This program is designed for students with career goals in transportation engineering and transportation planning. The degree requirements include core courses from the Department of Civil and Environmental Engineering, complemented by electives in civil and environmental engineering and by related courses in applied mathematics, engineering, economics, policy, and management.

<table>
<thead>
<tr>
<th>Degree Requirements</th>
<th>With Report</th>
<th>With Thesis</th>
<th>Course Work Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required core courses</td>
<td>12 SH</td>
<td>12 SH</td>
<td>12 SH</td>
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<tr>
<td>Restricted electives</td>
<td>8 SH</td>
<td>8 SH</td>
<td>12 SH</td>
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<tr>
<td>Other electives</td>
<td>8 SH</td>
<td>4 SH</td>
<td>8 SH</td>
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<tr>
<td>Master of Science report/thesis</td>
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<td>8 SH</td>
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<tr>
<td>Minimum semester hours required</td>
<td>32 SH</td>
<td>32 SH</td>
<td>32 SH</td>
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</table>

**Graduate Certificate Options**

Students enrolled in a master’s degree have the opportunity to also pursue one of the many engineering graduate certificate options in addition to or in combination with the MS degree. Students should consult their faculty advisor regarding these options (http://catalog.northeastern.edu/graduate/engineering/graduate-certificate-programs).

**GORDON INSTITUTE OF ENGINEERING LEADERSHIP**

Master’s Degree in Civil Engineering with Concentration in Transportation with Graduate Certificate in Engineering Leadership

Students may complete a Master of Science in Civil Engineering with Concentration in Transportation in addition to earning a Graduate Certificate in Engineering Leadership. Students must apply and be admitted to the Gordon Engineering Leadership Program in order to pursue this option. The program requires fulfillment of the 16-semester-hour curriculum required to earn the Graduate Certificate in Engineering Leadership, which includes an industry-based challenge project with multiple mentors. The integrated 32-semester-hour degree and certificate will require 16 hours of advisor-approved transportation engineering technical courses.

Engineering Leadership (http://catalog.northeastern.edu/graduate/engineering/leadership/engineering-leadership-graduate-certificate/#text)

**Program Requirements**

Complete all courses and requirements listed below unless otherwise indicated.

**Core Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE !5373</td>
<td>Transportation Systems: Analysis and Planning</td>
<td>4</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 5376</td>
<td>Traffic Engineering and Sustainable Urban Street Design</td>
<td>4</td>
</tr>
<tr>
<td>IE 6200</td>
<td>Engineering Probability and Statistics</td>
<td>4</td>
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</table>

**Options**

Complete one of the following options:

**COURSE WORK OPTION**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Traffic Engineering and Sustainable Urban Street Design</td>
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</tr>
<tr>
<td>IE 6200</td>
<td>Engineering Probability and Statistics</td>
<td>4</td>
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</table>

**REPORT OPTION**

<table>
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<tr>
<th>Code</th>
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<tr>
<td>CIVE 8674</td>
<td>Master's Report</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 6566</td>
<td>Sustainable Urban Transportation: Netherlands</td>
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</tr>
<tr>
<td>CIVE 7380</td>
<td>Performance Models and Simulation of Transportation Networks</td>
<td></td>
</tr>
<tr>
<td>CIVE 7381</td>
<td>Transportation Demand Forecasting and Model Estimation</td>
<td></td>
</tr>
<tr>
<td>CIVE 7385</td>
<td>Public Transportation</td>
<td></td>
</tr>
<tr>
<td>CIVE 7387</td>
<td>Design Aspects of Roadway Safety</td>
<td></td>
</tr>
<tr>
<td>CIVE 7388</td>
<td>Special Topics in Civil Engineering (Informatics in Civil Engineering)</td>
<td></td>
</tr>
<tr>
<td>IE 7215</td>
<td>Simulation Analysis</td>
<td></td>
</tr>
<tr>
<td>IE 7280</td>
<td>Statistical Methods in Engineering</td>
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</table>

**THESIS OPTION**

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>CIVE 7990</td>
<td>Thesis</td>
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<tr>
<td>CIVE 6566</td>
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<tr>
<td>CIVE 7380</td>
<td>Performance Models and Simulation of Transportation Networks</td>
<td></td>
</tr>
<tr>
<td>CIVE 7381</td>
<td>Transportation Demand Forecasting and Model Estimation</td>
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</tr>
<tr>
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<td>Statistical Methods in Engineering</td>
<td></td>
</tr>
</tbody>
</table>

**Course Lists**

**RESTRICTED ELECTIVE LIST**

<table>
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<tr>
<td>IE 7280</td>
<td>Statistical Methods in Engineering</td>
<td></td>
</tr>
</tbody>
</table>

**OTHER ELECTIVE LIST**

Any restricted elective not used to meet the restricted elective requirement can be used as another elective. Courses outside this list may be taken as electives with advisor approval.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 7275</td>
<td>Data Mining in Engineering</td>
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</tr>
<tr>
<td>IE 7290</td>
<td>Reliability Analysis and Risk Assessment</td>
<td></td>
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</tbody>
</table>

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Civil Engineering with Concentration in Transportation, MSCivE

<table>
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<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>INFO 6210</td>
<td>Data Management and Database Design</td>
</tr>
<tr>
<td>MATH 7343</td>
<td>Applied Statistics</td>
</tr>
<tr>
<td>OR 6205</td>
<td>Deterministic Operations Research</td>
</tr>
<tr>
<td>OR 7230</td>
<td>Probabilistic Operation Research</td>
</tr>
<tr>
<td>OR 7245</td>
<td>Network Analysis and Advanced Optimization</td>
</tr>
<tr>
<td>PPUA 5263</td>
<td>Geographic Information Systems for Urban and Regional Policy</td>
</tr>
<tr>
<td>PPUA 7231</td>
<td>Transportation Policy</td>
</tr>
<tr>
<td>PPUA 7234</td>
<td>Land Use and Urban Growth Policy</td>
</tr>
</tbody>
</table>

**Program Credit/GPA Requirements**

32 total semester hours required
Minimum 3.000 GPA required