, SOCIAL SCIENCES, OR UNIVERSITY WIDE. (HU, SS, UN)
- ANY 4000 OR HIGHER LEVEL COURSE IN MATHEMATICS (MA) INTERESTS?

- REMEDIATION – think about taking GE 3850 (Geohydrology) and CEE 4511 (Solid & Hazardous Waste Engineering)
- NATURAL SYSTEMS – think about taking CEE 4518 (Aquatic Biogeochemistry), CEE 4665 (Stream Restoration), and FW 4220 (Wetlands)
- MUNICIPAL ENGINEERING – think about taking CEE 4507 (Water Distribution and Wastewater Collection), CEE 4511 (Solid & Hazardous Waste Engineering), and SU 2000 (Surveying and GIS Fundamentals)* (only 2 credits)
- ATMOSPHERIC PROCESSES & AIR POLLUTION – think about taking MEEM 4240 (Combustion & Air Pollution) and CH 4515 (Atmospheric Chemistry)
- WATER RESOURCES – think about taking CEE 4620 (River and Floodplain Hydraulics), CEE 4640 (Stormwater Management and Low Impact Development), and CEE 4665 (Stream Restoration)

NOTES:

AN OVERALL GPA OF 3.00 IS REQUIRED TO TAKE GRADUATE LEVEL COURSES (5000 LEVEL). A MAXIMUM OF TWO (2) GRADUATE LEVEL COURSES MAY BE USED TOWARD YOUR BS ENVE DEGREE.

OTHER COURSES MAY BE USED TO SATISFY THE PROFESSIONAL ELECTIVES REQUIREMENT IF APPROVED BY THE DEPARTMENT OF CIVIL, ENVIRONMENTAL, AND GEOSPATIAL ENGINEERING ACADEMIC ADVISOR.

SELECTED TECHNICAL ELECTIVES (3 cr)

GE3850 Geohydrology (Spring)
CEE4507 Water Dist. & Wastewater Collect. (Spring)
CEE4511 Solid & Hazardous Waste Engineering (Spring)
CEE4518 Aquatic Biogeochemistry (Fall – Alt Years)
CEE4521 Bioremediation Engineering (Spring)
CEE4528 Global Biogeochemistry (Fall – Alt Years)
CEE4620 River & Floodplain Hydraulics (Fall)
CEE4640 Stormwater Management and LID (Summer)
CEE4665 Stream Restoration (Spring)
CEE4993 Engrg with Developing Communities (Fall)
CH4515 Atmospheric Chemistry (Spring)
MEEM4240 Combustion & Air Pollution (Fall/Spring)

SENIOR DESIGN PREREQUISITES

Complete 7 of the following courses:

CEE3620 – Water Resources
CEE3810/FW3330 – Soil Mechanics or Soil Science
CEE4501 – Env. Engineering Chem Processes
CEE4502 – Wastewater Treatment
CEE4503 – Water Treatment
CEE4504 – Air Quality
CEE4505 – Surface Water Quality
CEE4506 – Sustainable Engineering
CEE4509 – Env. Process and Simulation

UNDERGRADUATE CATALOG (COURSE

DESCRIPTIONS):

www.mtu.edu/catalog/courses/

ESSENTIAL ED:

<https://www.mtu.edu/registrar/essential-education/overview/>

ESSENTIAL EDUCATION REQUIREMENTS

ESSENTIAL ED FOR ENVIRONMENTAL ENGINEERING

1. Core: (16 credits min)

Seminar ENG1101

Composition-focused Course UN1015

Math MA1160/61

Science PH2100

STEM ENG1102

Foundations in the Human World

2.a. Distribution Pathway: (18 credits)

Communication Intensive

Intercultural Competency

SHAPE Course EC3400

Arts and Culture List

STEM CH1150

Essential Ed Experience (E3)

OR

2.b. Minor Pathway: (18 credits)

Minor Course

Minor Course

Minor Course

Minor Course

Minor Course

Minor Course

3. Activities for Well-Being: (3 credits)

ENVIRONMENTAL ENGINEERING FOCUS AREAS

Course Suggestions

Focus Areas	Professional Elective #1	Professional Elective #2	Professional Elective #3	Selected Tech Elective
<u>Atmospheric Processes and Air Pollution</u>	GE2640 Atmospheric Observations and Meteorology	CH4515 Atmospheric Chemistry	GE3250 Computational Geoscience	MEEM4240 Combustion & Air Pollution
<u>Remediation</u>	GE3850 Geohydrology	CEE4511 Solid and Hazardous Waste Engineering	BL4120 Env. Remediation or BL4070 Env. Toxicology	CEE4521 Bioremediation Engineering
<u>Water Resources</u>	CEE4620 River and Floodplain Hydraulics	CEE4507 Water Distribution & Wastewater Collection	CEE4640 Stormwater Mgmt. or CEE4650 Hydraulic Structures	CEE4665 Stream Restoration
<u>General Environmental Engineering</u>	Follow Current Guidelines	Follow Current Guidelines	Follow Current Guidelines	Follow Current Guidelines

ENVIRONMENTAL ENGINEERING FOCUS AREAS

Course Suggestions With Minors Included

MINOR	Selected Tech Elective	Professional Elective #1	Professional Elective #2	Professional Elective #3	Additional Credits
<u>Ecological Engineering Minor</u>	Pick a Selected Tech Elective from Group A	FW4220 Wetlands	Pick a Prof Elective from Group B	-	-
<u>Municipal Engineering Minor</u>	Pick a Selective Tech Elective from Elective Area	CEE3332 Fundamentals of Construction	CEE4333 Estimating and Planning	CEE4402 Traffic Engineering	-
<u>Water Resource Recovery Technology Minor</u>	CEE4507 Water Distribution & Wastewater Collection	SU2000 Intro to Surveying	FW3540 Intro to GIS	Pick a Prof Elect from Admin. Skills Elective List	UN3002 Summer Co-op (1 cr)
<u>Humanitarian Engineering Minor</u>	CEE4993 Engineering with Developing Comm	ENG4515 Introduction to Sustainability	SS Elective (3000+)	Pick a Prof Elect from Bottom Elective List	Bottom Elective List May count for Ess Ed

If you like math, computing, and the outdoors...

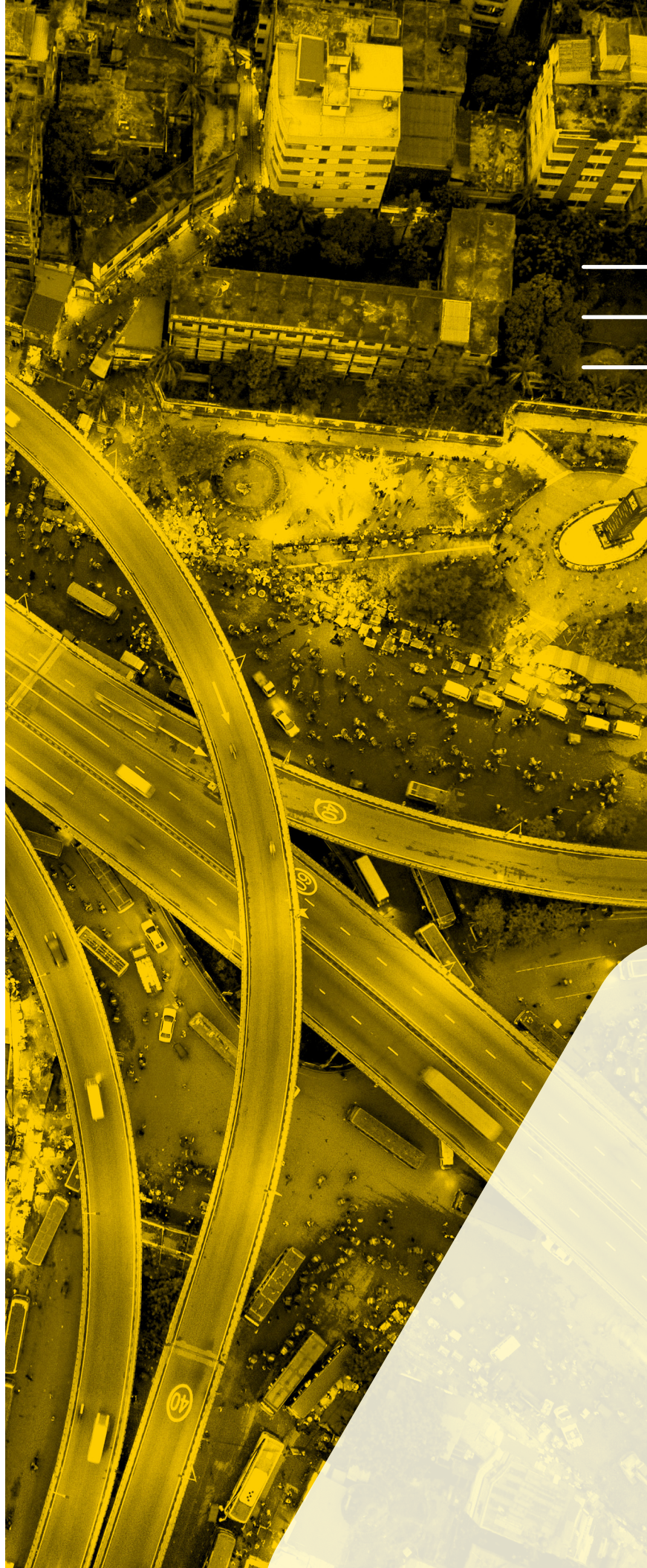
you may have
what it takes to
be a geospatial
engineer.



