



Michigan Technological University

Mechanical Engineering-
Engineering Mechanics

Enterprise Enrollment Guidelines (Undergraduate) April 2023

Enterprise project work (ENT3950/3960/4950/4960) and Enterprise Modules are required for students completing the BSME-Enterprise Concentration as shown on the **BSME-Enterprise Concentration (Blue) flowchart**. Students may enroll in Enterprise project work (e.g., ENT3950) and participate on an Enterprise team prior to declaring the Enterprise Concentration. If the student decides not to complete the Enterprise Concentration, any Enterprise project or module credits can be applied to free electives for the standard BSME (Gold flowchart). If the student chooses to complete the Enterprise Concentration, he/she must update their major to add the Enterprise Concentration. This should be done prior to enrolling in ENT4950 at the latest (see pages 5-6 and Appendix B).

Visit <https://www.mtu.edu/registrar/students/major-degree/curriculum/index.html> for full instructions.

Suggested Enterprise teams for mechanical engineering undergraduate students are shown below. It is possible for an ME student to participate on other Enterprise teams provided the student's planned project work for ENT4950 and ENT4960 meets the capstone requirements defined by the ME-EM department to satisfy ABET accreditation requirements. For all teams, the capstone project must be defined for ENT4950 and 4960 (a full two-semester project) prior to registration in ENT4950. Regardless of enterprise team, mechanical engineering students will not register for ENT4950 or ENT4960 until the capstone project is fully defined and approved (see page 6 and Appendix A for further details).

The minimum Enterprise team participation for ME students completing the BSME-Enterprise Concentration is four project semesters (ENT3950/3960/4950/4960) with the same Enterprise team. Three one-credit Enterprise modules are also required. Refer to the **BSME-Enterprise Concentration (Blue) flowchart notes (reverse/page 2 of flowchart)** for more details. All required forms and templates are available on the ME Advising Webpage. <http://www.mtu.edu/mechanical/undergraduate/advising/>

ME-EM Faculty Advised or ME-Focused Enterprises (Projects should always be available which meet ME Enterprise capstone criteria). The following guidelines apply through the first week of classes each semester. Registration after that date will follow late-add procedures in addition to the guidelines below.

ADVANCED METALWORK (AME, L01) – **Advisor: Dr. David Labyak**, EERC 322, dmlabyak@mtu.edu

Component design/modeling, fabrication (machining, casting, wrought processing), and performance characterization (microstructure, mechanical properties). Primarily working on industry-sponsored projects related to machining, casting, and wrought processing of metals and metallic components. Fabrication of patterns for sand molding, permanent molds, dies for die-casting, and specialized testing equipment for our sponsors and other enterprises on campus. **Registration:** To join the Enterprise each semester, see an ME academic advisor during open registration periods. The academic advisor will register students for each project semester course (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://ame.enterprise.mtu.edu/>

AEROSPACE (AERO, L21) – **Advisor: Dr. L. Brad King**, MEEM 1014, lbking@mtu.edu

Design, test, and launch spacecraft with an emphasis on systems engineering in the areas of structures, avionics, software, and communications. Industry and military-sponsored projects. **Registration:** Students are required to apply through the Aerospace Enterprise website and obtain instructor approval. This approval is required for each project semester course (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://aerospace.mtu.edu/>

BLIZZARD BAJA (BAJA, L06) – **Advisor: Kevin Johnson**, EERC 311, kevinj@mtu.edu

Design and fabricate an off-road vehicle for competition with a focus on frame, chassis, drivetrain, and suspension improvements. Competition based on performance, manufacturability, cost, and ergonomics.

Registration: To join Enterprise for the first time, submit a resume to the Enterprise Advisor. You will be interviewed by the Baja Enterprise Executive Board. If accepted on the team, an academic advisor will register students for each project semester course (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <https://baja.mtu.edu/>

BLUE MARBLE SECURITY (BLUE, L02) – **Advisor: Dr. Glen Archer**, EERC 629, gearcher@mtu.edu

Working to develop security solutions for people in their homes, for local governments to protect their communities, for industries to protect their workers and their infrastructure, and for international markets.

