

Building Tomorrow's Engineering Leaders



BERNARD M. GORDON
MIT Engineering Leadership
PROGRAM

About

Bernard M. Gordon




For more than fifty years, Bernard M. Gordon and the teams of engineers he has led have conceived, invented, and developed myriad pioneering high-technology devices and equipment contributing to major advances in the fields of industrial instrumentation, medical imaging, computer systems, aerospace telemetry, and communications. Founder and Chairman Emeritus of the Board of Analogic Corporation, Bernard M. Gordon is often called the “father” of high speed analog-to-digital conversion for his many contributions to the technologies that enrich our lives. Currently Chairman of NeuroLogica Corporation, involved in advanced brain imaging, he continues as an active entrepreneurial innovator.

Awarded the National Medal of Technology by President Reagan in 1986, and elected to the National Academy of Engineering in 1991, Mr. Gordon has been honored by the Engineering Societies of New England, the Institute of Electrical and Electronic Engineers, the Franklin Institute, the Boston Museum of Science, and Eta Kappa Nu among others.

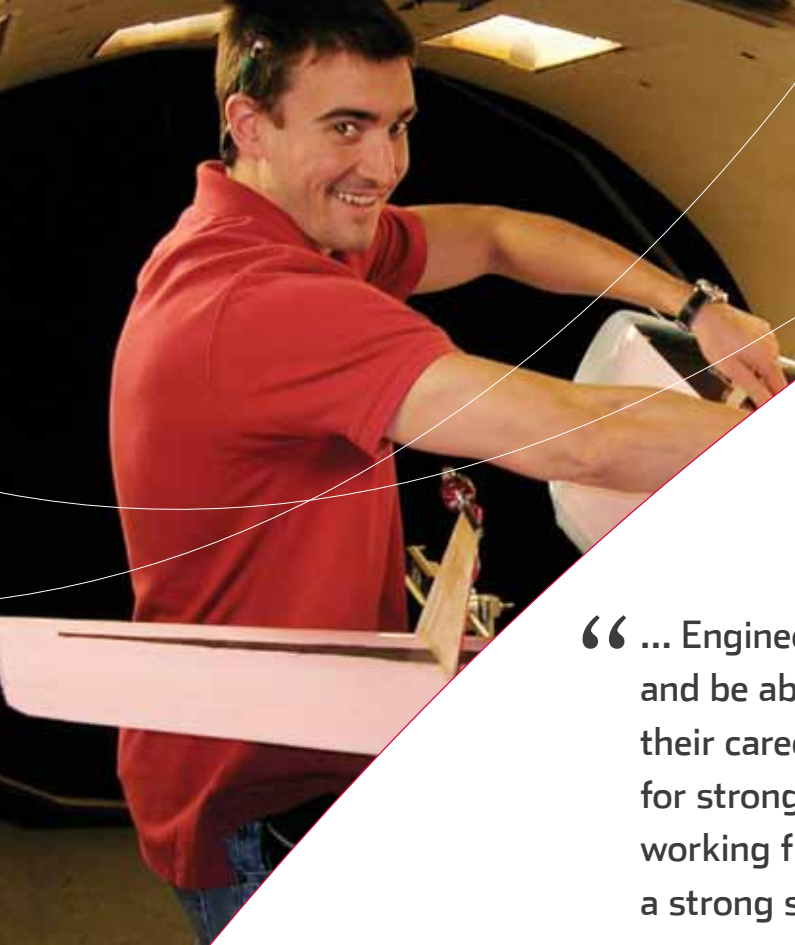
From his earliest contributions to the development of UNIVAC — the world’s first commercial digital computer — and to the first alphanumeric dot matrix display, to scanning devices that would become the central core of modern medical imaging and counter-terrorism technology, Mr. Gordon has represented the key creative and essential role of the engineer in the development of new technology.