Questions? Ask Matt Laird

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mslaird@mtu.edu
Dow 607

mtu.edu/geo/departments/staff



→ The Geospatial Engineering degree at Michigan Tech prepares students to:

Become a state-licensed professional surveyor

across a range of applications such as: accurate location of real property boundaries, data capture of the natural/man-made objects on the earth's surface, and digital mapping for use in design or planning.

Manage large volumes of digital geoinformation

that can be stored, manipulated, visualized, analyzed, and shared. Courses focus on applications of managing geoinformation using Geographic Information Science (GIS) tools, remote sensing, big data acquisition, and cloud computing.

Geospatial Engineering Course Descriptions

mtu.edu/catalog/courses

Allison Spierling, CE '23, GE '24

Junior Land Surveyor/Junior Engineer,
Benchmark Engineering

Allison takes in jobs and preps for field crews as an office manager. She works with various survey maps, including boundary, location, topographic, line splits/adjustments, and certified surveys. Allison also completes survey work outside on some of the most breathtaking lakes and land in Michigan.

Fun Fact: After graduation Allison traveled to Italy with her best friend, and got engaged. A year later they were married in Hawaii in front of 100 of their closest friends and family.

Advice: The world does not end when you fail an exam or even a class. Keep pushing towards your goals and dreams!





GEOSPATIAL ENGINEERING FLOWCHART

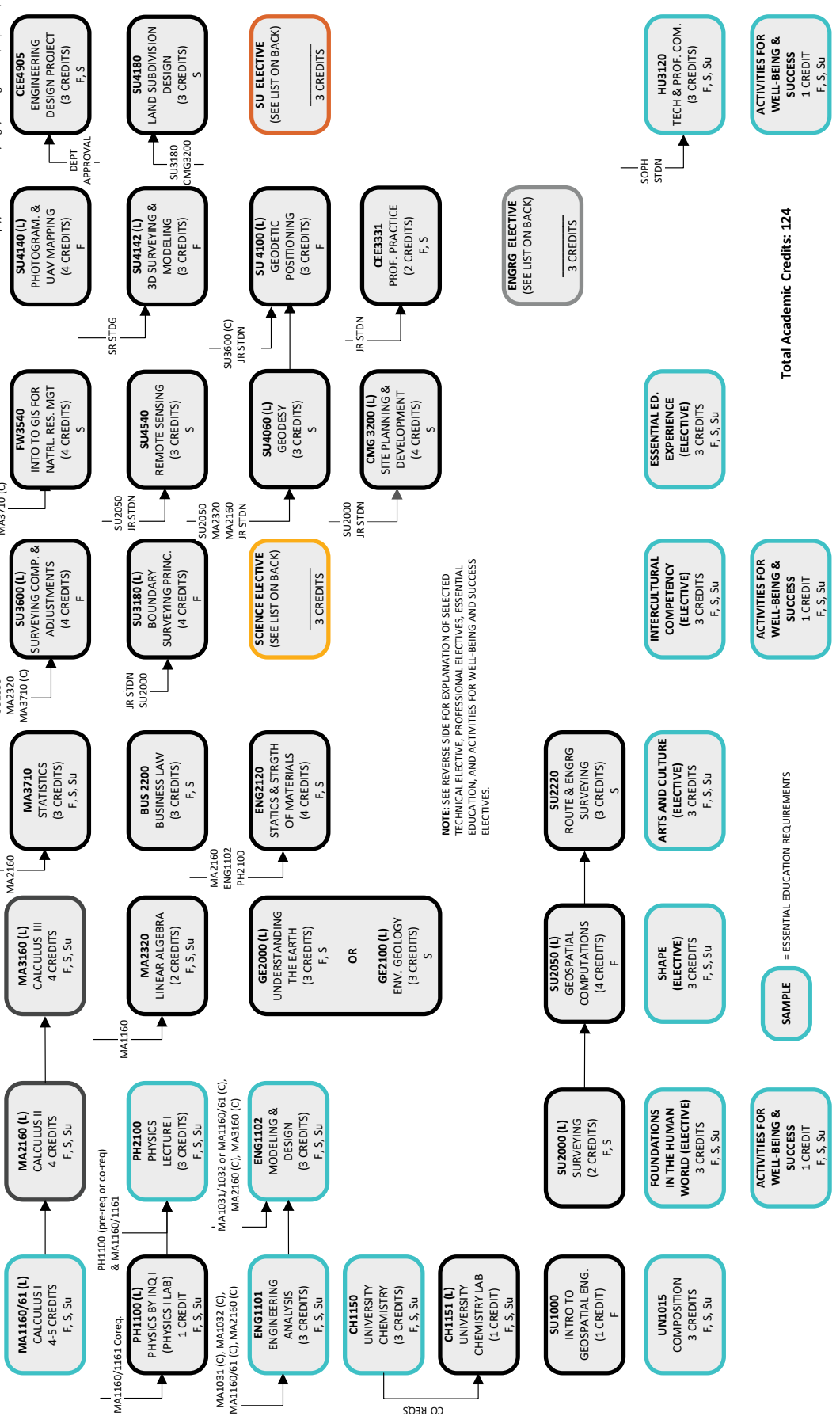
Academic Year 2026-27

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

TAKE FS EXAM HERE!!

Year 1 Year 2 Year 3 Year 4

For other senior design options, please visit the advising website: <http://www.mtu.edu/cege/undergraduate/capstone/>



NOTE: SEE REVERSE SIDE FOR EXPLANATION OF SELECTED TECHNICAL ELECTIVE, PROFESSIONAL ELECTIVES, ESSENTIAL EDUCATION, AND ACTIVITIES FOR WELL-BEING AND SUCCESS ELECTIVES.

16

16

16

16

15

17

15

13

ENGINEERING ELECTIVES (3 credits)		
CEE3101	Civil Engineering Materials (F, S)	3 cr
CEE3200	Thermo/Fluids (F, S, Su)	4 cr
CEE3332	Fundamentals of Construction (F, S)	3 cr
CEE3401	Transportation Engineering (F, S)	3 cr
CEE4020	Digital Project Delivery (F)	3 cr
ENTXXXX	Enterprise (Except 3960/4950) (F, S)	var
UN3002	Co-op (F, S, Su)	var

SCIENCE ELECTIVES (3 credits)		
BL2001	Valuing the Great Lakes (F, Su)	3 cr
BL2160	Botany (S)	4 cr
CH1153	Chemistry Recitation I (F, S, Su)	1 cr
FW2010	Vegetation of North America (F)	4 cr
PH1200/2200	Physics II (F, S, Su)	3 cr + 1 cr
PH1600/1610	Introductory Astronomy & Lab (F, S, Su)	2 cr + 1 cr
GE3850	Geohydrology (S)	3 cr

SURVEYING ELECTIVES (3 credits)		
SU3110	Surveying Field Practice	4 cr
SU4010	Geospatial Concepts, Technologies, and Data	3 cr
SU4013	Hydrographic Mapping & Surveying	3 cr
SU4996	Special Topics in Geospatial Technologies	var
SU4997	Independent Study in Geospatial Technologies	var
SU4998	Undergrad Research in Geospatial Technologies	var

UNDERGRADUATE CATALOG (COURSE DESCRIPTIONS):
www.mtu.edu/catalog/courses/

ESSENTIAL ED:
<https://www.mtu.edu/registrar/essential-education/overview/>

ESSENTIAL EDUCATION REQUIREMENTS

ESSENTIAL ED FOR GEOSPATIAL ENGINEERING

1. Core: (16 credits min)

Seminar ENG1101

Composition-focused Course UN1015

Math MA1160/61

Science PH2100

STEM ENG1102

Foundations in the Human World _____

2.a. Distribution Pathway: (18 credits)

Communication Intensive HU3120

Intercultural Competency _____

SHAPE Course _____

Arts and Culture List _____

STEM CH1150

Essential Ed Experience (E3) _____

OR

2.b. Minor Pathway: (18 credits)

Minor Course _____

Minor Course _____

Minor Course _____

Minor Course _____

Minor Course _____

Minor Course _____

3. Activities for Well-Being: (3 credits)

• _____

• _____

• _____

Take charge of building projects— from structures and roads to homes and hospitals.

Get a degree
in construction
management.



Questions? Ask Ryan Neely

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mtu.edu/business/people-groups/administration



Accredited by the American Council for Construction Education, the Michigan Tech Construction Management program includes:

100% job placement thanks in part to a background in accounting, scheduling, and business practices that sets Michigan Tech CMG graduates apart.