Additionally, developing initiatives in counter-surveillance, imaging solutions, environmental monitoring, and industrial process control. **Registration:** To join the Enterprise each semester, see an ME academic advisor during open registration periods. The academic advisor will register students for each project semester course after Instructor (Enterprise Advisor) approval (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://bluemarblesecurity.eit.mtu.edu/>

BOARD SPORT TECHNOLOGIES (BST, L11) **Advisor: Dr. Cam Hadden**, MEEM 831, cmhadden@mtu.edu

Enterprise focus is on innovative design and manufacturing techniques across all action sports disciplines. Students will have the ability to modify geometry, materials, and processes in the construction of boards and associated structures/products for a variety of action sports, such as: down-hill winter sports, water-based board sports, and wheel propelled board sports like skateboarding and mountain boarding. Students will have an opportunity to propose their own innovative project ideas, as well as contribute to industry-sponsored innovation projects.

Registration: To join the Enterprise each semester, see an ME academic advisor during open registration periods. The academic advisor will register students for each project semester course (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6). Instructor (Enterprise advisor) approval is required for ENT1960, ENT3980 and ENT4961. <http://www.enterprise.mtu.edu/boardsports/>

SAE CLEAN SNOWMOBILE CHALLENGE (CSC, L07) **Advisor: Dr. Jason Blough**, MEEM 808, jrbrough@mtu.edu

Design and modify a snowmobile to achieve a reduction in emissions and noise levels while maintaining high performance and fuel efficiency. Compete in both gasoline and diesel utility divisions. **Registration:** To join the Enterprise for the first time, submit a resume and a personal statement (why you want to join CSC and description of your intended contribution to the team) to the Enterprise advisor. If approved by the Enterprise Executive Board, an ME academic advisor will register students for each project semester course (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://csc.enterprise.mtu.edu/>

Registration: To join the Enterprise for the first time, submit a resume and a personal statement (why you want to join CSC and description of your intended contribution to the team) to the Enterprise advisor. If approved by the Enterprise Executive Board, an ME academic advisor will register students for each project semester course (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://csc.enterprise.mtu.edu/>

CONSUMER PRODUCT MANUFACTURING (CPM, L08) **Advisor: Jon Herlevich**, ChSci 305C, jaherlev@mtu.edu

CPM aims to empower students with entrepreneurial, technical, and professional skills to develop and market successful products in a company setting. The classes teach industrial and workplace skills and each team within CPM offers a different experience. Teams vary from mechanical, automation, chem E to electrical based industrial projects. Courses can be used in place of Senior Design, including 2 semesters of prior CPM courses to the Senior Design semesters.

Registration: To join the Enterprise each semester, see an ME academic advisor during open registration periods. The academic advisor will register students for each project semester course after Instructor (Enterprise Advisor) approval (except ENT 4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <https://www.cpmenterprise.org/>

FORMULA SAE RACING TEAM (FSAE, L05) – **Advisor: Steven Ma**, MEEM 929, stevenma@mtu.edu

Design and build an Indy-style race car for competition with a focus on optimization of chassis, frame, wheel, and engine design. Competition includes dynamic performance, engineering design, and business case. **Registration:** To join the enterprise for the first time, visit the “Interested in Joining?” tab on the team web page and submit a resume and a personal statement (why you want to join FSAE and description of your intended contribution to the team). **Preference will be given to undergraduates with at least 6 semesters of eligibility and graduate students with at least 4 semesters of eligibility.** Interested students are encouraged to visit the FSAE shop and attend a team meeting (Tuesdays at 7pm at ATDC). If approved by FSAE Leaders, the instructor will contact you to complete an enrollment survey and have an ME academic advisor register students for each project semester course (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://formulasae.mtu.edu>

GENERAL AND EXPEDITION ADVENTURE RESEARCH (GEAR, L34) – **Advisor: Brett Hamlin**, Dillman 104C, bhhamlin@mtu.edu

The General And Expedition Adventure Research Enterprise (GEAR) collaborates with the outdoor recreation industry to develop new products and new processes. The goal of GEAR is to educate students in the fundamentals of product development for customer need. Through product and process design and testing, prototyping, supply chain management, marketing, and distribution. **Registration:** To join the Enterprise each semester, see an ME academic advisor during open registration periods. The academic advisor will register students for each project semester course after Instructor (Enterprise Advisor) approval (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <https://gearenterprise.weebly.com/>

