The Gordon Engineering Leadership Program (GEL) offered by the Gordon Institute of Engineering Leadership is a transformational graduate program designed to build a future corps of engineering leadership professionals. GEL seeks to accelerate leadership development capability in an engineering context through a concentrated curriculum that inculcates both the psychological skills and capabilities needed to lead engineers in parallel with technical skills to successfully engineer products to customers and markets. The program teaches relevant leadership theory followed by practice in leadership laboratories. Technical product development and scientific principles courses are followed by the completion of a market-worthy challenge project. This learning framework is supplemented with three-way mentoring from industry, faculty, and program mentors. Graduates of the program, known as Gordon Fellows, have an opportunity to gain the knowledge, skills, and attitudes required to successfully lead engineering teams. They stand out from their peers in their ability to invent, innovate, and implement engineering projects from concept to market success. Participation in GEL accelerates Gordon Fellows’ careers, making them more valuable to their company.

The Challenge
When relatively unseasoned engineers run teams or projects, most fail to satisfy all of the project’s critical requirements—missing the mark in functionality, performance, quality, time-to-market, cost, or other key objectives. This shortfall exists because engineers enter the workforce without critical skills related to:

- Competitiveness
- Taking responsibility to prevent failure
- Market and customer focus
- Influencing and motivating skills
- Interdisciplinary decision making and teamwork capability
- Simultaneous optimization of all elements of performance, quality, cost, and timing
- Front-loading the engineering process
- Financial acumen
- Big-picture engineering
- Leadership abilities and organizational social awareness
- Enterprise understanding
- Program management tools and processes
- Designing to avoid failure modes
- Designing for lean manufacture

The Mission
GEL’s mission is to create an elite cadre of engineering leaders who stand out from their peers in their ability to invent, innovate, and implement engineering projects from concept to market success.

These leaders will demonstrate an exceptional ability to lead engineering teams by providing purpose, direction, and motivation to influence others to achieve their collective goals.

The Method
To close the gaps and realize its mission, GEL concentrates on the knowledge, skills, and abilities that reside at the intersection of engineering and leadership.

At the end of the program, Gordon Fellows emerge with the awareness, confidence, vision, and technical dexterity to drive positive change within their organizations and society.

Admissions
GEL candidates must apply for and be admitted to both the Northeastern Graduate School of Engineering and the Gordon Engineering Leadership Program.

Students pursue GEL as part of a Master of Science degree in the engineering discipline of their choice or as a stand-alone graduate certificate. Upon completion of a Master of Science degree, students earn both the Master of Science degree in the discipline of choice and a Graduate Certificate in Engineering Leadership. Students who already hold a graduate degree in engineering or have greater than three years’ engineering work experience can complete the program to earn a Graduate Certificate in Engineering Leadership. The core GEL curriculum takes place during one calendar year (September–July), and additional coursework required for the Master of Science degree can be pursued before, after, or in parallel with GEL.

Programs
Graduate Certificate: Stand-Alone or Combined with Existing MS Degree
The Graduate Certificate in Engineering Leadership can be pursued as a stand-alone certificate, or the certificate can be earned in conjunction with existing Master of Science degrees offered by the College of Engineering. Departments across the College of Engineering have developed graduation requirements that enable students to earn both the MS degree and the engineering leadership graduate certificate. Please contact your faculty mentor for details.

REQUIREMENTS
Complete all courses and requirements listed below unless otherwise indicated.

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENLR 5121</td>
<td>Engineering Leadership 1</td>
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<tr>
<td>ENLR 5122</td>
<td>Engineering Leadership 2</td>
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<tr>
<td>ENLR 5131</td>
<td>Scientific Foundations of Engineering 1</td>
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<tr>
<td>ENLR 5132</td>
<td>Scientific Foundations of Engineering 2</td>
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<tr>
<td>ENLR 7440</td>
<td>Engineering Leadership Challenge Project 1</td>
<td>4</td>
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The following MS programs can be taken in conjunction with the Engineering Leadership Graduate Certificate

