



MIT Civil and Environmental Engineering
Master of Engineering, *Structural Mechanics & Design*

1.THG / Thesis Guidelines

The MEng thesis is the result of an individual research project conducted by each student in the program in close collaboration with their faculty thesis supervisor. Thesis research begins immediately upon arrival at MIT, and concludes in May with the submission of the signed thesis document. The official MIT deadline for thesis submission is **May 10, 2024**.

Research Requirement and 1.THG

1.THG is a subject associated with a program of research leading to the writing of a graduate thesis. Research plays an integral role in the graduate degree, and research effort is tracked through enrollment in 1.THG. This subject is associated with the laboratory, field, computational, or theoretical research undertaken by each student working with a faculty supervisor in CEE at MIT.

Graduate students are required to register for 1.THG every semester (including IAP), and as part of this, meet with their supervisors on a regular basis. MEng students are required to register for 24 units of 1.THG during the program (we recommend 10 units in fall and spring and 4 units over IAP) and should meet with their supervisors on a weekly basis.

IAP is considered its own term and is not a vacation period. This time should be spent on research. Students should plan to register for 4 units of 1.THG over IAP.

The general process and timeline for conducting and writing the MEng thesis is as follows:

September-October 2023

Thesis topic exploration, preliminary literature review, meetings with supervisor and topic refinement.

November-December 2023

Thesis literature review completed, research question and methodology established, preliminary research results gathered, thesis outline started.

January-February 2024

Research methodology(ies) carried out, including numerical and computational work, physical experiments, etc. Students are expected to be present on campus during IAP conducting research.



March 2024

Final research results and analysis/interpretation completed, writing on all chapters initiated.

April-May 2024

Thesis writing, revising, editing, and submission. Final poster presentation.

Students will work closely with their thesis supervisors throughout all steps of the thesis process. As part of the 24 1.THG units completed in the program, students will have milestones, deadlines, and presentations to ensure steady progress and to share thesis research and results with their peers and supervisors.

A detailed schedule for the 2023-2024 academic year is given below.

Key 1.THG Dates and Assignments, Fall 2023

Friday, September 8, 2023, 12 pm, 1-131

This information session will review one of our departmental resources, the CEE Communications Lab. The Communications Lab is here to help you with all of your research communication needs, resumes, cover letters, etc.

Monday, September 11, 2023, 12 pm, 1-131

This information session will provide an overview of MIT's library systems. You'll learn how to navigate the thesis archives (Dspace) to view past MEng theses, search the inventory system, and request books.

Friday, September 15, 2023

Academic Program Form due to cee-apo@mit.edu. This form should include your intended program of study and be signed off by your advisor.

Friday, September 15, 2023, 12 pm, 1-141

Thesis Project Presentations from faculty

Faculty will be presenting possible MEng thesis topics. Students will have the opportunity to hear all of the project pitches, ask questions, and connect with potential thesis advisors. Lunch will be served.

Thursday, September 28, 2023, 3-4:30 pm, 48-316

Literature Review Workshop with the CEE CommLab



Friday, October 13, 2023

Preliminary literature review due

Select and annotate three scholarly publications representative of your interests and possible focus of the MEng thesis. A written paragraph devoted to each publication should summarize the completed research and propose future work that could be done toward the thesis. This should be submitted to your advisor with a copy to cee-apo@mit.edu.

Friday, October 20, 2023

Thesis proposal signed by supervisor due to cee-apo@mit.edu

Prepare a one-page abstract proposing research for the MEng thesis. The abstract should introduce the topic, outline research methodology, and summarize the goals of the work. The thesis supervisor must also sign the cover sheet to indicate their agreement in supervising the proposed topic.

Submit signed copy of thesis proposal electronically, using form on CEE.MIT.EDU/RESOURCES

Friday, November 3, 2023, 12pm-2pm, 1-141

Thesis progress presentations by each student

Prepare a 6-minute presentation using PowerPoint or similar software to introduce your research topic, review critical existing research in the same area, identify the original research question, outline the proposed methodology, anticipate results, and conclude with the impact of the work. The goal is to share your research plans with each other as well as the wider department community; advisors and research groups will be invited to attend. Feedback on both the content and clarity of the presentation will be provided by CEE advisors and postdocs.

Friday, December 8, 2023

Thesis outline due to supervisor (copy cee-apo@mit.edu)

Full thesis draft in outline form, including the five standard chapters: 1. Introduction, 2. Literature Review, 3. Methodology, 4. Results, 5. Conclusions. The first three chapters should be more filled out, including text and images, while the later chapters can include placeholders for anticipated content.

Key 1.THG Dates and Assignments, IAP 2024

January 3-6, 2024

MEng trip to New York City

This will be a 3-4 day trip to NYC to visit top structural engineering firms and their projects. Costs of the trip are covered by the department.



Key 1.THG Dates and Assignments, Spring 2024

Friday, February 2, 2024, 12-2pm, 1-141

Thesis progress presentations by each student

Prepare a 5-minute presentation using PowerPoint or similar software to give updates on your thesis research, following a similar format to the November presentation (with more focus on methodology and results).