INNOVATIVE GLOBAL SOLUTIONS (IGS, L16) – **Co-advisor: Dr. Radheshyam Tewari**, MEEM 818, rtewari@mtu.edu,
Co-advisor: Dr. Nathan Manser, Dow 602, ndmanser@mtu.edu

IGS offers a unique opportunity for students interested in entrepreneurship to innovate, design, and build systems and products that solve real problems. Through working with other organizations on campus including the Pavlis Honors College, the Peace Corps program, and/or International Senior Design, they will implement or introduce these solutions in targeted developing countries. **Registration:** To join the Enterprise each semester, see an ME academic advisor during open registration periods. The academic advisor will register students for each project semester course after Instructor (Enterprise Advisor) approval (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://igs.enterprise.mtu.edu>

MULTIPLANETARY INnovation ENTERPRISE (MINE, L32) **Advisor: Dr. Paul Van Susante**, MEEM 915A, pjvansus@mtu.edu

The Multiplanetary INnovation Enterprise (MINE) seeks to design, test, and implement robotic technologies for extracting and using local resources, construction, and characterization in extreme environments. These environments currently include Lunar, Martian and flooded subterranean environments on Earth. MINE works in multidisciplinary groups to develop technology to perform tasks in extreme environments on Earth and on other planets. Extreme environments include the space environment (vacuum, temperature extremes, lunar dust, minerals, and lunar and Martian ice), underground remote operation and autonomy as well as unstructured and GPS denied environments on Earth and other planetary bodies, as well as exploring flooded mines. We participate in NASA’s lunabotics competition, build and test robotic vehicles and technologies directly related to state-of-the-art research for a variety of customers (Government, Commercial, Internal). **Registration:** To join the Enterprise each semester, see an ME academic advisor during open registration periods. The academic advisor will register students for each project semester course after Instructor (Enterprise Advisor) approval (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://mine.geo.mtu.edu/>

ROBOTIC SYSTEMS ENTERPRISE (RSE, L15) – Advisor: **Dr. Jeremy Bos**, EERC 236, jpbos@mtu.edu

The Robotic Systems Enterprise focuses on integrating knowledge of electronics, robotics, and programming to solve real-world engineering problems. All majors are welcome—the team depends on more than just the skills and talents of engineering and science majors. *Robotic Systems Enterprise* produces solutions that contribute to industry, recreation, and medical research. **Registration:** To join the Enterprise each semester, see an ME academic advisor during open registration periods. The academic advisor will register students for each project semester course after Instructor (Enterprise Advisor) approval (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://rse.enterprise.mtu.edu/>

STRATEGIC EDUCATION THRU NAVAL SYSTEMS EXPERIENCES (SENSE, L09) Advisor: **Dr. Tim Havens**, EERC 504, thavens@mtu.edu

SENSE's mission is to enable the workforce of tomorrow to redefine the boundaries for air, land, sea, and cyber supremacy through experiential learning and discovery. Students will design, build, and test engineering systems with a focus on Navy applications in all domains: space, air, land, sea, and undersea. Get hands-on experiences with cutting-edge defense technologies that directly impact the safety and success of our armed forces. Prepare for civilian employment opportunities in Department of Defense research labs or with DoD contractors. **Registration:** To join the Enterprise for the first time, submit a resume and a personal statement (why you want to join SENSE and description of your intended contribution to the team) to the Enterprise advisor. If approved by the Enterprise Executive Board, an academic advisor will register students for each project semester course. Returning members will need to work with the ME academic advisors to enroll them in the appropriate enterprise course. However, the registration procedures for ENT4950 (see ENT 4950 INSTRUCTIONS on page 6/appendix) still apply to returning students. <https://sense.mtu.edu/>

SUPERMILEAGE SYSTEMS (SSE, L13) – Advisor: **Mr. Nicholas Hendrickson**, M&M 119A, nvhendri@mtu.edu