Top-notch faculty that have decades of real-world construction and construction administration experience.

Small class sizes that provide individual attention and mentoring.

Construction Management Course Descriptions

mtu.edu/catalog/courses

Bill Barnhart, CMG '23

Project Manager, Rieth-Riley Construction

Bill's primary focus is on MDOT and county road construction projects. He oversees projects from start-to-finish: estimating/bidding to construction management and project closeout. He works with multiple grading and paving crews, coordinates material suppliers and subcontractors, and builds relationships with owners—often on multiple projects at a time.

Multiple large paving projects on Beaver Island—located miles from shore in Lake Michigan—presented logistical difficulties. Bill enjoyed working with his team in a coordinated effort to successfully overcome the challenges of island construction.

Advice: Participate in career fairs and pursue internships. My internship led to a full-time position that I really enjoy. Even if your internship isn't the right fit, it will open a lot of doors for the future.



KEY:
F: INDICATES COURSE IS OFFERED FALL SEMESTER
S: INDICATES COURSE IS OFFERED SPRING SEMESTER
Su: INDICATES COURSE IS OFFERED SUMMER SEMESTER

(L): INDICATES A COURSE WHICH INCLUDES A LAB MUST BE SCHEDULED IN ADDITION TO THE LECTURE
 (C): INDICATES THE COURSE CAN EITHER BE TAKEN AT THE SAME TIME (CO-REQ) OR TAKEN PRIOR TO THE COURSE (PRE-REQ)

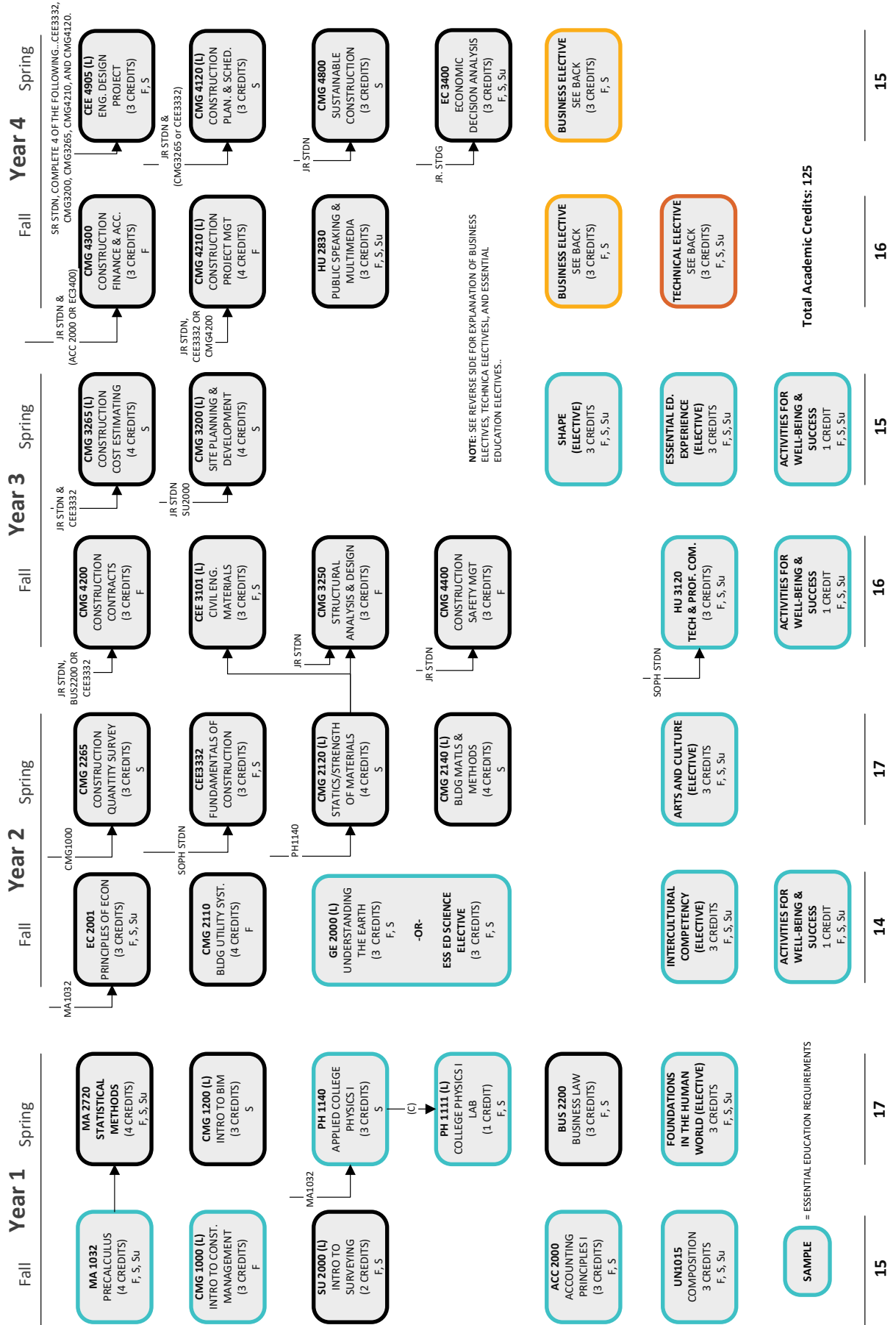


Michigan Tech

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

CONSTRUCTION MANAGEMENT FLOWCHART

Academic Year 2026-27



Total Academic Credits: 125

BUSINESS ELECTIVES (6 credits)

MGT 2000	Team Dynamics and Decision Making (F, S)	3 cr
MGT 3000	Organizational Behavior (F, S)	3 cr.
MGT 3800	Innovation & Entrepreneurship (F, S)	3 cr.
OSM 3000	Operations & Supply Chain Management (F, S, Su)	3 cr.
OSM 3150	Intro to Supply Chain Management (F)	3 cr.
OSM 3600	Procurement and Supply Management (F)	3 cr.

TECHNICAL ELECTIVES (3 credits)

BUS 2300	Quantitative Problem Solving (F, S)	3 cr.
CEE 3331	Professional Practice (F, S)	2 cr.
CEE 3401	Transportation Engineering (F, S)	3 cr.
CEE 3490	Intro to Rail Transportation (F)	1 cr.
CEE 4101	Bituminous Materials (F)	3 cr.
CEE 4233	Structural Timber Design (S)	3 cr.
CEE 4333	Estimating and Planning of Construction Proj. (F)	3 cr
CMG 4000	Project Delivery Methods (On Demand)	3 cr.
CMG 4100	Construction Equipment Management (On Demand)	3 cr.
CMG 4996	Spec. Topics in CMG (On Demand)	var.
CMG 4997	Ind. Study in CMG (On Demand)	var.
CMG 4998	UG Research in CMG (On Demand)	var.
ENT 3959	Fundamentals of Six Sigma (F)	1 cr.
ENT 3967	Design of Six Sigma (S)	1 cr.
ENT 3984	Lean Six Sigma Principles (F)	1 cr.
MGT 3000	Organizational Behavior (F, S)	3 cr.
MGT 4600	Management of Technology and Innovation (F, S, Su)	3 cr.
MKT 3000	Principles of Marketing (F, S, Su)	3 cr.
OSM 3000	Operations & Supply Chain Management (F, S, Su)	3 cr.
OSM 3150	Intro to Supply Chain Management (F)	3 cr.
OSM 3600	Procurement and Supply Management (F)	3 cr.
OSM 4650	Six Sigma Fundamentals (F, S)	3 cr.
SU 2050	Geospatial Computations (F)	4 cr.
SU 2220	Route/Engineering Surveying (S)	3 cr.
UN 3002	Undergrad Cooperative Education I (F, S, Su)	var.

UNDERGRADUATE CATALOG (COURSE DESCRIPTIONS):

www.mtu.edu/catalog/courses/

ESSENTIAL ED:

<https://www.mtu.edu/registrar/essential-education/overview/>

ESSENTIAL EDUCATION REQUIREMENTS

ESSENTIAL ED FOR CONSTRUCTION MANAGEMENT

1. Core: (16 credits min)

Seminar CMG1000

Composition-focused Course UN1015

Math MA1032

Science GE2000 or Ess Ed Sci Course

STEM PH1140 + PH1111

Foundations in the Human World _____

2.a. Distribution Pathway: (18 credits)

Communication Intensive HU3120

Intercultural Competency _____

SHAPE Course _____

Arts and Culture List _____

STEM ACC2000

Essential Ed Experience (E3) _____

OR

2.b. Minor Pathway: (18 credits)

Minor Course _____

Minor Course _____

Minor Course _____

Minor Course _____

Minor Course _____

Minor Course _____

3. Activities for Well-Being: (3 credits)



Minors

can broaden
your experience
and lead you to
specialization.

