The GORDON ENGINEERING LEADERSHIP PROGRAM
at Northeastern University

TAKING THE LEAD ON
ENGINEERING
leadership education

INVENT. INNOVATE. IMPLEMENT.

Northeastern University
“Our purpose is to develop leaders who will make a significant contribution to society.” - Bernard M. Gordon

Bernard M. Gordon is considered “the father of high-speed, analog-to-digital conversion,” the mastermind of extraordinary breakthroughs in signal translation, medical tomography, and other high-precision instrumentation. He founded three high-tech companies and led teams responsible for dozens of engineering achievements, securing many hundreds of patents worldwide.

For his profound contributions to his profession and society, Bernie received the National Medal of Technology from President Ronald Reagan in 1986 and was elected to the National Academy of Engineering in 1991.

Bernie’s impact on engineering education and use-inspired research at universities is similarly profound. He and his wife Sophia, through their establishment of the Gordon Foundation, have distributed more than $100 million since the early 1990s, much of it to train outstanding engineers and scientists and to support educational and medical initiatives.

In 2007, the Gordon Engineering Leadership Program at Northeastern University was launched to identify and prepare the next generation of industry pioneers and leaders. This $20 million gift represents the single largest endowment in the history of Northeastern University.
The Gordon Engineering Leadership Program (GEL) is a transformational graduate curriculum offered through Northeastern University’s College of Engineering. Each year, a select number of highly qualified Candidates pursue GEL as part of a Master of Science degree in a range of engineering disciplines or as a standalone Certificate in Engineering Leadership. Graduates of the program, known as Gordon Fellows, emerge with the capabilities and confidence to lead the engineering breakthroughs of tomorrow.

OUR PURPOSE IS TO:

• **DEVELOP CORE CAPABILITIES**
  at the intersection of engineering and leadership

• Prepare students to invent, innovate, and implement projects by providing **PURPOSE, DIRECTION, AND MOTIVATION** to cross-functional engineering teams

• Create engineering leaders who have the awareness, confidence, vision, and technical dexterity to **ACHIEVE STAKEHOLDER GOALS**
The Gordon Engineering Leadership Program (GEL) was founded on the belief that a fundamental disconnect exists between industry needs and the output of contemporary engineering education.

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.
A TRANSFORMATIONAL EXPERIENCE
GEL prepares Candidates to invent, innovate, and – most important – implement technical projects by providing effective leadership to teams and the organizations in which they operate.

To deliver on these objectives, Northeastern combines the expertise of College of Engineering faculty and Professors of Practice who have decades of experience leading engineering teams in industrial and military settings.

PATHS TO FOLLOW
Most Candidates complete GEL as part of a Master of Science degree in a range of engineering disciplines. Upon completion, Gordon Fellows receive both the Master of Science degree and a Graduate Certificate in Engineering Leadership.

Candidates who already have a graduate degree can complete GEL as a standalone fellowship to earn the Graduate Certificate in Engineering Leadership.

FEATURED INDUSTRIES
GEL is a rigorous and innovative graduate degree program that brings together promising engineers across a broad range of disciplines and industries. Some of our sponsor organizations are featured below.

THE ADVANTAGE
GEL is DIFFERENT THAN AN MBA, because it focuses on leadership in an engineering context, rather than general management.

GEL is MORE THAN A TRADITIONAL MS DEGREE because it helps promising engineers accelerate the development of their leadership skills and broaden their cross-functional capabilities.
MARKET, CUSTOMER, AND STAKEHOLDER FOCUS

GEL “caps” the curriculum structure by continuously emphasizing that the objective of the engineering leader is to engineer products and processes that satisfy the collective needs of a market, customers, and the organization’s stakeholders.

CURRICULUM STRUCTURE

The GEL curriculum consists of:

- Two graduate-level courses (Engineering Leadership and Scientific Principles of Engineering)
- An industry-sponsored Challenge Project
- Supplemental leadership development activities

All GEL program requirements are completed over the course of one calendar year. Additional coursework required to earn a Master of Science degree can be completed before, after, or in parallel with the GEL requirements.

CURRICULUM ELEMENTS

Five pillars represent the core elements covered in various aspects of the GEL curriculum:

- Leadership Capabilities
- Leadership Labs
- Product Development
- Scientific Principles
- Challenge Project

Four foundational elements are integrated into every aspect of the curriculum:

- Experiential Learning to Enhance Knowledge, Skills and Attitudes
- Distinguished Speakers
- Mentoring
- Cross Cohort Sharing

The program curriculum is “capped” by an overarching focus on market, customer, and stakeholder needs.

