# Department of Civil, Environmental, and Geospatial Engineering

**ENT4950 Capstone Credits Project Submission Template for CEGE Students (Project Brief)**

**To Verify Senior Design Objectives will be met through Enterprise Concentration**

**Project Title:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Enterprise Team:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Submission Date: \_\_\_\_\_\_\_\_\_\_\_

**Enterprise Advisor Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Email: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_@mtu.edu

**CEGE SENIOR DESIGN STUDENTS ON THIS PROJECT**

1. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ M#: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Email: \_\_\_\_\_\_\_\_\_\_\_@mtu.edu

 [ ]  ENT 4950 ONLY If the project changes significantly, please submit an updated form as needed.

Semester(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**ABET Criterion 3: Student Outcomes** (as approved by enterprise advisor):

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies Program-specific criteria (for academic department use only)

**ACCE Student Outcome:**

SLO 1: Create written communications appropriate to the construction discipline

SLO 2: Create oral presentations appropriate to the construction discipline

Approved by:

 CEGE Department Chair Date

Date Forwarded: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ENT Advisor Approval Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Instructions for the Enterprise Project Brief Template***

*The Project Brief is a proposal for a project that you want to count towards Senior Design credit in Civil, Environmental, Geospatial Engineering, or Construction Management. This proposal must be approved by your Enterprise Advisor and by the CEGE Department Chair. The purpose of the project brief is to demonstrate that the proposed project has sufficient scope and rigor to be considered as Senior Design. The Project Brief is an exercise in technical communications. The template and instructions below are to help develop an acceptable Project Brief. Each element in the template can be adapted to your specific project and you can add sections to the template if needed for your project.*

*Please complete this document electronically (not handwritten, use text boxes above). Delete/replace the instructions (blue text) before submitting the Project Brief.*

***Frequently Asked Questions:***

*I don’t know the design requirements yet. How do I fill out the Project Scope and Constraints section?*

* *At a minimum you should be able to describe the overall goal of the project (redesign X to improve Y; design, build, and test X, etc.) and describe what engineering tools will be needed for this project.*

*My sponsor has not finalized the project. How do I fill out the Project Brief?*

* *Remember that the purpose of the Project Brief is to communicate how this project has sufficient scope and rigor to be considered as Senior Design. Senior Design projects use advanced engineering tools, are subject to periodic reviews, and have some type of constraints and/or standards that have to be met. Even if you do not have all of the details and deliverables, you ought to know the nature of the project and the types of engineering tools that will be required. You are responsible for communicating how this project is a “culminating design experience” in civil, environmental, geospatial engineering, or construction management.*

*If there is a substantial change in the project after it has been approved or if the project changes between semesters you can submit a new Project Brief.*

*Remember, this document must be completed and approved before registering for ENT 4950.*

**TO BE COMPLETED BY THE STUDENT**

**Project Title: *Include a descriptive title of your project.***

**Objective:** *Explain the overall objective of your project in one sentence.*

**Background**

*In this section, educate your audience on the project. Common points of discussion include:*

* *A concise overview of problem domain.*
* *Definition of any specialty technical terms or acronyms used in this project or problem domain.*
* *Motivation for the project.*
* *Previous work by individuals and/or enterprise teams on this project or in this problem domain.*
* *Images or figures that illustrate the problem domain and/or project.*

**Project Scope and Constraints**

*In this section, the scope of the project, technical tools that will be used on the project, design constraints for the project, profession standards to be used on the project. This is the section where you convince your audience that this project is at a level of Senior Capstone. Common points of discussion include:*

* *Specific goals to achieve during this project.*
* *Rough definition of design requirements and constraints.*
* *Project deliverables to developed during the course of the project..*
* *Scope of work to be conducted – experimental, computational, design, build, test, etc.*
* *Engineering tools that will be used.*
* *Prior coursework that will be applied to complete the project.*
* *Describe any training you may need to complete the project.*

**Project Goals**

*In this section, provide a short summary (bullet list) of goals and outcomes for this project.*

* *Desired outcome*
* *Design for X*
* *Performance goals etc...*
* *Some analysis deliverables along with design prototype, etc.*
* *Goal 3…*
* *Goal 4… etc*.

**Project Goals**

*In this section, summarize how you will attain the ABET Criterion 3 outcomes stated above. Also, provide a description of the standards that will be employed in the project and anticipated constraints that will define your project scope.*

**Sponsor Can Provide: (if applicable)**

*This section is a short summary (bullet list) of any resources provided by a sponsor for this project.*

* *Any unique data, information, testing equipment, etc.*
* *Any technical support that will be necessary.*
* *Any other resources, including financial, that will be necessary.*

**Project Team**

*In this section, indicate if the project is individual or a team project. If the project is being conducted by a team, describe your individual component and how it relates to the team’s goals. Please remember, you will be assessed and graded on completion of your individual project, not on the success of the entire team. This section is where you list the team members and the structure of the team. Describe your role in providing leadership.*

**Timing**

Project Start: *Thursday of Week 1, Semester 1 (fill in with which semester, Fall 2022, etc.)*

Project Completion: *Finals Week, Semester 2 (fill in with which semester, Spring 2023, etc, could be same semester for a one-semester project submission)*

*The template timeline must be edited/adapted to show specific milestones related to your project. Do not submit the template timeline verbatim. Adjust the timeline to show 1- or 2- semester project as applicable. In order to receive approval your project must include a mid-project review and final review with your customer/sponsor, advisor, external panel, etc. These reviews serve as an independent assessment of your progress and help guide mid-project design changes.*

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| Preliminary project milestones forENT4950 |
| Week 1 | Begin Semester |
| Week 2 | Initial Contact with Advisor and Sponsor |
| Week 6  | Draft Project Plan Complete |
| Week 7 | Project Plan Approved |
| Week 11 | Mid-Semester Design Review, Concepts Review |
| Week 12 | Concept Selection Complete |
| Exam week | Panel Review |

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| Preliminary project milestones for ENT4960 |
| Week 1 | Begin Semester |
| Week 4 | Alpha Proto Near Completion, Begin Evaluation |
| Week 8 | Alpha Proto Complete, Testing and Revision Iteration |
| Week 14 | Final Documentation, Presentation, and Panel Review |