His concern for the education of engineering leaders led to the establishment of the Bernard M. Gordon-MIT Engineering Leadership Program. He holds B.S. and M.S. degrees from MIT and several honorary doctorate degrees in engineering and science.



“ THIS PROGRAM will inspire young people to become real engineers who lead diverse teams of resources: Financial, personal and material, at all levels of engineering activity. In this program, students will develop the essential leadership qualities they need — integrity, discipline, a stronger character, and an understanding of other human beings — which, along with their technical ability, will help them become effective engineering designers and leaders.”

— BERNARD M. GORDON MIT '48, M.S. '49, PROGRAM FOUNDER



“ ... Engineers must understand the principles of leadership and be able to practice them in growing proportions as their careers advance. Complementary to the necessity for strong leadership ability is the need to also possess a working framework upon which high ethical standards and a strong sense of professionalism can be developed.”

— THE ENGINEER OF 2020: VISIONS OF ENGINEERING IN THE NEW CENTURY, NATIONAL ACADEMY OF ENGINEERING

Transforming Engineering Leadership Education

Engineering has historically fueled our nation’s economic growth and prosperity. Distinguished engineering leaders — the men and women who conceived and designed exciting new products and led complex technical projects — have profoundly and positively impacted our lives.

For more than 150 years, MIT’s technically expert engineering graduates have fueled our nation’s powerful technology engine. **It is in the spirit of MIT’s innovative and inventive tradition of engineering leadership that the Bernard M. Gordon-MIT Engineering Leadership Program (ELP) operates.**

Housed in MIT’s School of Engineering, ELP provides an integrated array of leadership-oriented and hands-on activities, set in the context of the practice of engineering. To develop the potential leaders of engineering innovation, invention, and implementation, the program works both with students enrolled at MIT and beyond the Institute with industry.

Launched in 2007 through a \$20 million gift (with a matching requirement) by The Bernard M. Gordon Foundation—the largest gift made to MIT’s School of Engineering for curriculum development—the Gordon-MIT Engineering Leadership Program is creating a national model for preparing the engineering leaders of the 21st century.

“ **The challenges we face in the 21st century — from the stable supply of energy in a carbon constrained world to the delivery of new products based on the fusion of engineering and the life sciences — cannot be accomplished by individuals or by technology on its own. We need to cultivate technically astute people who can apply their skills to guide the development of economically, socially, and environmentally acceptable solutions to technical problems.**”

— DR. SUSAN HOCKFIELD, PRESIDENT, MIT

“ The most important thing we can do is to take engineers who are technically proficient and prepare them to lead. Yes, you must have a good process from concept to design to execution. But you also must have engineers who will both risk acting on great ideas as well as nurture and propagate the emotional side of engineering.”

— DAN RICCIO, VP, APPLE COMPUTER INC.

Building

The Capabilities of Effective Engineering Leaders

The goal of the Bernard M. Gordon-MIT Engineering Leadership Program (ELP) is to educate and prepare the future potential leaders of engineering innovation, invention, and implementation efforts. The curriculum to meet this goal is derived from the belief that engineering leadership can best be developed by timely and systematically linking:

- Immersive experiences on- and off-campus in which students practice, observe, and discuss engineering leadership
- Courses that provide conceptual and analytical models and frameworks that support engineering leadership
- Reflection, evaluation, and feedback from peers, faculty, and experienced engineering industry mentors on lessons learned from leadership activities

ELP based the curriculum on the Capabilities of Effective Engineering Leaders (see over) and delivers this unique curriculum through an alliance of MIT departments, other MIT programs, industry and alumni, interacting synergistically with undergraduates and maturing engineers in professional master's programs. MIT students participate ELP provides augmented opportunities in leadership, teamwork, and innovation, invention, and implementation.