Bo Zhou and Daniel Wells
Sponsor: Entegris
Candidates pursue a highly interactive Engineering Leadership course focused on core leadership capabilities, leadership labs, and the end-to-end product development process.

"The program wasn’t simply about academic rigor. It was about implementation, which was big for me."

Nick Brooks, Gordon Fellow
Sponsor: EnerNOC

LEADERSHIP CAPABILITIES

Much of the GEL curriculum focuses on 14 capabilities that research and experience identify as essential qualities for successful engineering leaders. Each capability is explored in theory and historical context during a class lecture and is enhanced by stories culled from the collective experience of the program faculty.

To visualize the balance of personal strengths and weaknesses, the capabilities are depicted on a polar plot. Candidates begin the program by plotting a self-assessment of their capabilities, in addition to soliciting feedback from their supervisors and peers.

Based on this 360-degree feedback, Candidates gain a better understanding of their current strengths and identify areas for additional development. This diagnostic is repeated at the end of the course to measure growth.

LEADERSHIP LABS

Leadership Laboratories supplement each Engineering Leadership class session by enhancing the mastery of topics introduced in lectures. Through self-assessment, interactive role-playing and reflection, and case studies, Candidates explore topics through experience.
ASSESS YOUR LEADERSHIP CAPABILITIES

Use the chart below to assess your leadership capabilities. For each capability, review the definition and assign yourself a rating between 10 (strongest) and 1 (weakest). Plot your ratings on the area of the chart associated with each capability. Upon completion, use the chart to reflect on your current strengths and identify areas for future development.

14 ESSENTIAL QUALITIES OF ENGINEERING LEADERS.

- **Initiative:** Assess risk and take the initiative to create a vision and course of action.
- **Decision Making:** Make decisions with information at hand, factoring in risk and uncertainty; take alternative action when necessary.
- **Responsibility and Urgency to Deliver:** Demonstrate determination to accomplish mission in the face of constraints or obstacles. Commit to absolute responsibility to deliver on time; pursue necessary follow-up.
- **Resourcefulness – Get it Done:** Focus on the tasks at hand with passion, discipline, intensity, and flexibility.
- **Ethical Actions and Integrity:** Adhere to ethical standards and principles. Have the courage to act ethically and with integrity.
- **Trust and Loyalty:** Commit to actions that instill trust, and to the principle that loyalty to the team yields loyalty to the leader and vision. Work to empower the people around you and to make them successful.
- **Vision:** Create compelling images of the future, identifying what could and should be new products, systems and enterprises.
- **Realizing the Vision:** Design processes and approaches to move from abstraction to invention, innovation and implementation. Lead an organization to plan and deliver a project, exercising solution judgement and critical reasoning.
- **Inquiry:** Listen to others in order to genuinely understand their thoughts and feelings. Recognize their ideas may be better than yours.
- **Interpersonal Skills:** Respect the needs of individuals and the group. Recognize others' strengths; coach, give feedback, both embody and encourage gracious professionalism.
- **Communicating and Advocacy:** Be able to clearly explain your point of view or approach to those with differing backgrounds and proactively assess the extent to which you are understood.
- **Connect – Across Disciplines, Skills and Cultures:** Appreciate, engage, and connect with those who have different perspectives.
- **Negotiating and Compromise:** Appreciate the need to identify potential disagreement or conflict; negotiate to find mutually acceptable solutions.

PRODUCT DEVELOPMENT

As a key component to leading the implementation of products and processes to the marketplace, GEL introduces engineering leadership in the context of the end-to-end product development process. The framework used to drive this portion of the program leads Candidates step-by-step through a structured, generic product development process.

Skills Labs aligned with the lecture topics familiarize Candidates with the detailed flow of product development. They learn that product development is not accomplished through a sterile sequence of separate events. Rather, it encompasses a collection of overlapping activities and interdependent series of people-centered processes where authority, decision-making, and boundary conditions are fluid and dynamic.

“I got a promotion last week. They referenced the ambition to take on this program as something that was a real positive reflection of me and who I want to be with the company.”

Chris Walker, Gordon Fellow
Sponsor: A.W. Chesterton
The Scientific Principles of Engineering course derives from one basic principle: in order to be a good engineering leader, one must first be a good engineer.

Through this portion of the curriculum, GEL breaks away from more traditional treatments of leadership and management to concentrate on the scientific aptitude required to successfully lead technical teams and projects.