Wednesday, February 28, 2024, 2-6pm, 750 Main Street (The Engine)

CEE Research Day

MEng students are encouraged to participate in the annual CEE Research Day. Get a jump start on your poster and enter it in the poster session for a chance to win cash prizes.

Friday, March 15, 2024

Progress thesis draft due to supervisor (copy cee-apo@mit.edu)

Expansion on thesis draft outline from December, including substantial updates to Literature Review, Methodology, and Results. Your supervisor will give comments and feedback in person and/or in writing on your draft.

Friday, April 12, 2024

Full thesis draft due to supervisor (copy cee-apo@mit.edu)

Near-final thesis draft with all chapters written, and results completed, analyzed, and interpreted. This deadline is critical to receive final feedback from your supervisor.

Poster draft due to supervisor (copy cee-apo@mit.edu)

Outline of poster content planned for final presentations in mid-May

Friday, April 26, 2024

Final thesis draft due to supervisor (copy cee-apo@mit.edu)

Finalized thesis that has been copy-edited, formatted according to MIT Guidelines (<https://libraries.mit.edu/distinctive-collections/thesis-specs/>), and thoroughly reviewed by the student for legibility, clarity of arguments, and overall quality. This is the final version to be approved by the supervisor prior to printing and submission.

Friday, May 10, 2024

Thesis submission deadline

Poster submission deadline

Thursday, May 16, 2024, 5-8pm, Samberg Conference Center (E52), 50 Memorial Drive

Present final poster to CEE community at the end of year award ceremony.



May 28-30, 2024

Commencement Activities

Ceremony dates, times, and locations will be shared following IAP.

Program Requirements & Suggested Subjects

Degree Requirements

Program must include at least 66 subject units of graduate level credit and 24 units of Thesis ([1.THG](#)).

- Students will take [1.562](#) (12 units, Fall) and [1.563](#) (12 units, Spring) as their core subjects, with two additional graduate CEE Subjects (24 units). **Students can take any two CEE graduate subjects** to fulfill this requirement; See suggested subjects below.
- MEng Thesis ([1.THG](#)), equivalent to 24 units.
- 18+ units of Elective Subjects—These can be inside or outside of Course 1.

Suggested Elective Subjects, Fall 2023

- [1.303](#) Infrastructure Design for Climate Change (6 units)
- [1.361](#) Advanced Soil Mechanics (9 units)
- [1.364](#) Advanced Geotechnical Engineering (9 units)
- [1.38](#) Engineering Geology (12 units)
- [1.462](#) Entrepreneurship in the Built Environment (6 units)
- [1.541](#) Mechanics and Design of Concrete Structures (12 units)
- [1.550](#) Engineering Mechanics (12 units)
- [1.564](#) Environmental Technology in Buildings (9 units)
- [1.573](#) Structural Mechanics (12 units)
- [1.583](#) Topology Optimization of Structures (12 units)
- [1.813](#) Technology, Globalization, and Sustainable Development (12 units)
- [3.371](#) Structural Materials (12 units)
- [4.130](#) Architectural Design Theory and Methodologies (12 units)
- [4.140](#) How to Make (Almost) Anything (18 units)
- [4.412](#) D-Lab Schools: Building Technology Laboratory (units arranged)
- [4.463](#) Building Technology Systems: Structures and Envelopes (9 units)
- [4.481](#) Building Technology Seminar (3 units)
- [4.580](#) Inquiry into Computation and Design (12 units)
- [4.604](#) Understanding Modern Architecture (12 units)
- [11.401](#) Introduction to Housing, Community, and Economic Development (12 units)
- [11.407](#) Tools and Techniques for Inclusive Economic Development (12 units)
- [11.450](#) Real Estate Development Building Systems (3 units)



Suggested Elective Subjects, Spring 2024

- [1.001](#) Engineering Computation and Data Science (12 units)
- [1.121](#) Advanced Mechanics and Materials via Machine Learning (12 units)
- [1.142](#) Robust Modeling, Optimization, and Computation (12 units)

- [1.202](#) Demand Modeling (12 units)
- [1.472](#) Innovative Project Delivery in the Public and Private Sectors (6 units)
- [1.541](#) Mechanics and Design of Concrete Structures (12 units)
- [1.C51](#) Machine Learning for Sustainable Systems (6 units)
- [4.252](#) Introduction to Urban Design and Development (12 units)
- [2.081](#) Plates and Shells: Static and Dynamic Analysis (12 units)
- [3.207](#) Innovation and Commercialization (12 units)

- [3.371](#) Structural Materials (12 units)
- [4.123](#) Architectural Assemblies (9 units)
- [4.163](#) Urban Design Studio (arranged)
- [4.244](#) Urban Design Seminar: Perspectives on Contemporary Practice (9 units)
- [4.453](#) Creative Machine Learning for Design (12 units)
- [4.570](#) Computational Design Lab (arranged)

Submitting your subject registration

After you meet with your advisor to discuss your fall schedule, you will need to follow these steps to submit your finalized registration:

1. student enters their subject selection at <https://registration.mit.edu/>
2. the advisor approves the subject selection
3. the student submits the approved registration