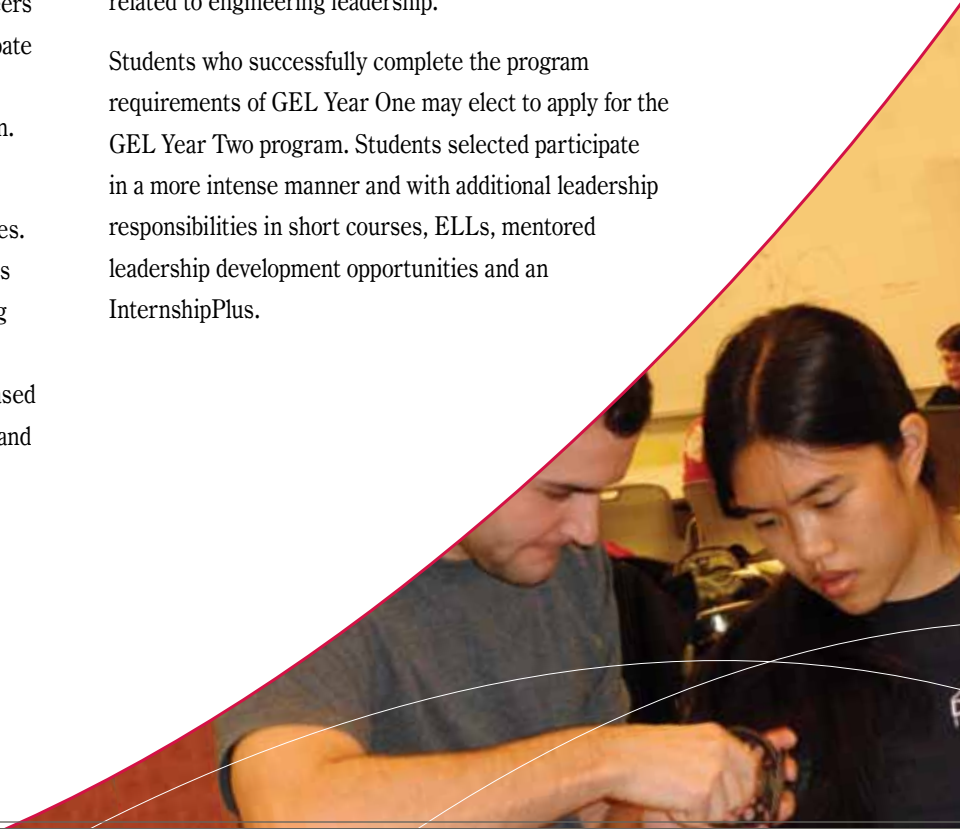
Within MIT, ELP offers tools and resources to faculty to improve engineering education for all MIT undergraduates. Aided by ELP resources, MIT faculty can integrate ELP's modules, activities, and workshops into their engineering classes. ELP also provides funds to support aligned educational endeavors, broadening sustainable project-based learning within MIT and offers assessment instruments and data to gauge and evaluate program effectiveness.

For MIT students, the Gordon Engineering Leader (GEL) program can begin as early as the Sophomore year, with students participating in UPOP, the Undergraduate Practice Opportunities Program. Juniors and Seniors who complete UPOP or who have demonstrated experience on an engineering project in an industrial or academic setting can apply for the GEL Year One program.

Accepted students join GEL Year One. GEL Year One students participate in interactive short courses, learning from frameworks, models, and cases on engineering leadership. They apply and practice these approaches in weekly Engineering Leadership Labs (ELLS), create and execute a Personal Leadership Development Plan (PLDP), and reflect on their performance.

The ELLs are “safe havens” in which GELs participate in guided reflection on their success—and discover opportunities for improvement. Guided learning events in the ELLs include role-plays, simulations, design-implement activities, and analyses of case studies, films, and books related to engineering leadership.

Students who successfully complete the program requirements of GEL Year One may elect to apply for the GEL Year Two program. Students selected participate in a more intense manner and with additional leadership responsibilities in short courses, ELLs, mentored leadership development opportunities and an InternshipPlus.