Development and construction of innovative, extremely energy-efficient vehicles for the SAE Supermileage and Shell Eco-marathon Americas competitions. Supermileage Systems is a multidisciplinary student-led organization where team members gain valuable experience in leadership, teamwork, communication, project management, and vehicle development. Primary focus areas include body/chassis design, powertrain development, and electrical/control systems. In addition to engineering experience, team members also develop business acumen through active participation in organizational support teams. The Shell Eco-marathon competition includes two vehicle classes (prototype and urban concept) and three energy types (internal combustion, battery electric, and hydrogen fuel cell), providing a wide range of vehicle designs. **Registration:** To join Enterprise, new members need to complete the online application form here - <https://forms.gle/2L4B9giKRiPhevjE9> and returning members will need to work with the ME academic advisors to enroll them in the appropriate enterprise course. The academic advisor will simply register students for each project semester course except ENT4950/4960 (see ENT 4950/4960 INSTRUCTIONS on page 6/appendix). <http://sse.enterprise.mtu.edu/>

VELOVATIONS (VELO, L31) – Advisor: **Mr. Steve Lehmann**, M&M 344, sdlehman@mtu.edu

Velovations works on bicycle related projects to develop new products and processes. Focus on product development from customer need, through product/process design, testing, manufacturing, supply chain management, marketing, and distribution. **Registration:** To join the Enterprise each semester, see an ME academic advisor during open registration periods. The academic advisor will register students for each project semester course after Instructor (Enterprise Advisor) approval (except ENT4950, see ENT 4950 INSTRUCTIONS on page 6/appendix). <http://velovations.enterprise.mtu.edu>

Other Enterprise teams (Home Department) – Verify that ME project work is/will be available

- Alternative Energy Enterprise (AEE, Chemical Engineering, L23)
- Built World Enterprise (BWE, Civil & Environmental Engineering, L26)
- Green Campus Enterprise (Green, Civil & Environmental Eng, L30)
- Hot Forest Enterprise (HOTF, College of Forestry, L35)
- H-STEM (KIP, L36)
- Humane Design Interface Enterprise (HIDE, Computer Science, L19)
- Open-Source Hardware (OSHE, Materials Science and Eng, L33)
- Wireless Communications (WCE, Electrical & Computer Eng, L03)

Any Enterprise team **may** have acceptable Capstone work for ME students, but students must verify this prior to starting ENT 3950 with the Enterprise advisor. For Enterprise teams not typically joined by ME's, consultation with the ME-EM department for evaluation of example possible Capstone projects (ENT4950/4960) is highly recommended before adding ENT 3950.

Enterprise Team web pages: <http://www.mtu.edu/enterprise/>

Declaring the Enterprise Concentration

Students must declare the BSME-Enterprise Concentration (EMEE). This will ensure that the BSME-Enterprise Concentration degree audit is used to verify graduation requirements. Declaration of the concentration is appropriate when the student has completed one or more project semesters with an Enterprise team, intends to complete the concentration requirements, and before enrollment in ENT4950. <https://www.mtu.edu/registrar/students/major-degree/curriculum/index.html>

PROJECT CREDIT COURSES

Getting Started

- **ENT 1900** – Enterprise Explorations – 1 credit. **Only applies to the BSME degree as a free elective.** Introduction to the Enterprise program, project-based learning, and interdisciplinary teams. Includes hands-on exploration of the various enterprises and curricular options available. Specifically for first-year students.
- **ENT 1960** – Project work (first semester of team-specific Enterprise participation) – 1 credit. Intended for 2ND semester of the first year. **Only applies to the BSME degree as a free elective.** Students may be required to meet team-specific criteria prior to enrollment. First-year students should not join an enterprise in their first semester on campus. It may be appropriate for transfer students to join right away. Please see an academic advisor to discuss in more detail.

Project semesters NOT required for BSME Enterprise concentration (In excess of 4-semester minimum commitment to team)

- **ENT 2950** – Project work – 1 credit. Intended for 1ST semester of the second year and/or when a student has six semesters remaining until graduation (when enrolled in Mechanical Engineering Practice I, MEEM2901). May be used as an Enterprise module. Students may be required to meet team-specific criteria prior to enrollment.
- **ENT 2960** – Project work – 1 credit. Intended for second semester of the second year and/or when a student has five semesters remaining until graduation (when enrolled in Mechanical Engineering Practice II, MEEM2911). May be used as an Enterprise module. Students may be required to meet team-specific criteria prior to enrollment.
- **ENT 3980** – Project work – 1 credit. Pre-capstone project semester. Intended for students that have completed ENT3950 and ENT3960 but lack the required pre-requisites to enroll in ENT 4950. May be used as an Enterprise module twice (repeatable). Students may be required to meet team-specific criteria prior to enrollment.

