DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Electrical engineers and computer scientists are everywhere—in industry and research areas as diverse as computer and communication networks, electronic circuits and systems, lasers and photonics, semiconductor and solid-state devices, nanoelectronics, biomedical engineering, computational biology, artificial intelligence, robotics, design and manufacturing, control and optimization, computer algorithms, games and graphics, software engineering, computer architecture, cryptography and computer security, power and energy systems, financial analysis, and many more. The infrastructure and fabric of the information age, including technologies such as the internet and the web, search engines, cell phones, high-definition television, and magnetic resonance imaging, are largely the result of innovations in electrical engineering and computer science. The Department of Electrical Engineering and Computer Science (EECS) (http://www-eecs.mit.edu) at MIT and its graduates have been at the forefront of a great many of these advances. Current work in the department holds promise of continuing this record of innovation and leadership, in both research and education, across the full spectrum of departmental activity.

The career paths and opportunities for EECS graduates cover a wide range and continue to grow: fundamental technologies, devices, and systems based on electrical engineering and computer science are pervasive and essential to improving the lives of people around the world and managing the environments they live in. The basis for the success of EECS graduates is a deep education in engineering principles, built on mathematical, computational, physical, and life sciences, and exercised with practical applications and project experiences in a wide range of areas. Our graduates have also demonstrated over the years that EECS provides a strong foundation for those whose work and careers develop in areas quite removed from their origins in engineering.

Undergraduate students in the department take two core subjects that introduce electrical engineering and computer science, and then systematically build up broad foundations and depth in selected intellectual theme areas that match their individual interests. Laboratory subjects, independent projects, and research provide engagement with principles and techniques of analysis, design, and experimentation in a variety of fields. The department also offers a range of programs that enable students to gain experience in industrial settings, ranging from collaborative industrial projects done on campus to term-long experiences at partner companies.

Graduate study in the department moves students toward mastery of areas of individual interest, through coursework and significant research, often defined in interdisciplinary areas that take advantage of the tremendous range of faculty expertise in the department and, more broadly, across MIT.

Undergraduate Study

For MIT undergraduates, the Department of Electrical Engineering and Computer Science offers several programs leading to the Bachelor of Science:

- The 6-1 program (http://catalog.mit.edu/degree-charts/electrical-science-engineering-course-6-1) leads to the Bachelor of Science in Electrical Science and Engineering. It is accredited by the Engineering Accreditation Commission of ABET (http://www.abet.org).
- The 6-2 program (http://catalog.mit.edu/degree-charts/electrical-engineering-computer-science-course-6-2) leads to the Bachelor of Science in Electrical Engineering and Computer Science and is for those whose interests cross this traditional boundary. It is accredited by both the Engineering and Computing Accreditation Commissions of ABET.
- The 6-3 program (http://catalog.mit.edu/degree-charts/computer-science-engineering-course-6-3) leads to the Bachelor of Science in Computer Science and Engineering. It is accredited by both the Engineering and Computing Accreditation Commissions of ABET.
- The 6-7 program (http://catalog.mit.edu/degree-charts/computer-science-molecular-biology-course-6-7), offered jointly by the Department of Electrical Engineering and Computer Science and the Department of Biology (Course 7), is for students specializing in computer science and molecular biology. A detailed description of this degree program and its requirements can be found in the section on Interdisciplinary Programs (http://catalog.mit.edu/interdisciplinary/undergraduate-programs/degrees/computer-science-molecular-biology).
- The 6-9 program (http://catalog.mit.edu/degree-charts/computation-cognition-6-9), offered jointly by the Department of Electrical Engineering and Computer Science and the Department of Biology and the Department of Brain and Cognitive Sciences (Course 9), focuses on the emerging field of computational and engineering approaches to brain science, cognition, and machine intelligence. A detailed description of this degree program and its requirements can be found in the section on Interdisciplinary Programs (http://catalog.mit.edu/interdisciplinary/undergraduate-programs/degrees/computation-cognition).
- The 6-14 program (http://catalog.mit.edu/degree-charts/computer-science-economics-data-science-course-6-14), offered jointly by the Department of Electrical Engineering and Computer Science and the Department of Economics (Course 14), is for students specializing in computer science, economics, and data science. A detailed description of this degree program and its requirements can be found in the section on Interdisciplinary Programs (http://catalog.mit.edu/

- The 11-6 program (http://catalog.mit.edu/degree-charts/urban-science-planning-computer-science-11-6), offered jointly by the Department of Electrical Engineering and Computer Science and the Department of Urban Studies and Planning (Course 11), is for students specializing in urban science and planning with computer science. A detailed description of this degree program and its requirements can be found in the section on Interdisciplinary Programs (http://catalog.mit.edu/interdisciplinary/undergraduate-programs/degrees/urban-science-planning-computer-science).