Municipal Engineering

Plan for a career with a city or municipality and broaden your skillset. Build a working knowledge of the planning, design, building, and municipality's facilities.

Courses include:

- Transportation engineering
- Traffic engineering
- Water and wastewater treatment
- Water distribution and wastewater collection system design
- Hydraulic structures

Rail Transportation

Participate in innovative courses and develop skills to become a specialist and leader in the railroad industry. Pick your path with a focus on civil, mechanical, or electrical, while learning the logistics, management, and communication skills to meet the demands of rail industry careers.

Courses include:

- Railroad engineering
- Logistics and transportation management
- Public transit
- Transportation engineering
- Vehicle dynamics
- Control systems

Surveying

Enhance your degree with a minor in surveying, where you will learn how to utilize the latest technology in remote sensing and transits to verify and establish boundaries. Build sustainable development practices for the design and layout of infrastructure.

Courses include:

- Surveying computations and adjustments
- Geodesy
- Route and construction surveying
- Boundary surveying principles
- Photogrammetry
- Land subdivision design

Complete list of minors:

mtu.edu/catalog/degrees/minors

Humanitarian Engineering

Make a difference by helping design and implement practices in disaster relief and in rural development of under-served communities. Learn how these practices provide access to clean water, enhance air quality, and build systems for water and wastewater management.

Courses include:

- Engineering with developing communities
- International field experience
- World resources and development
- Communicating across cultures
- Anthropology of international development

Construction Management

Gain valuable industry-specific skills for the construction industry, including estimating, safety, scheduling, contracts, project management, and project controls. Students are introduced to industry-standard technologies and up-to-date methods that will prepare them for success.

Courses include:

- Construction contracts
- Construction project management
- Construction planning and scheduling
- Construction cost estimating
- Construction finance and accounting
- Construction safety management

Ecological Engineering

Broaden expertise in engineering disciplines relating to earth sciences to understand natural systems in outdoor labs to create sustainable systems in natural, urban, and agricultural settings.

Courses include:

- Principles of biology
- Wetlands
- Water resource engineering
- Introduction to sustainability and resilience
- River and floodplain hydraulics
- Engineering with developing communities

Water Resource Recovery Technology

Secure hands-on experience through an internship with a water resource recovery facility to be ready to enter the workforce as a municipal wastewater treatment plant operator.

Courses include:

- Wastewater treatment principles and design
- Water distribution and wastewater collection design
- Stormwater management
- Environment and society
- Introduction to public policy
- Undergraduate co-op

Accelerated Masters and Graduate Certificates

Our Department offers two Accelerated Master's degrees as well as many Graduate Certificates. These programs enable students to double count approved undergraduate credits toward their advanced degree. Certificates can be stacked to allow students to work toward a master's degree.

mtu.edu/cege/graduate/accelerated

Faculty



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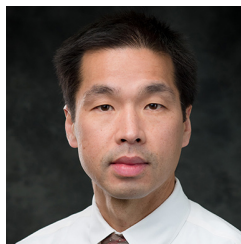
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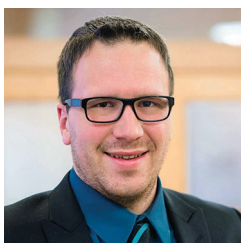
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CEGE CAREER ADVISOR

Faculty (cont.)



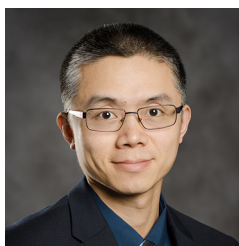
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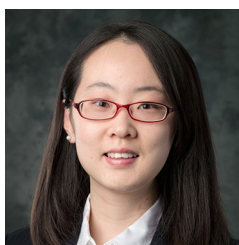
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CEGE CAREER ADVISOR



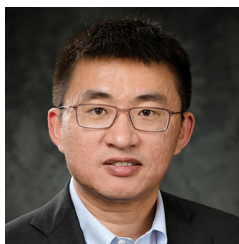
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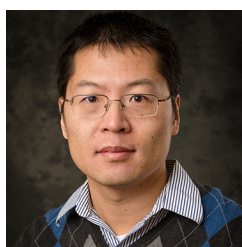
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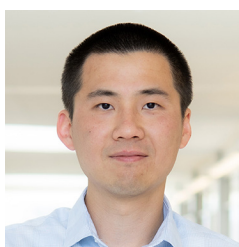
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Essential Education

2026 - 2027

Essential Education Requirements

- Students must complete three main components of Essential Education (First-Year Experience, Distribution or Minor Pathway, and Activities for Well-being and Success) with the credit distributions as shown below. A minimum of 37 credits is required to complete these requirements.
- Up to five Essential Education requirements and the Michigan Tech Seminar may be shared (double-counted) with major requirements. Work with your advisor to determine which major requirements may satisfy Essential Education requirements.
- Some courses are on more than one list, but each course can satisfy only one Essential Education requirement.
- Students may choose between an Essential Education minor or the Distribution Pathway.
- Lists of courses for each requirement can be found on the Essential Education page.

First-Year Experience (16 credits)

- Michigan Tech Seminar (1)
- Math (3)
- Natural and Physical Science (3)
- STEM (3)
- Composition (3)
- Foundations in the Human World (3)

Distribution Pathway (18 credits)

- Communication Intensive (3)
- Intercultural Competency (3)
- Arts and Culture (3)
- STEM (3)
- SHAPE (3)
- Essential Education Experience (3)

Activities for Well-being & Success (3 credits)

mtu.edu/registrar/pdfs/essential-education-course-lists-2026-2027.pdf



Preston Toutant, CMG '25

Project Engineer, Barton Malow

Preston manages subcontractor performance and contract execution, drives procurement, and facilitates trade coordination to ensure project scope, schedule, and quality objectives are achieved.

He has found the projects both unique and rewarding. For example, Preston's current project involves building the infrastructure for a new generation of V8 engines. Outside of work, he enjoys traveling and exploring new cities, as well as visiting state and national parks. Preston has also been fortunate to attend memorable sporting events, including the Buffalo Sabres first NHL playoff game in 14 seasons.

Advice: Soak up every moment and don't be afraid of new experiences. You will never know if you love something if you never try.



Math (3)

BUS2100	Business Statistics	3
BUS3000	Introduction to Business Analytics	3
EC4100	Mathematical Economics	3
EC4200	Econometrics	3
MA1020	Quantitative Literacy	3
MA1031	College Algebra II with Trigonometry	3
MA1032	Precalculus	4
MA1135	Calculus for Life Sciences	4
MA1160	Calculus with Technology I	4
MA1161	Calculus Plus with Technology	5
MA2160	Calculus with Technology II	3
MA2720	Statistical Methods	4
MIS4400	Business Intelligence and Analytics	3
PSY2720	Statistics for the Behavioral Sciences	4
SS2720	Statistics for Social Sciences	4
SS4010	Applied Statistics for Social Sciences	3

Natural and Physical Science (3)

BL1100	General Biology I	3
BL1200	General Biology II	3
BL1400	Principles of Biology	3
BL2010	Anatomy & Physiology I	3
BL2160	Botany	4
BL2170	Zoology	4
BL2940	Human Nutrition	3
BL4090	Tropical Island Biology	2
CH1000	Introductory Chemistry	3
CH1150	University Chemistry I (and CH1151)	4
CH1160	University Chemistry II	3
CH2590	The Chemistry of Color and Art Materials	3
FW1035	Wood Anatomy and Properties	3
FW2060	Fundamentals of Environmental Sustainability	3
FW2081	Introduction to Circular Economy	3
FW3330	Soil Science	4
FW3610	Ornithology	4
FW4120	Tree Physiology	3
FW4128	Conservation Genetics	3
FW4240	Mammalogy	4
GE2000	Understanding the Earth	3
GE2300	Mineral Science	3
GE3320	Earth History	3
GE3850	Geohydrology	3
GE4150	Natural Hazards	3
PH1090	The Physics Behind Music	3
PH1110	College Physics I	3
PH1140	Applied College Physics I	3
PH1160	Honors Physics I-Mechanics	3
PH1210	College Physics II	3
PH1600	Introductory Astronomy (and PH1610)	3
PH2100	University Physics I-Mechanics	3
SS3250	Biological Anthropology	3

STEM (6)