The course has three overarching goals:

1. It refreshes Candidates on the first principles of the main engineering disciplines that they are likely to face when leading cross-functional teams. This enables them to ask the right questions and make informed decisions, even when faced with information from outside their given domain.

2. It strengthens Candidates’ ability to leverage scientific analysis to understand problems and make decisions, often under significant time pressure.

3. It reinforces Candidates’ confidence that they can continually learn, understand, and master the science underpinning new and emerging technologies throughout their careers.

The course covers a broad range of topics, including: principles of mechanics and mechanics of materials, wave physics, quantum physics, statistical and thermal physics, fluid physics, and Maxwell’s equations and constitutive relations.

“I found the focus on shared learning among professionals across industries to be appealing. Additionally, I wanted to develop confidence in leadership based on a solid foundation of principles.”

Harry Malkasian, Gordon Fellow
Sponsor: Bose Corporation
“The most important thing my Challenge Project taught me was to take a multi-disciplinary approach to problem solving. I learned to pull from multiple resources to develop the best technical solution that met the clinical need.”

Matthew Dickman, Gordon Fellow
Sponsor: NeuroLogica Corporation

“This program has so much more to offer than a typical Master’s program and in turn, Gordon Fellows come out of the program with far more skills to be successful in industry.”

Lauren Brown, Gordon Fellow
Sponsor: Food and Drug Administration, Winchester Engineering & Analytical Center

Every aspect of the GEL curriculum is grounded in real-world application, as is demonstrated by the significant emphasis placed on the Challenge Project.

Through this transformational experience in project-based learning, Candidates directly apply the concepts and techniques learned in the classroom to leading a project of significant value to their organizations. Unlike a traditional academic thesis that focuses on research, the Challenge Project focuses on product/process development and delivery with an emphasis on customers and stakeholders.

For industrial sponsors, the Challenge Project is the mechanism through which a product or process of value and impact is developed on behalf of the organization. For Candidates, it is the opportunity to expand their knowledge of a technical domain and develop self-confidence under real-world time, business, performance, and quality pressure.

During the program, Candidates transition from an initial plan to a complete project proposal, including schedule, cost estimates, technology strategy, and anticipated value to the sponsoring company.

Upon completion, Candidates write a formal, thesis-equivalent report that describes the project, results, and final status. They also present a defense of the project for final approval by a faculty committee.
FOUNDATIONAL ELEMENTS

Four foundational elements are integrated into every aspect of the GEL curriculum.

EXPERIENTIAL LEARNING
In concert with Northeastern’s long-standing reputation as a leader in global experiential learning—most notably via its top-ranked cooperative education program—GEL works hand-in-hand with industry partners to develop and grow the proficiency, effectiveness, and dexterity of future leaders.

Gordon Fellow Candidates tackle topics and challenges that directly relate to their professional responsibilities and aim to grow their understanding and appreciation of the organization’s position in the marketplace. They also lead an industry-focused Challenge Project that has significant value to their sponsor organizations.

DISTINGUISHED SPEAKERS
Throughout the academic year, GEL brings notable engineering leaders and innovators to campus to share their experience and lessons with Gordon Fellow Candidates. These sessions provide a valuable opportunity for Candidates to engage in candid conversations with seasoned leaders and see various models of engineering leadership at work.

MENTORING
Gordon Fellow Candidates receive guidance and direction from a personalized support team of mentors. Together, this team provides the personal guidance, encouragement, and support to overcome obstacles that may arise during the progression of the project and program.

CROSS COHORT SHARING
The GEL cohort consists of Candidates with a broad range of academic and professional experience. This diversity enriches classroom discussions and facilitates opportunities for peer-to-peer learning. In exit surveys, Candidates frequently cite the opportunity to learn from other emerging engineering leaders as one of the most important aspects of the GEL experience.
THE NORTHEASTERN UNIVERSITY COLLEGE OF ENGINEERING

Northeastern University’s College of Engineering is home to numerous federally-funded research centers and an array of leading-edge projects and initiatives that advance discovery and new knowledge in human health and rehabilitation, sustainability, and security. An engineering faculty of over 130 leads students through innovative coursework, experiential learning, and use-inspired research on a stunning urban campus in Boston, Mass. The University’s world-renowned cooperative education program was founded at the College of Engineering in 1909 and remains at the very core of the Northeastern academic experience.
HOW IT WORKS
FOR STUDENTS

Secure sponsorship from your current employer, secure sponsorship through a new internship or employment opportunity, or affiliate with a company to complete a Challenge Project.

