Interdepartmental Program in Transportation
Master of Science in Transportation Guide

Students must satisfactorily complete a program of study that consists of at least 66 units of graduate level subjects, plus a research-based master's thesis. Required coursework includes three core subjects, one policy, technology, and society subject, one computing/analytics subject, and at least one additional transportation or related subject comprising an individually designed program.

In the following document you will find specific information pertaining to:

1. Thesis Supervision
2. Research and Degree Requirements
3. Thesis Submission

Appendix A - Contact Information

Appendix B - Policy, Technology and Society Subjects

Appendix C - Responsible Conduct of Research

Appendix D - Responsible Use of Generative AI in Thesis Research

Thesis Supervision

A student's thesis supervisor can be:

1. An MIT Interdepartmental Program in Transportation Faculty member(s) or
2. An Interdepartmental Program in Transportation Senior or Principal Research Scientist/Engineer.

A thesis supervisor is responsible for certifying and signing the thesis.

Research and Degree Requirements

Subject Requirements
The requirements for the MST degree consist of the following:

Core MST

- 1.200 Transportation: Foundations and Methods (12 units)
- Select one (12 units)
    - 1.202 Demand Modeling
    - 1.208 Resilient Networks
    - 6.7260 Network Science and Models
    - 1.260 Logistics Systems
    - 11.478 Behavioral Science, AI, and Urban Mobility
- 11.251 Frontier of Transportation Research (3 units)
  Students enroll in the subject in the fall and spring of their first year (6 units earned over two terms)

Computation/Analytics (select one)

- 6.C51 Modeling with Machine Learning: from Algorithms to Applications + 1.C51 Machine Learning for Sustainable Systems (must be taken and completed simultaneously)
- 6.3732 Statistics, Computation and Applications
- 6.7910/9.520 Statistical Learning Theory and Applications
- 6.7900 Machine Learning
- 15.071 The Analytics Edge
- 15.072 Advanced Analytics Edge

Policy, Technology and Society Subjects
Students are required to select one subject from the list found in Appendix B

Electives Subjects
Students round out their degree program with one or two subjects selected in consultation with their advisor.

Additional Requirements

24 units of thesis/research requirement

Students are required to fill out and submit the program form, found at: https://cee.mit.edu/resources/, **by December 15 of their first term**.

The Program

The program requires each student to take 1.200 Transportation: Foundations and Methods. Students then select one of the four subjects; 1.202 Demand Modeling, OR 1.208 Resilient Networks, OR 6.7260 Network Science and Models, OR 1.260 Logistics Systems OR 11.478 Behavioral Science, AI, and Urban Mobility. Selecting one of these subjects provides depth in an area, which furthers their educational objectives in the field of transportation. Students will also enroll in 11.251 Frontier of Transportation Research (3 credits), in both the fall and spring term of their first academic year to experience the breadth of transportation research at MIT.

To fulfill the computation and analytics aspect of the curriculum requirement, students may select one of the six subjects; 6.3732 Statistics, Computation and Applications, OR 6.C51 Modeling with Machine Learning: from Algorithms to Applications + 1.C51 Machine Learning for Sustainable Systems (must be taken and completed simultaneously), OR 6.7900 Machine Learning, OR 6.7910/9.520 Statistical Learning Theory and Applications, OR 15.071 The Analytics Edge, OR 15.072 Advanced Analytics Edge. Students may also submit a petition to the Program for an equivalent or higher level subject to satisfy the computation and analytics requirement. In working with your advisor please select the subject that is best suited to your research and educational objectives.

Students will also select a Subject in Policy, Technology or Society with a list of possible subjects found in Appendix B. Lastly, students will work with their advisors to fulfill the remaining credits, either aiming to build their depth of understanding in a selected area of interests or emphasize breadth rather than depth in a single area.

Note on Petitions: Program Petitions are submitted to the Academic Programs Office for subject substitution requests. The petition form can be found at https://cee.mit.edu/resources/ and should be completed *prior* to taking the subject.

Petitions for an Institute level request, are administered through the Office of Graduate Education, and are used for academic requests including, but not limited to, requesting graduate level credit for an undergraduate level subject, filing for dual degree status, etc. If you would like to request graduate level credit for a subject, you must act at the start of the term AND the instructor must agree to assign and grade additional work. Note that while the

petition can cover multiple requests, there is a $50 filing fee. The Assistant Director of Academic Program Administration (Sarah Smith, ssmith1@mit.edu) can sign on behalf of the program and then you will submit the form electronically to the OGE at oge-petitions@mit.edu.