All	Math list courses	
All	Natural and Physical Science list courses	
ACC2000	Accounting Principles I	3
ACC2100	Accounting Principles II	3
ACC3000	Intermediate Accounting I	3
ACC3500	Managerial Cost Accounting	3
BL2000	Biology of Movement and Meditation	3
BL3001	Emergency Medical Technician I	3
CS1111	Programming in C/C++	3
CS1121	Introduction to Programming I	3
CS1122	Introduction to Programming II	3
CS1131	Accelerated Introduction to Programming	5
DATA1200	Data Science with Python	3
DATA2201	Foundations of Data Science	3
EET1121	Circuits I	4
EET1411	Basic Electronics	4
ENG1102	Engineering Modeling and Design	3
FIN4000	Investment Analysis	3
FIN4200	Derivatives and Financial Engineering	3
FIN4500	Risk Management	3
FIN4600	FinTech Foundations	3
FIN4700	Global Finance	3
FW3075	Introduction to Biotechnology	3
GE1200	Intro to Data Sci Earth Resources	1
GE2010	Intro to GIS	3
KIP1500	Foundations of Kinesiology	3
KIP3100	Exercise Assessment and Prescription	3
MIS2000	IS/IT Management	3
MIS2100	Introduction to Business Programming	3
MIS3100	Business Database Management	3
MIS3200	Systems Analysis and Design	3
MIS3500	User-Centered Design	3
MIS4000	Emerging Technologies	3
MIS4200	Management of Cyber Security	3
OSM3000	Operations & Supply Chain Management	3
OSM3600	Procurement & Supply Management	3
PSY3060	Brain and Behavior	3
SAT1610	Computer and OS Architecture	3
SAT2711	Linux Fundamentals	3
SND1150	Sound Technology	3
SND4121	Transducer Theory Lab	3
SS2050	Fundamentals of GIS	3
SS3221	Archaeological Sciences	3
SS3510	History of American Technology	3
SS3511	History of Science in America	3
SS3800	Energy Policy and Technology	3

Foundations in the Human World (3)

ART1000	Art Appreciation	3
EC2001	Principles of Economics	3
FIN2400	Financial Literacy	3
HF2000	Introduction to Engineering Psychology	3
HF2300	Introduction to Human-Centered Design	3
HON2300	Introduction to Human-Centered Design	3
HU2130	Introduction to Rhetoric	3
HU2200	Introduction to World Cultures	3
HU2241	Level I-A Less Commonly Taught Languages	var
HU2242	Level I-B Less Commonly Taught Languages	var
HU2271	Level I-A French Language & Culture	3
HU2272	Level I-B French Language & Culture	3
HU2273	Transitional Level I French Language & Culture	3
HU2281	Level I-A German Language & Culture	3
HU2282	Level I-B German Language & Culture	3
HU2291	Level I-A Spanish Language & Culture	3
HU2292	Level I-B Spanish Language & Culture	3
HU2293	Transitional Level I Spanish Language & Culture	3
HU2324	Introduction to Film	3
HU2400	Conversations on Culture and Diversity	3
HU2503	Introduction to Literature	3
HU2505	Humanities, Science, and Technology	3
HU2700	Introduction to Philosophy	3
HU2701	Logical and Critical Thinking	3
HU2702	Ethical Theory and Moral Problems	3
HU2820	Communication and Culture	3
HU2825	Technology and Media	3
MUS1000	Music Appreciation	3
MUS1140	Popular Songwriting	3
PSY2000	Introduction to Psychology	3
SAT1700	Cyber Ethics	3
SND1000	Sound in Art and Science	3
SS1500	Introduction to History	3
SS2100	Introduction to Cultural Anthropology	3
SS2200	Introduction to Archaeology	3
SS2210	Community Development and Planning	3
SS2300	Environment and Society	3
SS2400	Introduction to Human Geography	3
SS2450	Introduction to Sustainable Tourism	3
SS2500	United States History to 1877	3
SS2501	US History Since 1877	3
SS2502	European History to 1650	3
SS2503	European History Since 1650	3
SS2504	World History to 1500	3
SS2505	World History Since 1500	3
SS2600	American Government and Politics	3
SS2610	Introduction to Law and Society	3
SS2625	Introduction to American Foreign Policy	3
SS2635	Comparative Politics	3
SS2700	Introduction to Sociology	3
SS2750	Racial Inequality	3
THEA1000	Theatre Appreciation	3
THEA1140	Foundations of Entertainment Design	3
THEA1400	Acting I	3
UN 1025	Global Issues	3

Composition (3)

UN1015	College Writing, Reading, and Research	3
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Communication Intensive (3)

AF3001	Leading People and Effective Communication	3
CH3124	Communication for the Chemical Sciences	3
HU2500	Writing About Literature	3
HU2510	Intro to Creative Writing	3
HU2810	Research & Writing in Communication	3
HU2830	Public Speaking & Multimedia	3
HU2840	Interpersonal Communication and Technology	3
HU3015	Advanced Composition	3
HU3105	Writing about Numbers	3
HU3120	Technical and Professional Communication	3
HU3130	Rhetoric of Science and Technology	3
HU3140	Rhetoric of Health and Medicine	3
HU3151	The Rhetoric of Everyday Texts	3
HU3160	Rhetoric and Culture of Games	3
HU3282	Level II-B German Language & Culture	3
HU3283	German Composition and Conversation	3
HU3293	Level II-C Spanish Composition & Conversation	3
HU3514	Workshop Creative Nonfiction	3
HU3515	Workshop in Poetry	3
HU3516	Workshop in Fiction	3
HU3517	Literary Theory and Criticism	3
HU3518	Workshop in Sci Fi Writing	3
HU3519	Workshop in Nature Writing	3
HU3606	Editing	3
HU3692	Writing for Scientific Audiences	3
HU3693	Science Writing for Public	3
HU3694	Grant Writing	3
HU3698	Writing for Health/Medical Audiences	3
HU3699	Health/Medical Writing for Public Audiences	3
HU3832	Virtual Encounters	3
HU3845	Human-Machine Communication	3
HU4625	Risk Communication	3
MA4945	History of Mathematics	3
SND4120	Transducer Theory	3
SS3240	Reading the Landscape	3
SS3420	Imaginary Worlds: Geographies of Science Fiction and Fantasy	3
SS3501	Making History	3
SS3520	U.S. Environmental History	3
SS3535	History of Privacy	3
SS3552	Renaissance & Reformation	3
SS3950	Topics in American History	3
SS3951	Topics in European History	3
SS3952	Topics in World History	3
SS4001	History of Social Thought	3
SS4040	Civic Communications	3
SS4540	Global Environmental History	3
SS4550	History of Technology	3
THEA1170	Voice and Movement	3
THEA2310	Drafting for the Entertainment Industry	3
THEA2470	Voice Acting Fundamentals	3
THEA3320	Lighting Design	3



Intercultural Competency (3)

ART3180	Color and Creativity: Exploring the Power of Color	3
ART3420	World Sculpture Traditions	3
BL3090	Spirituality in Healthcare	3
BL3970	Current Health Issues	3
EC3100	International Economics	3
EC4710	Labor/Human Resource Economics	3
FW4111	Indigenous Natural Resources Management	3
HU3135	Power and Bias in Technology Design	3
HU3261	Communicating Across Cultures	3
HU3262	Topics in Francophone Cultures	3
HU3263	Topics in German-Speaking Culture	3
HU3264	Topics in Spanish-Speaking Culture	3
HU3284	Level III German Literature & Culture	3
HU3294	Hispanic Literatures and Culture	3
HU3296	Survey of Hispanic Literatures and Cultures	3
HU3326	Topics in World Cinema	3
HU3400	Topics in Diversity Studies	3
HU3401	Gender and Culture	3
HU3502	Mythology	3
HU3507	Cultural Traditions in Literature	3
HU3508	Literature and the Environment	3
HU3545	Literature across Borders	3
HU3554	Science Fiction	3
HU3628	User Research	3
HU3710	Engineering Ethics	3
HU3800	Media and Society	3
HU3830	Creativity, Culture, & Change	3
HU3850	Automated Culture: Critical Approaches to AI	3
HU3855	Power, Activism, and Technology	3
HU3860	Cultural Theory and Popular Culture	3
HU3871	Media Theory	3
HU3950	Sound and Culture	3
HU4271	Modern Language Seminar I-French	3
HU4272	Modern Language Seminar II-French	3
HU4281	Modern Language Seminar I-German	3
HU4282	Modern Language Seminar II-German	3
HU4283	Modern Language Seminar III-German	3
HU4291	Modern Language Seminar I-Spanish	3
HU4292	Modern Language Seminar II-Spanish	3
HU4293	Modern Language Seminar III-Spanish	3
HU4725	Existentialism and Phenomenology	3
MGT3000	Organizational Behavior	3
MGT4100	International Management	3
MKT4300	Global Marketing	3
PSY3340	Psychology of Race	3
PSY3720	Social Psychology	3
PSY4340	Culture and Cognition	3
SS3105	Native American and Indigenous Communities	3
SS3110	Food Systems and Sustainability	3
SS3225	Capitalism and the Modern World	3
SS3260	Latin American Cultural History	3
SS3542	History of Detroit	3
SS3612	International Relations	3

Intercultural Competency continued

SS3640	Selected Topics in Cyber-Law	3
SS3660	Constitutional Law	3
SS3661	Civil Rights & Civil Liberties	3
SS3750	Social Inequality	3
SS3805	Environmental Justice	3
SS3811	Energy Security and Justice	3
SS3920	Topics in Anthropology/Archaeology	3
SS3961	Preparing for Cross-Cultural Immersion Experiences	3
SS4211	Ethnographic Methods	3
SS4420	Memory and Heritage	3
SS4450	Sustainable Tourism and Planning	3
SS4710	Geographies of Migrant and National Communities	3
THEA3201	Theatre History	3
THEA3230	Costume History	3
THEA3330	Costume Design	3