- **ENT 4961** – Project work – 1 credit. Post-capstone project semester. Intended for students that have completed ENT 4950 and ENT 4960 with the same Enterprise team. May be used as an Enterprise module. Students may be required to meet team-specific criteria prior to enrollment.

Project semesters required for the BSME-Enterprise Concentration

(Minimum of 4-semester must be with the **SAME** ENTERPRISE TEAM)

- **ENT 3950** – Project work – 1 credit. Intended for the first semester of the third year and/or when a student has four semesters remaining until graduation (when enrolled in Mechanical Engineering Practice III, MEEM3901). Students may be required to meet team-specific criteria prior to enrollment. (ENT 2950/2960 may be substituted for ENT 3950/3960 as needed)
- **ENT 3960** – Project work – 1 credit. To be taken after ENT 3950 during the second semester of third year and/or with three semesters remaining until graduation (when enrolled in Mechanical Engineering Practice IV, MEEM3911). **Students should also be set up for other capstone design readiness prerequisites required for ENT4950 (see below and blue flowchart).** Students may be required to meet team-specific criteria prior to enrollment. (ENT 2950/2960 may be substituted for ENT 3950/3960 as needed)
 - *MEP pairings may not apply to ALL situations and are simply guidelines.*
- **ENT 4950** – Capstone Project work – 2 credits.

The following are required *prior* to being registered in ENT 4950.

1. Satisfy pre-requisite requirements:

- **EE 3010 (concurrent), ENT 3950 (same team), ENT 3960 (same team), MA 3710 (concurrent, or MA 2710 or MA 2720), MEEM 3400, MEEM 3600 (concurrent), MEEM 3201, MEEM 3750, MEEM 3901, MEEM 3911.**

2. FULL APPROVAL through online (Google Form) capstone registration process (See detailed instructions in Appendix A. In addition, they are emailed to students each semester and can also be found on the ME Advising page).

Students may also be required to meet team-specific criteria prior to enrollment.

- **ENT 4960** – Capstone Project work – 2 credits. The above ENT4950 project submission **should** also define this course content as the second capstone project semester, although separate Enterprise advisor (instructor) approval may be required for ENT4960 registration.

The following are required *prior* to being registered in ENT 4960.

1. Satisfy pre-requisite requirements:

- **EE 3010, ENT 4950 (same team), MA 3710, MEEM 3400, MEEM 3600, MEEM 3201, MEEM 3750, MEEM 3901, MEEM 3911, (ALL non-concurrent with ENT 4960).**

2. FULL APPROVAL through online (Google Form) capstone registration process (See detailed instructions in Appendix A. In addition, they are emailed to students each semester and can also be found on the ME Advising page). **This is only needed for ENT 4960 IF THE INITIAL VERIFICATION OF SENIOR DESIGN OBJECTIVES WAS FOR A SINGLE-SEMESTER PROJECT (ENT4950 ONLY).**

Students may also be required to meet team-specific criteria prior to enrollment.

NOTES:

- **The four required project semesters on the same enterprise team are not necessarily required to be completed in consecutive semesters.** Any semesters of non-participation due to co-op, study abroad, etc. should be coordinated by the student with the Enterprise advisor. Summer project work is acceptable with Enterprise Advisor approval.
- Amended capstone submissions should be prepared and submitted through the Google Form process as appropriate if significant changes to the approved scope or deliverables of the capstone project are made during either senior capstone design project semester. These changes will require Enterprise Advisor and ME-EM department review and approval. The final project brief on file at the conclusion of the capstone project semesters must represent the project and deliverables as completed by the student.
- All Mechanical Engineering Undergraduate Enterprise Enrollment (Enterprise Advisor) Approval forms required for registration into a given project semester must be fully and accurately completed by the student (M number, name, course number, CRN (including lab section number for specific team section for requested semester), Enterprise name, and semester) before submission to the ME Advising Center for registration. ***An Enterprise advisor may send an ME academic advisor an email to approve enrollment in place of the signed enrollment form as long as the appropriate student and section information is included.***

Enterprise Modules

- 1-2 credits each (mostly 1 credit each)
- 3 total credits required.
- Specific modules may be restricted by class standing, require instructor approval for registration, have pre-requisites, and/or be offered in only one semester per academic year or not at all. Please see BanWeb for course descriptions and any restrictions.
- See notes on reverse side/page 2 of BSME-Enterprise Concentration (Blue) flowchart for a list of approved modules for ME majors.
- Up to 2 credits of UN3002 and/or UN3003 (co-op credits) may be used as Enterprise modules for ME majors.