Research Requirement and Thesis Registration
Research plays an integral role in the MST degree, and this research effort is tracked academically through enrollment in your department of registration's thesis subject designation.

In the Interdepartmental Program in Transportation, we **require each graduate student to register for 1.982 every term that they are in the program *except the final term when a student is on the degree list***. The units for 1.982 should fill in the term load to equal 48 units (a full subject load), but with a minimum of 12 units of 1.982 in each term. The number of credit hours is determined in consultation with your advisor and should be reflective of the amount of time you will be spending on your thesis work during the term. First-year students are required to register for 24 units of 1.982 and should meet with their supervisors on a weekly basis. Beyond first year, the number of credit hours is determined in consultation with your advisor.

Through enrollment in 1.982, students are formally graded on research performance each term, in accordance with MIT Faculty Rules and Regulations 2.62.3.

In the final term when a student is on the degree list, they must register for 24 units of X.THG (e.g., 1.THG, 11.THG, etc.). 1.THG if your home department is Civil and Environmental Engineering and 11.THG if your home department is Urban Studies and Planning.

Receipt of "P" grades in 1.982 signals satisfactory academic progress in the research associated with a student's funded appointment. A "D/F" grade is used to indicate unsatisfactory research progress. Following a "D/F" grade, the student will receive a program letter outlining steps needed to meet research expectations. If a student earns two consecutive "D/F" grades, the student's funding may be withdrawn and further registration at the Institute denied such that a student may no longer continue in the Transportation program.

Summer Tuition Subsidy
Graduate students who are enrolled in a research degree program and who are **not** taking subjects are eligible to have their summer tuition subsidized from Institute general funds.

The subsidy applies to new or continuing graduate students in normal resident status during the preceding spring term, and who are only registered for thesis or pre-thesis research credit during the summer.

Some key points to remember:

- Graduate students who register for other summer subjects will be charged tuition on a per unit basis up to the maximum tuition.
- Students registering for summer internship subjects are not eligible and will be charged the per unit rate, up to a maximum of four units.

The Registrar's office oversees this subsidy and the source information for the points noted above can be found here: https://registrar.mit.edu/registration-academics/tuition-fees/graduate/summer-tuition-subsidy

Checklist for Submission of Master of Science in Transportation Thesis
MIT has specific guidelines for writing and formatting your thesis. Please follow them closely: https://libraries.mit.edu/archives/thesis-specs/

MIT has three degree-granting cycles per year: February, May/June and September. Approaching the time when you will submit your thesis, you should register to be on the appropriate degree list. To register for the degree list, go to student.mit.edu, select "online degree application" and follow the instructions. Once registered for the degree list, you will receive a detailed email from the Assistant Director of Academic Program Administration outlining the steps needed to complete your degree.

Submitting your Thesis to the Academic Programs Office
You are required to submit two copies of your thesis, following the electronic submission instruction which are provided by the Assistant Director of Academic Program Administration, by 5 pm the day of the program deadline. If you are a DUSP Transportation student, you will follow their thesis submission guidance. If you are a CEE Transportation student, you will follow their submission guidance.

Appendix A
Contact Information

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Appendix B

Policy, Technology and Society Subjects
This list is not exhaustive, and you may petition to the TEC director to take alternate subjects to fulfill this requirement per the discretion of your advisor. Students are required to take one subject to fulfill this requirement.