Seminar (1)

BUS1100	Introduction to Business	3
BL1580	First-Year Experience in Biological Sciences	1
BL1600	First-Year Experience in MLS	1
CH1134	Professional Development Seminar for Chemists	1
CMG1000	Introduction to Construction Management	2
CS1000	Explorations in Computing	1
DATA1000	Explorations in Data Science	1
ENG1101	Engineering Analysis and Problem Solving	3
FW1050	Natural Resource Professional	2
GE1100	Geo-Orientation	1
HF1999	Introduction to HF Major	1
HU1000	Introduction to Humanities	3
KIP1000	Introduction to Exercise Science	1
MA1910	Exploring Symmetry Groups	3
MA1920	Exploring Knots and Surfaces	3
MA1930	Exploring Number Theory	3
MA1940	Exploring Non-Euclidean Geometry	3
NUR1100	Introduction to Nursing	2
PH1162	Introduction to Physics Seminar	1
PSY1999	Introduction to the Psychology Major	1
SAT1000	Introduction to Applied Computing	1
SS1001	Orientation to the Social Sciences	1
THEA1001	First Year Arts Seminar	1
UN1013	Michigan Tech Seminar	1
UN2013	Michigan Tech Transfer Seminar	1

Arts and Culture (3)

ART1000	Art Appreciation	3
ART1100	Drawing I	3
ART1110	Art + Design Studio	3
ART2100	Drawing II	3
ART2110	Art on Site	3
ART2140	Ceramics I	3
ART2145	Beginning Wheel Throwing	3
ART2170	Fiber Arts	3
ART2195	Art and Flora	3
ART2350	Scenic Art & Scenic Illustration	3
ART2950	Creative Campus: Local Arts Immersion	3
ART3130	Creative Drawing II	3
ART3140	Creative Ceramics	3
ART3145	Ceramic Sculpture	3
ART3410	Contemporary Sculpture Studio	3
ART3850	Special Topics: Art	var
ART4410	Advanced Sculpture Studio	3
ART4440	Advanced Ceramics	3
ART4450	Advanced Creative Drawing & Painting	3
HU2200	Introduction to World Cultures	3
HU2400	Conversations on Culture and Diversity	3
HU2501	American Experience in Literature	3
HU2503	Intro to Literature	3
HU2538	British Experience in Literature	3
HU2548	Young Adult Literature	3
HU2633	Fundamentals of Digital Imaging	3
HU2645	Graphic and Information Design	3
HU2820	Communication and Culture	3
HU3241	Level II-A Less Commonly Taught Languages	var
HU3242	Level II-B Less Commonly Taught Languages	var
HU3271	Level II-A French Language & Culture	3
HU3272	Level II-B French Language & Culture	3
HU3273	Level II-C French Composition & Conversation	3
HU3274	Level III Topics in French Literature & Culture	3
HU3275	Level III French for Special Purposes	3
HU3281	Level II-A German Language & Culture	3
HU3285	Level III German Film & Media	3
HU3291	Level II-A Spanish Language & Culture	3
HU3292	Level II-B Spanish Language & Culture	3
HU3327	Film Style and Genre	3
HU3503	Special Topics in Literature and Culture	3
HU3504	Studies in the Novel	3
HU3505	Special Topics Literary Forms	3
HU3506	Major Authors	3
HU3509	Studies in Drama	3
HU3513	Shakespeare	3
HU3557	Literature and Science	3
HU3630	Publication and Information Management	3
HU3700	Philosophy of Science	3
HU3701	Philosophy of Technology	3
HU3702	Philosophy of Religion	3
HU3704	Ethics of Artificial Intelligence	3
HU3705	Media and Communication Ethics	3
HU3711	Biomedical Ethics	3
HU3802	Media and Globalization	3
HU3852	See and Be Seen: Data, Surveillance & Society	3
HU3872	Machines in the Mist: Visuality and Culture	3

Arts and Culture continued

HU3882	Media Industries	3
HU4327	Multimedia Storytelling	3
HU4370	Documentary Workshop	3
HU4642	Advanced Topics in Media	3
HU4701	Political Philosophy	3
MUS1000	Music Appreciation	3
MUS1100	Western Music Fundamentals	3
MUS1140	Popular Songwriting	3
MUS1580	Group Voice	3
MUS2000	History of Classical Music	3
MUS2001	Film Music	3
MUS2020	History of Rock	3
MUS2030	History of Jazz	3
MUS2040	Music and Tradition	3
MUS2103	Jazz Theory and Aural Skills	3
MUS3020	Beatles and Beach Boys	3
MUS3130	Jazz Improvisation	3
MUS3210	Electronic Music: History and Practice	3
MUS3850	Special Topics: Music	var
MUS4130	Jazz Arranging	3
PSY2082	Psychology of Friendship	3
PSY2083	Psychology of Happiness	3
PSY2600	Death and Dying	3
PSY3880	Psychology of Social Media	3
SND1101	Introduction to Music Mixing	3
SND1102	Intro to Audio Production	3
SND3850	Special Topics: Sound	var
SS2100	Intro to Cultural Anthropology	3
SS2500	United States History to 1877	3
SS2501	United States History Since 1877	3
SS2502	European History to 1650	3
SS2503	European History Since 1650	3
SS2504	World History to 1500	3
SS2505	World History Since 1500	3
SS2510	Gender and the Past	3
SS2630	Culture and Society	3
SS3513	History of Making Things: Craft and Industry in America	3
SS3530	The Automobile in America	3
SS3540	History of Michigan	3
SS3580	Technology and Society in History	3
SS3581	History of Science	3
SS4200	Environmental Anthropology	3
SS4220	Archaeological Thought in Society	3
SS4552	Historical Archaeology	3
SS4553	Material Culture Studies	3
SS4600	Indus & Historical Archaeology	3
SS4990	Directed Study in Anthropology	var
THEA1000	Theatre Appreciation	3
THEA3400	Acting II	3
THEA3850	Special Topics: Theatre	var
THEA4400	Acting: Shakespeare	3
THEA4402	Musical Theatre Performance	3



SHAPE Elective (3)

All	Foundations Courses list courses	
All	Arts and Culture Courses list courses	
All	Communication Intensive Courses list courses	
All	Intercultural Competency Courses list courses	
AF1340	Field Training	1
AF2001	Team and Leadership Fundamentals I	1
AF2002	Team and Leadership Fundamentals II	1
AF3001	Leading People and Effective Communication I	3
AF3002	Leading People and Effective Communication II	3
AF4001	Nat'l Security/Leadership Resp/Commissioning Prep I	3
AF4002	Nat'l Security/Leadership Resp/Commissioning Prep II	3
AR2001	Leadership and Ethics w/Lab	2
AR2002	Army Doctrine and Decision Making w/Lab	2
BL2001	Valuing the Great Lakes	3
BUS2200	Business Law	3
CS3000	Ethical and Social Aspects of Computing	3
EC3002	Microeconomic Theory	3
EC3003	Macroeconomic Theory	3
EC3300	Industrial Organization	3
EC3400	Economic Decision Analysis	3
EC4050	Game Theory/Strategic Behavior	3
EC4400	Banking and Financial Institutions	3
EC4500	Public Sector Economics	3
EC4620	Energy Economics	3
EC4630	Mineral Industry Economics	3
EC4640	Natural Resource Economics	3
EC4650	Environmental Economics	3
ENG2060	Facilitating Group Learning	1
ENG3060	Developing Mentoring Skills	1
ENG4060	Leadership in Group Environments	1
ENT2961	Teaming in the Enterprise	2
ENT2962	Communication Contexts	1
ENT3958	Ethics in Engineering	1
FIN4300	Personal Financial Planning	3
FW2801	Intro to Global Climate Change	3
FW3313	Sustainable Science	3
GE2100	Environmental Geology	3
HF3850	Human Factors	3
HF4015	Cognitive Task Analysis	3
HON2150	Know Yourself	1
HON3150	Pavlis Seminar II	1
HON3350	Navigate Your World	3
HON4150	Pavlis Seminar III	1
HON4350	Tell Your Story	3
HU2600	Introduction to Writing in Science & Technology	3
HU2646	Writing with Web Technologies	3
HU3121	Advanced Technical Writing	3
HU3295	Level III Advanced Spanish for Literacies	3
HU4628	Usability Evaluation and Testing	3
HU4635	Principles of User Experience Design	3
HU4890	Topics in Communication	3
IS2002	International Studies in situ - Social & Behavioral Science	var
KIP2600	Introduction to Public Health	3
KIP3700	Lifetime Fitness	3
MGT2000	Team Dynamics	3
MGT3100	Leadership Development	3
MGT3650	Intellectual Property Management	3