This set of guidelines should answer many student questions regarding participation in the Enterprise program and incorporating that participation into the BSME curriculum. Students must take responsibility for being proactive and having a good understanding of their current status, progress, and overall academic plan towards graduation. The ME academic advisors are available for assistance.

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Appendix:

- A:** (Pg. 9-10) - Detailed Instructions for ENT 4950 /4960 Enterprise Capstone Credits Online (Google Form) Registration Process
- B:** (Pg. 11) - Enterprise Enrollment (Enterprise Advisor) Approval Form for Enterprise Team Project Semester Registration (Non- Capstone Semesters)
- C:** (Pg. 12-14) - Updating your major to add an Enterprise Concentration

Appendix A:

Mechanical Engineering – Detailed Instructions for ENT 4950/4960 Enterprise Capstone Credits Online (Google Form) Registration Process

The Enterprise Capstone Credits Online (Google Form) Registration Process must be fully completed by each individual BSME-Enterprise Concentration (EMEE) student prior to registering for ENT 4950. The purpose of this process is to ensure that the student's participation in the Enterprise program represents a culminating design experience as required by ABET (equivalent to ME-EM Senior Capstone Design). The procedure to be followed by ME students is provided below. Students should consult with their Enterprise team advisor when defining their capstone equivalent project. Project submissions must be approved by both the Enterprise team advisor and the ME-EM Associate Chair for Undergraduate Studies prior to course enrollment. The student will be enrolled in ENT 4950 when the below process is complete. Dual degree students need departmental approval from both applicable (major) departments. Capstone students' approval must be from the major department, not the department housing the enterprise team (if different). The following steps are required prior to enrollment in ENT 4950 (and ENT 4960 if the original ENT 4950 project submission was only for one semester):

1. Initiate the Enterprise Capstone Credits Online (Google Form) Registration Process
<https://www.mtu.edu/enterprise/team-resources/>
 - May require SSO login
 - Click “Forms menu”
 - Click “ENT4950 Registration Form (Electrical & Computer Engineering, Software Engineering, Civil & Environmental Engineering, Mechanical Engineering, Applied Computing majors only)”
2. An academic advisor will verify the following senior design readiness (ENT 4950) pre-requisites are satisfied:
 - EE 3010 (concurrent), ENT 3950 (same team), ENT 3960 (same team), MA 3710 (concurrent, MA 2710 or MA 2720 are OK too), MEEM 3400, MEEM 3600 (concurrent), MEEM 3201, MEEM 3750, MEEM 3901, MEEM 3911.
 - At least two semesters of previous ENT project credit are required for ENT4950 readiness (typically these are ENT 3950/3960, but ENT 2950/2960 can be used as necessary). **These prior semesters must be on the same Enterprise team as planned for ENT4950/4960** (4 total semesters minimum on the same Enterprise team including the capstone project semesters).
3. To be approved, the submitted abstract/project brief must follow the current, required template (also found on the ME Advising webpage) for ME students, including their cover sheet showing all ME Capstone students on the project.
<https://www.mtu.edu/mechanical/undergraduate/advising/docs/ent4950-abstract-template.docx>

The project defined in this document **SHOULD** encompass both semesters of the project (ENT 4950 and 4960). Students working on the same project may submit the same project brief but must submit individual Google forms.

4. When department approval is received, an academic advisor will enroll the student in ENT 4950 and the student will be notified via email. Students will not be enrolled in ENT4950 prior to the completion of this process.
 - The approved project brief (approved revision, if applicable) will be retained on file electronically in the ME Advising Center. It is recommended that this process be completed during the semester prior to taking ENT4950 in order to facilitate the registration process. The latest the project should be submitted is the end of the first week of classes of the semester in which ENT4950 is to be completed. **Submissions will not be accepted after 5:00pm on the Friday of the 3rd week of the planned enrollment semester. This is a hard deadline.** Students will not be added to ENT 4950 or 4960 if their project is submitted after this date and time.
 - All that is typically required for ENT 4960 registration for the second semester of the capstone-equivalent project is a signed Enterprise Enrollment (instructor) Approval form or equivalent (email). However, if there are any significant changes to the project definition, or **if the original submission did not cover the second semester of the project, the above department approval process will be required for ENT 4960 as well.**
 - Recognizing that it may not be possible to predict the design project progress/outcome accurately and precisely in the above timeframe (i.e., the design project scope and/or deliverables may change over the course of the two project semesters), amended project briefs must be prepared and submitted to the ME Academic Advising Center, if necessary, due to significant changes in the project. **The project on file at the conclusion of the Enterprise project course sequence must represent the project and deliverables as completed by the student.**

