GRADUATE PROGRAMS IN TRANSPORTATION

MIT provides students with a broad range of opportunities for transportation-related education. Courses and classes span the School of Engineering, the Sloan School of Management, and the School of Architecture and Planning, with many activities covering interdisciplinary topics that prepare students for future industry, government, or academic careers.

A variety of graduate degrees are available to students interested in transportation studies and research, including the interdepartmental master’s program and doctoral program in transportation, described below, and the Master of Engineering in Logistics, described under Supply Chain Management (http://catalog.mit.edu/interdisciplinary/graduate-programs/supply-chain-management).

Opportunities are also available for students to obtain dual master’s degrees. Students who wish to pursue this option must follow the regular admissions procedure to be admitted to each degree program. Common dual degree pairings include the Master of Science in Transportation with:

- Master in City Planning
- Master of Science in Electrical Engineering and Computer Science
- Master of Science in Operations Research
- Master of Science in Technology and Policy

Information on requirements for dual degrees can be found in the section on General Degree Requirements for graduate education.

Master of Science in Transportation

The Master of Science in Transportation (MST) (http://catalog.mit.edu/degree-charts/master-transportation) program is based on the premise that a common set of analytical approaches and methodologies can be applied to solve a range of transportation problems. The MST provides a common basis for addressing a wide range of problems while allowing enough flexibility to accommodate students with diverse backgrounds and interests.

Students must complete a program of coursework, plus a research-based master’s thesis on a topic of their choosing approved by their thesis supervisor. Coursework includes two required core subjects, at least three additional transportation or related subjects comprising an individually designed program, one policy/technology subject, and a computer programming subject.

Generally, the three subjects chosen for the individually designed program relate to an area of specialization, although this is not required. Common areas of specialization include air transportation, data sciences for transportation, urban transportation, planning methods, logistics, and policy. Some students use the individually designed program to deepen their understanding of a selected area of interest, while others may choose to emphasize breadth rather than depth in their studies. At least one of the selected subjects should address policy or technology. At least two of the designated subjects should be clearly focused on transportation, while the third can be in a field that supports transportation, for example, a subject covering methods used in transportation drawn from fields such as economics, computer science, operations research, political science, or management.

The MST degree usually takes up to two years to complete.

For more information, see the full Master of Science in Transportation program description (http://cee.mit.edu/graduate/mst).

Admission

An undergraduate degree in engineering is not necessary for admission to the Master of Science in Transportation program, but applicants are expected to have an aptitude for analytical thinking. Backgrounds in the physical or social sciences, urban planning, management, and many other disciplines are equally appropriate foundations for the program.

The only specific subjects required for admission are two subjects in calculus, one in economics, and one in probability. One or more of these subjects may be completed simultaneously with application to the program, and acceptance is then conditional on satisfactory completion of these prerequisites. Applicants should have roughly the equivalent of the following MIT subjects:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
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<tbody>
<tr>
<td>18.01 Calculus</td>
<td>12</td>
</tr>
<tr>
<td>18.02 Calculus</td>
<td>12</td>
</tr>
<tr>
<td>14.01 Principles of Microeconomics</td>
<td>12</td>
</tr>
<tr>
<td>6.041A Introduction to Probability I</td>
<td>12</td>
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<tr>
<td>&amp; 6.041B Introduction to Probability II</td>
<td></td>
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<tr>
<td>or 1.010 Uncertainty in Engineering</td>
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Students without an equivalent Microeconomics course can be admitted, but will have to complete 14.01 Principles of Microeconomics, preferably during their first year in the degree.

All applicants are required to submit Graduate Record Examination (GRE) scores; applicants whose native language is not English are required to submit an English Language Exam. Two exams are accepted: the Test of English as a Foreign Language (TOEFL) and the International English Language Testing System (IELTS). Applicants to the Master of Science in Transportation degree program should achieve a score of at least 100 on the TOEFL iBT or 7.5 on the IELTS.

Financial Support

Funding for MST students is usually offered to about 80 percent of each incoming class. A limited number of fellowships are offered each year, but more often funding takes the form of a research assistantship (RA). A student with RA funding typically works with a faculty member on a research project for 15–30 hours per week. The
research that is conducted on that project generally becomes the
topic of the student’s thesis.

To learn more about current transportation research at MIT, visit
Transportation@MIT (http://transportation.mit.edu/research/people) to peruse the websites of the faculty involved.

RAs are awarded as either a half or full appointment. An award of
a full RA (about 30 hours of work per week) covers the student’s
tuition for the academic year and provides a monthly stipend to
cover living expenses. A half RA (approximately 15 hours of work per
week) covers half of the student’s tuition for the academic year and
provides half of the regular monthly stipend.

Students who are not awarded financial aid at the time of admission
may seek funding through other sources.

Doctor of Philosophy in Transportation

The interdisciplinary doctoral program in transportation provides
a structured and direct follow-on doctoral program for students
enrolled in the Master of Science in Transportation or other
transportation-related master’s degree programs offered at MIT
or elsewhere. Outstanding applicants without a master’s degree
can also be considered for admission to the doctoral program.
The interdisciplinary structure allows students great flexibility in
developing individual programs of study that cross both disciplinary
and departmental lines. The program is administered by a faculty
committee responsible for admissions, establishment and oversight
of program requirements, and conduct of the general examination
and dissertation defense.

The interdisciplinary doctoral program in transportation requires
completion of at least 120 units of coursework in a program of study
proposed by the student, the successful completion of a general
examination consisting of both written and oral components, and
the submission and defense of an acceptable dissertation.

The doctoral program offers five core areas of study. Students must
choose the Transportation Systems Analysis core area and at least
one of the Demand and Economics or Performance and Optimization
core areas to build a doctoral core program of six subjects.

<table>
<thead>
<tr>
<th>Core Area</th>
<th>Course Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation Systems Analysis</td>
<td>1.200[J]</td>
<td>Transportation Systems Analysis:</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>1.201[J]</td>
<td>Performance and Optimization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.202[J]</td>
<td>Demand Modeling</td>
<td>12</td>
</tr>
<tr>
<td>Demand and Economics</td>
<td>14.381</td>
<td>Statistical Method in Economics</td>
<td>12</td>
</tr>
<tr>
<td>Performance and Optimization</td>
<td>1.203[J]</td>
<td>Logistical and Transportation Planning</td>
<td>12</td>
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Graduates of the interdisciplinary doctoral program receive a PhD
in Transportation, although students may petition for other MIT
graduate fields of study as their degree designation, subject to
approval by the Transportation Graduate Program Committee.

Inquiries

Questions about and applications to graduate programs in
transportation should be directed to the Transportation Education
Committee (transpo-admissions@mit.edu), Department of Civil and
Environmental Engineering.