SHAPE Elective continued

MGT4300	Developing Entrepreneurial Ventures	3
MGT4600	Management of Technology and Innovation	3
MGT4650	Commercialization of Advanced Technologies	3
MKT3000	Principles of Marketing	3
MKT3200	Consumer Behavior and Culture	3
MKT4100	Sales and Sales Management	3
PSY2010	Wellness and Resilience for College and Beyond	3
PSY2080	Special Topics in Psychology	var
PSY2081	Psychology of Video Games	3
PSY2110	Educational Psychology	3
PSY2400	Health Psychology	3
PSY2800	Critical Thinking for Social and Behavioral Sciences	3
PSY2900	An Introduction to Restorative Practices	3
PSY3010	Theories of Personality	3
PSY3030	Abnormal Psychology	3
PSY3200	Motivation and Emotion	3
PSY3400	Developmental Psychology	3
PSY3600	Cognitive Psychology	3
PSY3700	Industrial/Organizational Psychology	3
PSY3800	Environmental Psychology	3
PSY4080	Topics in Psychology	var
PSY4750	Judgment and Decision Making	3
SS2001	Intro to Social Science Research	3
SS2620	Introduction to Public Policy	3
SS2801	Intro to Climate Change	3
SS3200	Archaeology of the Modern World	3
SS3230	Archaeology of Industry	3
SS3280	Anthropology of Energy	3
SS3315	Population and Environment	3
SS3505	Military History of the U.S.	3
SS3515	History of American Architecture	3
SS3621	Non-Profit Management	3
SS3625	Policy Analysis	3
SS3630	Environmental Policy & Politics	3
SS3650	Intellectual Property Management	3
SS3755	Sustainability and the Private Sector	3
SS3801	Science, Technology, & Society	3
SS3815	Energy and Society	3
SS3990	Topics in the Social Sciences	var
SS4009	Survey Methods	3
SS4120	Sustainable Development	3
SS4230	Archaeological Analysis and Interpretation	3
SS4313	Sustainability Science	3
SS4390	Seminar in Sustainability	3
SS4400	Environmental Sociology	3
SS4554	Global Industrial History	3
SS4995	Topics in the Social Sciences	var
THEA1110	Entertainment Technology I	3
THEA1120	Lighting Technology I	3
THEA1130	Costume Technology I	3
THEA3340	Scenic Design	3

Essential Education Experience (3)

ART3190	Art, Nature, and Contemplative Photography	3
ART3900	Study Away: Regional Arts Immersion	var
ART3950	International Arts Immersion	var
ENG4070	Peer Mentoring Practicum	3
FW3111	Wild Foods: Northern Forests	3
FW3114	Reading the Forest	3
FW3760	Human Dimensions in Natural Resources Stewardship	3
FW3766	Maple Syrup, Management & Culture	3
HON3999	Experiential Community Engagement	3
HON4070	Leadership Practicum	var
HON4400	Makerspace Operations	3
HU3000	Humanities Experience: Community-engaged learning	3
HU3289	HU Experience: German Abroad	3
HU3298	Experience Spanish Language & Culture thru Teaching	3
HU3299	Exploring a Hispanic City by Analyzing its Film Production	3
HU3370	The Documentary Experience	3
HU3442	Humanities Experience in Public Writing	3
HU3621	HU Experience in Journalism	3
HU3703	HU Experience in Environmental Philosophy	3
HU3810	HU Experience in Technology & Critical Making	3
HU3825	HU Experience in Environmental Communication	3
HU4041	HU Experience in Communication for Sustainability	3
IS3002	International Studies in situ - Social & Behavioral Science	var
MUS3700	Visual and Performing Arts Tour	var
PSY3510	Peer Support Communities Foundations & Practice	3
PSY3511	Teaching Digital Newcomers	3
PSY3512	Sparkling Curiosity – Summer Youth Programs	3
SS3210	Field Archaeology	var
SS3235	A Wasted Past: World of Goods, Trash & Sust.	3
SS3541	The Copper Country	3
SS3626	STEM Policy Lab at MTU	3
SS3665	Crime, Incarceration, & Policy	3
SS3760	Human Dimensions in Natural Resources Stewardship	3
SS3915	Experiencing Museums	3
SS3918	Community-Engaged Experiences	3
SS3960	Cultural Immersion	var
SS3962	Experiencing Cross-Cultural Immersion	3
SS4050	Advanced GIS Methods	3
SS4530	Deindustrialization and the Urban Environment	3
SS4551	Industrial Communities	3
SS4700	Communities and Research	3
SS4915	Effective Social Action	3
THEA4190	Directing for Theatre	3
UN3013	Interdisciplinary Experience	var
UN3950	Enterprise Experience I	1
UN3960	Enterprise Experience II	2

Activities for Well-Being and Success (3)

AF1120	Physical Conditioning	1
AF1130	Air Force Elite Workout	1
AF1230	Precision Drill Team	1
AF1340	Field Training	1
AR1001	Introduction to the Army w/Lab	1
AR1003	Foundations of Leadership w/Lab	1
AR2068	Fall Military Physical Conditioning	1
AR2069	Spring Military Physical Conditioning	1
AR3068	Physical Training Leadership I	1
AR3069	Physical Training Leadership II	1
ART1850	Special Arts Activities for Wellness + Success	1
ART1855	Special Arts Workshop for Wellness + Success	.5
ENT3953	Ignite: Ideate, Innovate, Create!	1
ENT3959	Fundamentals of Six Sigma	1
ENT3961	Building and Leading Teams	1
ENT3963	Deliver: Explore, Develop, Execute!	1
ENT3964	Project Management	1
ENT3971	7 Habits of Highly Effective People	1
ENT3982	Continuous Improvement Using Lean Principles	1
ENT3983	The Culture of Continuous Improvement	1
FW3620	Field Ornithology	1
HON1150	Launch Your Journey	1
KIP1900	Student Athlete 101	1
MUS1510	Huskies Pep Band	1
MUS1511	Campus Concert Band	1
MUS1530	Workshop Brass Band	1
MUS1570	Private Music Instruction	1
MUS2530	R & D Jazz Band	1
MUS2580	Concert Choir	1
MUS3500	Keweenaw Symphony Orchestra	1
MUS3510	Superior Wind Symphony	1
MUS3530	Jazz Lab Band	1
MUS3580	Chamber Choir	1
MUS4510	Chamber Music Ensemble	1
MUS4530	Jazz Combo	var
PE1000	Fitness Foundations	1
PE1010	Active Michigan Tech	1
PE1028	Ski Patrol (Hill)	1
PE1101	Team Sports	1
PE1102	Hockey	1
PE1103	Bait and Fly Casting	1
PE1105	Bowling	1
PE1106	Golf	1
PE1108	Broomball	1
PE1109	Aikido	1
PE1113	Disc Sports	1
PE1115	Beginning Swimming	1
PE1116	Intermediate Swimming	1
PE1117	Fitness Swimming	1
PE1118	Weight/Fitness Training	1
PE1119	Conditioning	1
PE1120	Beginning Alpine Skiing (Downhill)	1
PE1121	Beginning Snowboarding	1
PE1123	Telemark Skiing	1
PE1124	Intermediate Alpine Skiing (Downhill)	1
PE1125	Intermediate Snowboarding	1
PE1126	Advanced Skiing	1
PE1127	Advanced Snowboarding	1



Activities for Well-Being and Success continued

PE1128	Alpine Skiing Fusion	1
PE1129	Snowboard Fusion	1
PE1135	Cross Country Skiing	1
PE1138	Racquet Sports	1
PE1140	Tennis	1
PE1142	Introduction to Brazilian Jiu Jitsu	1
PE1145	Rifle Marksmanship	1
PE1146	Billiards	1
PE1148	Skating	1
PE1150	Lifetime Activities	1
PE1152	Social Dance	1
PE1153	Zumba	1
PE1154	Aerobics	1
PE1155	Road Biking	1
PE1156	Mountain Biking	1
PE1165	Rowing	1
PE1167	Beginning Yoga	1
PE1169	Indoor Cycling	1
PE1170	TaeKwonDo	1
PE1175	Hiking	1
PE1177	Fundamentals of Laser Tag	1
PE1205	Special Topics	.5
PE1209	Intermediate Aikido	1
PE1210	Special Topics	1
PE1220	Introduction to Canoeing	1
PE1225	Indoor Rock Climbing	1
PE1230	Introduction to Kayaking	1
PE1235	Introduction to Log Rolling	1
PE1240	Snowshoeing	1
PE1242	Brazilian Jiu Jitsu II	1
PE1245	Wilderness First Responder	1
PE1250	Paintball	1
PE1267	Intermediate Yoga	1
PE1270	Cardio TaeKwonDo	1
PE1277	Strategies of Laser Tag	1
PE1330	Club Sports	1
PE1342	Intro to Kickboxing	1
PE1367	Mindful Yoga	1
PE1425	Intramurals	1
PE1430	Club Sports Leadership	1
PE1435	Self-Defense for Women	1
PE1436	Self-Defense for Men	1
PE1442	Kickboxing II	1
PE1450	Physical Education Fusion – Full	1
PE1451	Mountain/Road Bike Fusion	1
PE1470	Lifeguard Swimming	1
PE1480	Water Safety Instructor	1
PE2010	Varsity Football	1
PE2020	Varsity Basketball	1
PE2030	Varsity Hockey	1
PE2040	Varsity Nordic Skiing	1
PE2050	Varsity Soccer	1
PE2080	Varsity Track	1
PE2090	Varsity Tennis	1
PE2130	Varsity Volleyball	1
PE2140	Varsity Cross Country	1
PE2150	Cross Training	1
PE2160	Varsity Esports	1