Capabilities of Effective Engineering Leaders

Gordon Engineering Leaders will develop:

- **The attitudes of leadership**—Core personal values and character:
 - Initiative
 - Decision making in the face of uncertainty
 - Responsibility, urgency, and will to deliver
 - Resourcefulness, flexibility, and change
 - Ethical action, integrity, and courage
 - Trust and loyalty
 - Equity and diversity
 - Vision and intention in life
 - Self-awareness and self-improvement
- **Relating:**
 - Inquiring and dialoguing
 - Negotiation, compromise, and conflict resolution
 - Advocacy
 - Diverse connections and grouping
 - Interpersonal skills
 - Structured communications
- **Making sense of context:**
 - Awareness of the societal and natural context
 - Awareness of the needs of the customer or beneficiary
 - Enterprise awareness
 - Appreciating new technology
 - Systems thinking
- **Visioning:**
 - Identifying the issue, problem, or paradox
 - Thinking creatively, and imagining and communicating possibilities
 - Defining the solution
 - Creating the solution concept
- **Delivering on the vision:**
 - Building and leading an organization and extended organization
 - Planning and managing a project to completion
 - Exercising project/solution judgment and critical reasoning
 - Innovation, invention, and implementation and operation

The capabilities of engineering leadership upon which our curriculum is built are based on the Four Capabilities model, developed at the MIT Sloan School of Management (Ancona 2007), and anchored in the scholarship of leadership.

The “InternshipPlus” challenges GELs to expand traditional internships by identifying opportunities for project leadership and aligning themselves closely with engineering leaders in their organization. They also continue executing their Personal Leadership Development Plan, and prepare and present their portfolio of developed Capabilities of Effective Engineering Leaders.

“What’s important in engineering education? Making universities and engineering schools exciting, creative, adventurous, rigorous, demanding and empowering environments is more important than specifying curricular details. The Gordon-MIT Engineering Leadership Program is an example of how MIT is working to empower today’s engineering undergraduates with critical leadership skills that will help them to become tomorrow’s engineering leaders.”

— DR. CHARLES VEST, PRESIDENT, NATIONAL ACADEMY OF ENGINEERING AND FORMER PRESIDENT, MIT

The Impact Developing Tomorrow’s Engineering Leaders Today

By capitalizing on the combined strengths of MIT’s academic programs, prominence as a national leader in engineering education, and longstanding connections to industrial practice and innovation, the Bernard M. Gordon-MIT Engineering Leadership Program provides aspiring engineering leaders with experiences that prepare them to overcome the challenges they will face when confronted with real engineering design and implementation problems.

The Bernard M. Gordon-MIT Engineering Leadership Program serves as an incubator for future generations of effective engineering leaders. More importantly, the program provides a national model for an engineering education that focuses on university-industry partnership and develops in aspiring engineering leaders the capabilities and skills they’ll use as they help to solve tomorrow’s substantial engineering challenges.

“I’m involved in the Gordon-MIT Engineering Leadership Program because I want to make sure MIT engineering undergraduates get these skills before they enter the workforce—so they’re ready from Day One to be key members of engineering product development teams.”

- VANU BOSE, MIT '99, PRESIDENT AND CEO, VANU, INC.

“You have added values far beyond the lectures given within the walls of MIT. I am immensely impressed by your collective dedication to the well being of the students. You have earned a 5.0 (out of 5.0) in educating your Gordon Engineering Leaders!”

- JAMES NICHOLSON, CHAIRMAN & CHIEF OF TECHNOLOGY, EYETECT, LLC

“I am astounded at how much my mind is expanding to view engineering as more than just applying Thermodynamics and other fields of study to solve problems. My exposure to the capabilities of effective engineering leaders is shaping my career goals and helping me make decisions among my varied interests.”

- A.K., GEL '11



<http://web.mit.edu/gordonelp>