Questions can be directed to Ryan, Mark, or Sarah (meadvise@mtu.edu) in the ME Advising Center (inside the ELC).

Appendix B:

ME Enterprise Enrollment Form for Enterprise Team Project Semester **(Non-Capstone)** Registration

- Fill out completely with M number, course number, CRN and lab section number, Enterprise name, semester, and Enterprise advisor signature.
- May be replaced with an email from the Enterprise advisor that includes all the information on the form.

This form cannot be used for ENT4950 enrollment

Michigan Tech Mechanical Engineering Undergraduate Enterprise Enrollment (Enterprise Advisor) Approval

Personal Information

M Number		Name (please print)	
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Course Information

Semester / Year		Course Number (ENT XXXX)	
CRN # (5-digit)		Section Number (LXX)	
Enterprise Name			

Reference ME Enterprise Enrollment Guidelines for correct course number to be enrolled.

Enterprise Advisor Approval Signature

Date

This form can be returned to the ME Advising Center by Friday of 1st week (late-add form required after this date). Academic Advisors will enroll the above student with this signed approval form.

An email may also be sent (in lieu of the above form) to the Enterprise Advisor for approval (to join the team). Please be sure to include all of the above form information if submitted via email. The Enterprise Advisor will then forward the approval email to an Academic Advisor. Then the Academic Advisor will add the student to the appropriate ENT course.

Appendix C:

How to Declare an Enterprise Concentration (EMEE)

Any minor or concentration add or change requests will become effective during the current semester, regardless of when it is submitted. Curriculum add or change requests require advisor approval. Please contact the advisor of the major/minor/concentration you are adding **PRIOR** to using this request system. Dropping a double major, second degree, and/or minor does not require advisor approval.

- 1: Go to the [Current Students](#) tab of [MyMichiganTech](#) ([mymichigantech.mtu.edu](#)) and select "[Request to change major/minor/concentration](#)" under Academic Programs and Advisors:

The screenshot shows the MyMichiganTech student portal. The navigation bar includes 'Home', 'Community', 'Welcome', 'Prospective Student', 'Chat with Admission', 'Current Students' (highlighted), 'Financial Aid', 'Huskycard Photo Upload', 'Housing', and 'Secure Message'. The 'Current Students' tab is circled in red. The main content area is divided into several sections: 'Announcements', 'My Status', 'Quicklinks', 'Personal Information', and 'Academic Programs and Advisors'. The 'My Status' section shows 'M number: 9999-9999', 'Status: Active student', and 'Class: Senior'. The 'Academic Information' section shows 'Estimated Graduation Term - Spring 2018'. The 'Course Registration Status' section shows 'Good - No issues impact your ability to register for courses.' The 'Grade Point Average (GPA)' section shows a table with columns for 'Attempted Credits', 'Earned Credits', 'GPA Credits', and 'GPA'. The 'Academic Programs and Advisors' section shows 'BS, Management' and 'BS, Marketing'. The link 'Request to change major/minor/concentration' is circled in red.

	Attempted Credits	Earned Credits	GPA Credits	GPA
Cumulative - UG	14.00	14.00	14.00	3.00
Management	14.00	14.00	14.00	3.00

You will be brought to the curriculum change portlet home page. This page lists your current degree information and any recent curriculum change requests.

The curriculum change portlet home page allows you to select *Update Major* and use it to update/add a concentration.

Update Major – may be used to update your major, concentration, and/or minor

Current Academic Programs
Primary Degree - BS
Major - Management
Major - Marketing

Request History

Action	Degree	Result	Decision Comments
None			

Help text is available by clicking on the blue question marks. A box with help text will appear:

Current Academic Programs ?
Primary Degree - BS
Major - Management
Major - Marketing

Request History ?