Activities for Well-Being and Success continued

PE2210	Special Topics in Physical Education	1
PSY1100	Building Emotional Resilience	1
PSY1101	Enhanced Performance through Biofeedback/MSPE	1
PSY1102	Practical Approaches for Emotional Regulation	1
PSY1103	Mindfulness Based Stress Reduction (MBSR)	1
PSY1104	Motivation through Self-Compassion	1
PSY1105	Foundations of Well-being	1
SA1000	Exploring Majors	1
SND1570	Private Mixing Lessons	.5
SND2663	Career Development	1
SND2664	Career Development: AES National	1
SND2665	Career Development: AES Student Summit	1
THEA2600	Acting Practicum	1
THEA2610	Entertainment Tech Practicum	var
THEA2663	Career Development	1
THEA3650	Portfolio Development	1
UN1000	Frameworks for Success for ExSEL	1
UN1010	Creating Your Success for Themed Communities	1
UN1011	Strategies for Success	1
UN1016	Writing Studio	1
UN1018	Designing Your Career Path	1
UN1020	Husky Connect Success	1
UN3023	Advanced Portfolio for Essential Ed	1
All	0-level courses taken for the General Education Cocurricular requirement	



Jemel Thompson, EEN '22

Civil/Water Resource Engineer, Fishbeck

Jemel's work centers around hydraulic modeling and design for projects related to stream restoration, green infrastructure, and stormwater planning for municipal clients across the Midwest. He has had the opportunity to model, design, and build different hydraulic infrastructure, worked on a major groundwater remediation project in Michigan, and practice environmental sampling techniques for different constituents.

Fun Fact: Outside of work, Jemel enjoys volunteering, playing in a local symphony orchestra, and collecting magnets from every state he's visited.

APPROVED TRANSFER COURSES

The following courses are available ONLY by transfer.

Math

MA1XXX Approved Transfer Math

Natural and Physical Science

BL1XXX Approved Natural & Physical Science
 BL2XXX Approved Natural & Physical Science
 BLL1XXX Approved Natural & Physical Science
 BLL2XXX Approved Natural & Physical Science
 CH1XXX Approved Natural & Physical Science
 CH2XXX Approved Natural & Physical Science
 CHL1XXX Approved Natural & Physical Science
 CHL2XXX Approved Natural & Physical Science
 FW1XXX Approved Natural & Physical Science
 FW2XXX Approved Natural & Physical Science
 FWL1XXX Approved Natural & Physical Science
 FWL2XXX Approved Natural & Physical Science
 GE1XXX Approved Natural & Physical Science
 GE2XXX Approved Natural & Physical Science
 GEL1XXX Approved Natural & Physical Science
 GEL2XXX Approved Natural & Physical Science
 KIP1XXX Approved Natural & Physical Science
 KIP2XXX Approved Natural & Physical Science
 KIPL1XXX Approved Natural & Physical Science
 KIPL2XXX Approved Natural & Physical Science
 PH1XXX Approved Natural & Physical Science
 PH2XXX Approved Natural & Physical Science
 PHL1XXX Approved Natural & Physical Science
 PHL2XXX Approved Natural & Physical Science
 SCI1XXX Approved Natural & Physical Science
 SCI2XXX Approved Natural & Physical Science
 SCIL1XXX Approved Natural & Physical Science
 SCIL2XXX Approved Natural & Physical Science

STEM

All Math and Natural and Physical Science approved transfer courses listed previously

Communication Intensive

HU1XX5 Approved Transfer Communication Intensive
 HU2XX5 Approved Transfer Communication Intensive
 HU3XX5 Approved Transfer Communication Intensive
 HU4XX5 Approved Transfer Communication Intensive
 CMIN1XXX Approved Transfer Communication Intensive
 CMIN2XXX Approved Transfer Communication Intensive
 CMIN3XXX Approved Transfer Communication Intensive
 CMIN4XXX Approved Transfer Communication Intensive

Intercultural Competency

INCUB3XXX Approved Transfer Intercultural Competency
 INCUB4XXX Approved Transfer Intercultural Competency

Arts and Culture

ARCU1XXX Approved Transfer Arts and Culture
 ARCU2XXX Approved Transfer Arts and Culture
 ARCU3XXX Approved Transfer Arts and Culture
 ARCU4XXX Approved Transfer Arts and Culture
 ART1XXX Approved Transfer Arts and Culture
 ART2XXX Approved Transfer Arts and Culture
 ART3XXX Approved Transfer Arts and Culture
 ART4XXX Approved Transfer Arts and Culture
 MUS1XXX Approved Transfer Arts and Culture
 MUS2XXX Approved Transfer Arts and Culture
 MUS3XXX Approved Transfer Arts and Culture
 MUS4XXX Approved Transfer Arts and Culture

SHAPE

ART1XXX Approved SHAPE elective
 ART2XXX Approved SHAPE elective
 ART3XXX Approved SHAPE elective
 ART4XXX Approved SHAPE elective
 EC1XXX Approved SHAPE elective
 EC2XXX Approved SHAPE elective
 EC3XXX Approved SHAPE elective
 EC4XXX Approved SHAPE elective
 HF1XXX Approved SHAPE elective
 HF2XXX Approved SHAPE elective
 HF3XXX Approved SHAPE elective
 HF4XXX Approved SHAPE elective
 HU1XXX Approved SHAPE elective
 HU2XXX Approved SHAPE elective
 HU3XXX Approved SHAPE elective
 HU4XXX Approved SHAPE elective
 MUS1XXX Approved SHAPE elective
 MUS2XXX Approved SHAPE elective
 MUS3XXX Approved SHAPE elective
 MUS4XXX Approved SHAPE elective
 PSY1XXX Approved SHAPE elective
 PSY2XXX Approved SHAPE elective
 PSY3XXX Approved SHAPE elective
 PSY4XXX Approved SHAPE elective
 SND1XXX Approved SHAPE elective
 SND2XXX Approved SHAPE elective
 SND3XXX Approved SHAPE elective
 SND4XXX Approved SHAPE elective
 SS1XXX Approved SHAPE elective
 SS2XXX Approved SHAPE elective
 SS3XXX Approved SHAPE elective
 SS4XXX Approved SHAPE elective
 THEA1XXX Approved SHAPE elective
 THEA2XXX Approved SHAPE elective
 THEA3XXX Approved SHAPE elective
 THEA4XXX Approved SHAPE elective

Activities for Well-Being and Success

PE1XXX Approved Activities elective
 PE2XXX Approved Activities elective
 ACTV1XXX Approved Activities elective
 ACTV2XXX Approved Activities elective

ABET Accredited

Michigan Tech's Civil, Environmental, and Geospatial Engineering programs are accredited by the Engineering Accreditation Commission of ABET.

ABET accreditation is a significant achievement. We have worked hard to ensure that our program meets the quality standards set by the profession. And, because it requires comprehensive, periodic evaluations, ABET accreditation demonstrates our continuing commitment to the quality of our program—both now and in the future.

www.abet.org



Aden Clark, EEN '22

Environmental Engineer,
Tetra Tech

In her role as an environmental engineer, Aden assists with landfill design and permitting. She further monitors environmental elements, including groundwater, soil, and gas well tuning and oversees various construction quality assurance jobs.

Fun Fact: She has stayed connected with her friends from Michigan Tech and recently took a two week vacation to Italy with them!



ABET accreditation is proof that a collegiate program has met standards essential to produce graduates ready to enter the critical fields of applied science, computing, engineering, and engineering technology.

Your degree is a significant achievement and perhaps the largest investment you will make toward your future. The quality of education you receive makes a big difference in your career success.

ABET accreditation:

- ✓ Verifies that your educational experience meets the global standard for technical education in your profession.
- ✓ Enhances your employment opportunities—multinational corporations require graduation from an accredited program.
- ✓ Supports your entry to a technical profession through licensure, registration, and certification—all of which often require graduation from an ABET-accredited program as a minimum qualification.
- ✓ Establishes your eligibility for many federal student loans, grants, and/or scholarships.
- ✓ Paves the way for you to work globally, because ABET accreditation is recognized worldwide through international agreements, and many other countries' national accrediting systems are based on the ABET model.

**Why is ABET
accreditation
*so important?***





Michigan Technological University
**Civil, Environmental, and
Geospatial Engineering**

Meet Dylan

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Questions? Ask Julie Ross

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