CURRENT EMPLOYER SPONSORSHIP

Many organizations leverage the Gordon Engineering Leadership Program (GEL) curriculum to accelerate the development of their existing engineering workforce.

If you are currently employed in industry, GEL can help you approach your employer about possible sponsorship for the program.

The Process

• Meet with a GEL representative to discuss your interest in the program
• Determine whether you will pursue the standalone Gordon Fellowship (12-month duration) or a Master of Science degree (typically 12- to 24-month duration)
• Work with GEL during the application and Challenge Project identification process
• Secure a mentor from your company to support you during the program

The Details

• GEL requirements take place over the course of one calendar year (September – August); additional Master of Science coursework can be pursued simultaneously or in subsequent years
• Candidates retain their work responsibilities while participating in GEL; however, some organizations offer a reduced/adjusted schedule to accommodate GEL participation and Challenge Project completion
• During the fall and spring semesters, GEL meets at Northeastern’s main campus on Thursday evenings (3pm-8pm) and Friday mornings (8am-1pm)
• During the summer semester, GEL Candidates participate in weekly webinars, complete their Challenge Projects, and make final presentations

The Benefits

• At the end of the program, you will be a more confident, capable engineer with a broader leadership skill set and a deeper understanding of your organization’s position in the market
• You will deliver a completed Challenge Project of real value to your organization
NEW EMPLOYER SPONSORSHIP
If you are not currently employed in industry, GEL may be able to help you secure an internship or other employment opportunity to pursue in conjunction with the program.

While internships typically do not cover the tuition cost associated with your graduate program, they may provide an hourly wage or other compensation. They can also provide valuable experience in your engineering field.

The Process
• Meet with a GEL representative to discuss your interests and goals
• If opportunities arise that match your qualifications, attend interviews as desired
• Determine whether you will pursue the standalone Gordon Fellowship (12-month duration) or a Master of Science degree (typically 12- to 24-month duration)
• Work with GEL during the application and Challenge Project identification process
• Secure a mentor within your new organization to support you during the program

The Details
• GEL requirements take place over the course of one calendar year (September – August); additional Master of Science coursework can be pursued simultaneously or in subsequent years
• Candidates retain their work responsibilities while participating in GEL; however, some organizations offer a reduced/adjusted schedule to accommodate GEL participation and Challenge Project completion
• During the fall and spring semesters, GEL meets at Northeastern’s main campus on Thursday evenings (3pm-8pm) and Friday mornings (8am-1pm)
• During the summer semester, GEL Candidates participate in weekly webinars, complete their Challenge Projects, and make final presentations

The Benefits
• At the end of the program, you will be a more confident, capable engineer with a broader leadership skill set and real-world experience
• You will deliver a completed Challenge Project of real value to your organization

CHALLENGE PROJECT AFFILIATION
In some cases, GEL matches unaffiliated applicants with an organization to complete an industry Challenge Project.

The Process
• Meet with a GEL representative to discuss your interests and goals
• If opportunities arise that match your qualifications, attend interviews as desired
• Determine whether you will pursue the standalone Gordon Fellowship (12-month duration) or a Master of Science degree (typically 12- to 24-month duration)
• Work with GEL during the application and Challenge Project identification process
• Secure a mentor from within the organization to support you during the program

The Details
• GEL requirements take place over the course of one calendar year (September – August); additional Master of Science coursework can be pursued simultaneously or in subsequent years
• Candidates can complete the project at the company site or on campus; specific arrangements should be negotiated during the application process
• During the fall and spring semesters, GEL meets at Northeastern’s main campus on Thursday evenings (3pm-8pm) and Friday mornings (8am-1pm)
• During the summer semester, GEL Candidates participate in weekly webinars, complete their Challenge Projects, and make final presentations

The Benefits
• At the end of the program, you will be a more confident, capable engineer with a broader leadership skill set and real-world experience
• You will deliver a completed Challenge Project of real value to your organization
Current degree options include:

- Graduate Certificate in Engineering Leadership
- MS in Chemical Engineering with Graduate Certificate in Engineering Leadership
- MS in Civil and Environmental Engineering with Graduate Certificate in Engineering Leadership
- MS in Computer Systems Engineering with Graduate Certificate in Engineering Leadership
- MS in Electrical and Computer Engineering with Graduate Certificate in Engineering Leadership
- MS in Electrical and Computer Engineering Leadership with Graduate Certificate in Engineering Leadership
- MS in Energy Systems with Graduate Certificate in Engineering Leadership
- MS in Engineering Management with Graduate Certificate in Engineering Leadership
- MS in Industrial Engineering with Graduate Certificate in Engineering Leadership
- MS in Mechanical Engineering with Graduate Certificate in Engineering Leadership
- MS in Operations Research with Graduate Certificate in Engineering Leadership

Don’t see your degree option listed here? For details about how you can pursue GEL in conjunction with other engineering disciplines, contact a program representative at gordonleadership@neu.edu.