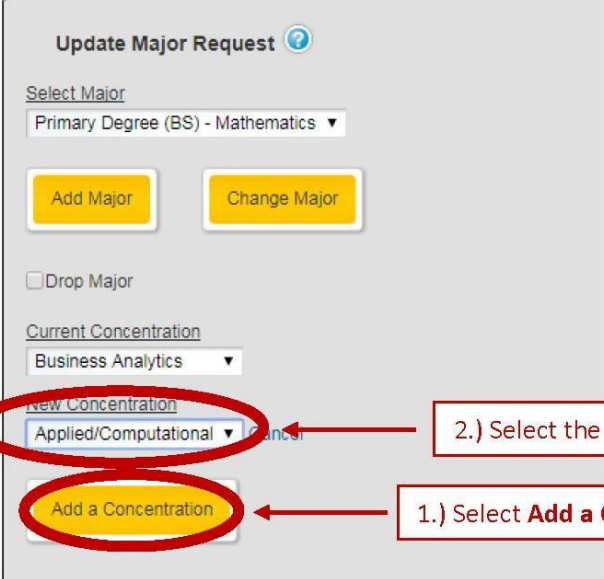
Action	Degree	Result	Decision Comments
None			

Summary of your recent requests. If a request is 'Pending,' the advisor decision has not yet been made and you will not be able to make additional requests. If a request is 'Approved - Pending Update,' the advisor has approved the request, but the Registrar's Office is processing your student record curriculum change.

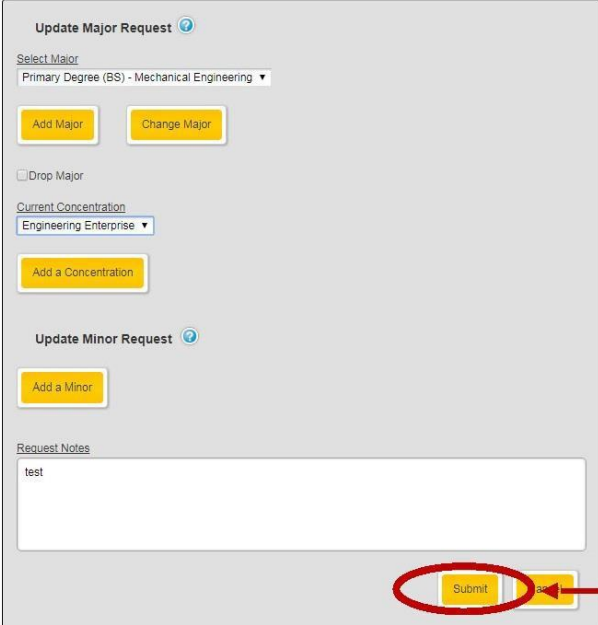
Update Major – Adding Additional Concentrations

To update your concentration, use the 'Update Major' option. You will be brought to the **Update Major Request** screen. Use the 'Add a Concentration' Button:

1. Select 'Add a Concentration'
2. A new Concentration pulldown will appear – Select 'Engineering Enterprise'
3. Click 'Submit'



The screenshot shows the 'Update Major Request' form. The 'Select Major' dropdown is set to 'Primary Degree (BS) - Mathematics'. Below it are 'Add Major' and 'Change Major' buttons. A 'Drop Major' checkbox is present. The 'Current Concentration' dropdown is set to 'Business Analytics'. The 'New Concentration' dropdown is set to 'Applied/Computational'. A red circle highlights the 'Add a Concentration' button, and a red arrow points to it with the text '1.) Select Add a Concentration'. Another red circle highlights the 'New Concentration' dropdown, and a red arrow points to it with the text '2.) Select the new concentration from the pulldown menu'.



The screenshot shows the 'Update Major Request' form. The 'Select Major' dropdown is set to 'Primary Degree (BS) - Mechanical Engineering'. Below it are 'Add Major' and 'Change Major' buttons. A 'Drop Major' checkbox is present. The 'Current Concentration' dropdown is set to 'Engineering Enterprise'. Below it is an 'Add a Concentration' button. The 'Update Minor Request' section has an 'Add a Minor' button. The 'Request Notes' text area contains the word 'test'. A red circle highlights the 'Submit' button, and a red arrow points to it with the text '3.) Click Submit'.