- Master of Science in Bioengineering (http://www.northeastern.edu/gordonleadership/degree/ms-in-bioengineering)
- Master of Science in Chemical Engineering (http://www.northeastern.edu/gordonleadership/degree/chemical-engineering)
- Master of Science in Civil Engineering—Select Master of Science concentration (http://www.northeastern.edu/gordonleadership/degree/ms-in-civil-engineering-2)
- Master of Science in Computer Systems Engineering (http://www.northeastern.edu/gordonleadership/degree/computer-systems-engineering)
- Master of Science in Data Analytics Engineering (http://www.northeastern.edu/gordonleadership/degree/ms-in-data-analytics-engineering)
- Master of Science in Electrical and Computer Engineering—Select Master of Science concentration (http://www.northeastern.edu/gordonleadership/degree/electrical-and-computer-engineering)
- Master of Science in Electrical and Computer Engineering Leadership (http://www.northeastern.edu/gordonleadership/degree/electrical-and-computer-engineering-leadership)
- Master of Science in Energy Systems (http://www.northeastern.edu/gordonleadership/degree/energy-systems)
- Master of Science in Engineering and Public Policy with a Concentration in Energy and Environment (http://www.northeastern.edu/gordonleadership/degree/ms-in-energy-environment)
- Master of Science in Environmental Engineering (http://www.northeastern.edu/gordonleadership/degree/ms-in-environmental-engineering)
- Master of Science in Engineering Management (http://www.northeastern.edu/gordonleadership/degree/engineering-management)
- Master of Science in Industrial Engineering (http://www.northeastern.edu/gordonleadership/degree/industrial-engineering)
- Master of Science in Information Systems (http://www.northeastern.edu/gordonleadership/degree/ms-in-information-systems)
- Master of Science in Mechanical Engineering—Select Master of Science concentration (http://www.northeastern.edu/gordonleadership/degree/mechanical-engineering-2)
- Master of Science in Operations Research (http://www.northeastern.edu/gordonleadership/degree/operationsresearch)
- Master of Science in Sustainable Building Systems (http://www.northeastern.edu/gordonleadership/degree/ms-in-sustainable-building-systems)
- Master of Science in Telecommunication Systems Management (http://www.northeastern.edu/gordonleadership/degree/ms-in-telecommunication-systems-management)

For engineering leadership certificate and MS combined course requirements, please refer to the Certificate and Degree Options (http://www.northeastern.edu/gordonleadership/prospective-students/degree-options) found on the Gordon Institute of Engineering Leadership website.

Courses

Engineering Leadership Courses

ENLR 5121. Engineering Leadership 1. 2 Hours.
Covers elements of engineering practices such as product engineering (system design and engineering, integration, and documentation); engineering leadership (team building, communication, leadership styles, ethical behavior, and conflict resolution); market assessment (engineering economics, business plans, intellectual property, risk assessment, and mitigation); and engineering excellence (quality, reliability, serviceability, manufacturability, procurement, and problem solving). Requires work/training with a sponsoring organization or employer to improve a process or develop a project that is of significant value to the organization and demonstrates a quantifiable market impact while enhancing the student’s technological and engineering depth and fostering the student’s leadership development.

ENLR 5122. Engineering Leadership 2. 2 Hours.
Continues the examination of engineering practices begun in ENLR 5121. Requires work/training with a sponsoring organization or employer to improve a process or develop a project that is of significant value to the organization and demonstrates a quantifiable market impact while enhancing the student’s technological and engineering depth and fostering the student’s leadership development.

ENLR 5131. Scientific Foundations of Engineering 1. 2 Hours.
Presents the fundamental science underlying engineering disciplines. Develops a conceptual framework to understand interdisciplinary engineering practice and to make informed, back-of-the-envelope, quantitative estimates. Covers topics such as principles of mechanics and mechanics of materials, wave physics, quantum physics, statistical and thermal physics, fluid physics, Maxwell's equations and constitutive relations, and topics in chemistry and biology.

ENLR 5132. Scientific Foundations of Engineering 2. 2 Hours.
Continues the examination of fundamental science begun in ENLR 5131.

ENLR 6962. Elective. 1-4 Hours.
Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

ENLR 7400. Special Problems in Engineering Leadership. 1-4 Hours.
Offers theoretical or experimental work under individual faculty supervision.

ENLR 7440. Engineering Leadership Challenge Project 1. 4 Hours.
Offers an opportunity to develop and present a plan for the demonstration of a marketable technology product or prototype. This course is the first half of a thesis-scale project in technology commercialization. Requires work/training with a sponsoring organization or employer to improve a process or develop a project that is of significant value to the organization and demonstrates a quantifiable market impact while enhancing the student’s technological and engineering depth and fostering the student’s leadership development.
ENLR 7442. Engineering Leadership Challenge Project 2. 4 Hours.
Continues ENLR 7440, a thesis-scale project in technology commercialization. Offers students an opportunity to demonstrate their development of a marketable technology product or prototype and produce a written documentary report on the project to the satisfaction of an advising committee. Requires work/training with a sponsoring organization or employer to improve a process or develop a project that is of significant value to the organization and demonstrates a quantifiable market impact while enhancing the student’s technological and engineering depth and fostering the student’s leadership development.

ENLR 7444. Engineering Leadership Challenge Project Continuation. 0 Hours.
Continues ENLR 7442, a thesis-scale project in technology commercialization. Requires work/training with a sponsoring organization or employer to improve a process or develop a project that is of significant value to the organization and demonstrates a quantifiable market impact while enhancing the student’s technological and engineering depth and fostering the student’s leadership development.