Some programs require advisor approval and/or a petition process to count completed GEL coursework towards the Master of Science degree. A GEL advisor can help guide you through this process.

For all programs, please be sure to confer with a faculty advisor from your engineering discipline prior to beginning your graduate coursework.
SCHEDULE
Candidates complete their core GEL requirements during one calendar year, as detailed to the right.

At the end of the core GEL requirements, Candidates earn a Graduate Certificate in Engineering Leadership and the prestigious title of “Gordon Fellow.”

Fall Semester (September – December)
• Classes held on main campus
• Thursdays (3pm-8pm) and Fridays (8am-1pm)

Spring Semester (January – April)
• Classes held on main campus
• Thursdays (3pm-8pm) and Fridays (8am-1pm)

Summer Semester (May – August)
• No on-campus class sessions
• Candidates participate in weekly Challenge Project webinars
• Candidates return to campus in August to present Challenge Project to Faculty Committee

Candidates who pursue GEL as part of a Master of Science degree can complete their additional technical coursework during the same year or after completing the core GEL curriculum. Upon completion of the additional technical coursework, Candidates earn a Master of Science in their designated engineering disciplines.

WORK-SCHOOL-LIFE BALANCE
GEL is designed for students employed in industry, and the majority of participants work full time while pursuing the degree.

To help maintain work-school-life balance and ensure the greatest return on investment from the Challenge Project, some organizations offer a reduced/adjusted work schedule to account for time spent in classes or working on the Challenge Project.

GEL encourages all organizations and Candidates to communicate about work expectations and schedules as part of the onboarding process for the program.
PROGRAM COST

A powerful investment for aspiring engineering leaders.

TUITION AND FEES
Rates for tuition and fees are set yearly by the Northeastern University Board of Trustees. The 2012/2013 tuition rate for the Northeastern University Graduate School of Engineering is $1270 per semester hour.

For the latest information regarding tuition and fees, please refer to www.northeastern.edu/financial aid/studentaccounts/.

FUNDING PROCESS
GEL tuition is typically supported by each Candidate’s sponsoring organization.

Specific payment methods vary, including:

• Direct payment to University
• Tuition reimbursement to Candidate
• Tuition coverage through membership in Northeastern University’s Bernard M. Gordon Center for Subsurface Sensing & Imaging Systems (see www.censsis.neu.edu/industry for details)

The program enrolls high-potential students by working with organizations to develop a sponsoring arrangement that best suits their needs.

Candidates who plan to complete the Challenge Project as part of an internship or standalone project typically finance their own graduate program.

FINANCIAL ASSISTANCE
In some cases, GEL will provide partial financial assistance to Candidates who do not qualify for sufficient tuition support through their sponsor organizations.

Contact gordonleadership@neu.edu for more information.
APPLICATION PROCESS
To apply, please complete the following steps:

**Step 1: Apply to the Northeastern University Graduate School of Engineering**
If you plan to pursue GEL as part of a Master of Science program, please select “Master of Science with Graduate Certificate in Engineering Leadership” as your degree option on the online application. Pay careful attention to the additional materials required for a complete application to the Graduate School of Engineering. Available at www.coe.neu.edu/gse.

**Step 2: Apply to the Gordon Engineering Leadership Program**
Submit your GEL application using the GEL online application system. In addition to the application form, you will be asked to upload your current resume and respond to questions regarding Challenge Project sponsorship. Available at www.neu.edu/gordonleadership.

**Step 3: Complete your GEL Interview**
Upon submission of your application, please contact gordonleadership@neu.edu to schedule an interview with the GEL admissions committee.

TIMELINE
Admission to GEL is competitive, and Candidates are encouraged to apply early. Please be aware of the following important dates:

- April 1: Priority deadline for applications to GEL (applications received after this date will be reviewed on a case-by-case basis based on program availability)
- August 1: Deadline for applications to the Graduate School of Engineering (part-time and full-time domestic students)
- September 4: GEL Orientation (please note that a Challenge Project Plan is due at orientation and serves as the first graded assignment in the Engineering Leadership course)