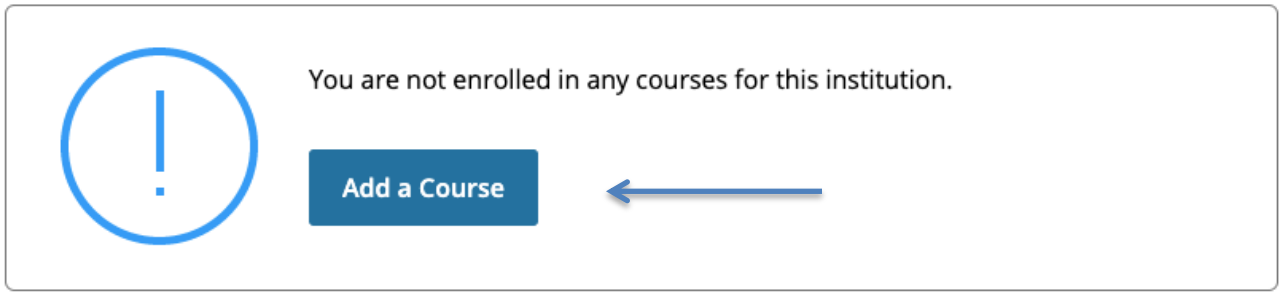
- 1.251 / 11.526 Comparative Land-Use and Transportation Planning
- 2.65 / 1.818 /10.391 / 11.371 / 22.811 Sustainable Energy
- 2.810 Manufacturing Processes and Systems
- 6.7260 Network Science and Models
- 10.805 / IDS.436 Technology, Law, and the Working Environment
- 11.255 Negotiation and Dispute Resolution in the Public Sector
- 11.478 Behavioral Science, AI, and Urban Mobility
- 11.540 Urban Transportation Planning and Policy
- 12.845 / IDS.526 Sustainability Science and Engineering
- 15.020 Economics of Energy, Innovation, and Sustainability
- 15.038 / 14.444 Energy Economics and Policy
- 15.230 Public Policy and the Private Sector
- 15.655 / IDS.435 / 11.422 Law, Technology, and Public Policy
- 16.422 Human Supervisory Control of Automated Systems
- 16.453 / HST.518 Human Systems Engineering
- 16.71 / 1.232 / 15.054 The Airline Industry
- 16.72 Air Traffic Control
- 16.89 / IDS.339 Space Systems Engineering
- 17.310 / STS.482 / IDS.412 Science, Technology, and Public Policy
- IDS.333 System Design and Management for a Changing World: Tools
- IDS.410 Modeling and Assessment for Policy
- IDS.411 Concepts and Research in Technology and Policy
- IDS.521 / 1.670 / 10.621 Energy Systems and Climate Change Mitigation
- IDS.522 Mapping and Evaluating New Energy Technologies
- MAS.552 / 4.557 City Science
- MAS.750 Human-Robot Interaction
- MAS.836 Sensor Technologies for Interactive Environments
- MAS.859 / 16.859 Space Technology for the Development Leader
- STS.477 / 21W.820 Writing: Science, Technology, and Society
- STS.487 / 6.4590 Foundations of Information Policy

Appendix C

Responsible Conduct of Research
Each MST student is required to complete MIT's online course on the Responsible Conduct of Research within the first year, i.e., by the end of Spring term AY1. If you are paid on an NSF grant, you are required to complete the course within 60 days of being assigned to the grant. You can access the course from this web site and following the instructions below. You will need an MIT certificate.

https://research.mit.edu/integrity-and-compliance/citi-training-courses/take-citi-courses

1. In the center of the page, slick "Log into CITI (Touchstone Required)"
2. Set up your account
3. Select "My Courses" 5.
4. Select "Add a Course"



5. Go to question 4 and select "RCR for Engineers"
6. Complete the Integrity Assurance Statement before beginning the course.
7. Once you have completed the course (10 modules with 80% or better on the individual quizzes) send a PDF of your completion report to the Academic Programs Office (cee-apo@mit.edu)

Appendix D :: Responsible use of Generative AI in Thesis Research

Each student is responsible for the integrity of their research and publications.

1) Prior to using generative AI for research or writing, the student must discuss these plans with their advisor.

2) It is the student's responsibility to verify the validity and novelty of all substantial content [data, code, text, images, methodologies, ideas, concepts] produced by generative AI that is not directly referenced or attributed in the thesis. Be aware that AI can generate incorrect information and fake references, as well as ideas that already exist in the literature, which could put you at risk of plagiarism. Be sure to review the literature yourself and use the appropriate citations.

3) Published work must describe the use of generative AI in the methods or implementation details in sufficient detail that others can reproduce the steps of the analysis. Keep track of what tools are used and how they are used from the start of research and throughout your thesis research process.

Students will be questioned on their responsible use of generative AI during the General Exam, Thesis Proposal, Green Light Meeting, and Thesis Defense. Students should be able to clearly enunciate what they did versus what was done by generative AI.