The bachelor’s programs in 6-1, 6-2, and 6-3 build on the General Institute Requirements in science and the humanities, and are structured to provide early, hands-on engagement with ideas, activities, and learning that allow students to experience the range and power of electrical engineering and computer science in an integrated way. The required introductory core subject (one of 6.01, 6.02, 6.03, and 6.08) involves substantial work in the laboratory. This subject is complemented by a mathematics subject, and followed by a choice of three foundation courses from a set of subjects that provide the basis for subsequent specialization. Students define their specialization by selecting three to four header subjects, two advanced undergraduate subjects, and one to two EECS elective subjects from an extensive set of possibilities. The flexibility in these choices permits students considerable latitude in shaping their program to match diverse interests, while ensuring depth and mastery in a few selected areas.

The joint bachelor’s programs in 6-7 provides an interdepartmental curriculum involving rigorous training in both molecular biology and computer science. Students begin with introductory courses in math, chemistry, programming, and lab skills. Students then build on these skills with five courses in algorithms and biology, which lead to a choice of electives in biology, with a particular focus on computational biology.

The joint bachelor’s program in 6-9 is designed to give students access to foundational and advanced material in electrical engineering and computer science, as well as in the architecture, circuits, and physiology of the brain, and computational approaches to cognition and intelligence.

The joint bachelor’s program in 6-14 is designed to equip students with a foundational knowledge of economic analysis, computing, optimization, and data science, as well as hands-on experience with empirical analysis of economic data. Students take eight subjects that provide a mathematical, computational, and algorithmic basis for the major. From there, students take two subjects in data science, two in intermediate economics, and three elective subjects from data science and economics theory.

All students in 6-1, 6-2, 6-3, 6-7, or 6-9 may also apply for one of the Master of Engineering programs offered by the department, which require an additional year of study for the simultaneous award of both degrees.

**Minor in Computer Science**

The department offers a Minor in Computer Science. The minor provides students with both depth and breadth in the field, as well as the opportunity to explore areas of their own interest.

To complete the minor, students must take at least six subjects (six-unit subjects count as half-subjects) totaling at least 72 units from the lists below, including:

- at least one software-intensive subject, and
- one algorithms-intensive subject at either the basic or advanced level.

**Introductory Level**

*Select up to 12 units of the following:*

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0001</td>
<td>Introduction to Computer Science Programming in Python</td>
<td>6</td>
</tr>
<tr>
<td>6.0002</td>
<td>Introduction to Computational Thinking and Data Science</td>
<td>6</td>
</tr>
<tr>
<td>6.01</td>
<td>Introduction to EECS via Robotics</td>
<td>12</td>
</tr>
<tr>
<td>6.02</td>
<td>Introduction to EECS via Communication Networks</td>
<td>12</td>
</tr>
<tr>
<td>6.08</td>
<td>Introduction to EECS via Interconnected Embedded Systems</td>
<td>12</td>
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</tbody>
</table>

**Basic Level**

*Select up to 63 units of the following:*

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.004</td>
<td>Computation Structures</td>
<td>12</td>
</tr>
<tr>
<td>6.008</td>
<td>Introduction to Inference</td>
<td>12</td>
</tr>
<tr>
<td>6.034</td>
<td>Artificial Intelligence</td>
<td>12</td>
</tr>
<tr>
<td>6.041</td>
<td>Introduction to Probability</td>
<td>12</td>
</tr>
<tr>
<td>18.200</td>
<td>Principles of Discrete Applied Mathematics</td>
<td>15</td>
</tr>
<tr>
<td>18.200A</td>
<td>Principles of Discrete Applied Mathematics</td>
<td>12</td>
</tr>
<tr>
<td>18.211</td>
<td>Combinatorial Analysis</td>
<td>12</td>
</tr>
</tbody>
</table>

**Algorithms-intensive**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.006</td>
<td>Introduction to Algorithms</td>
<td>12</td>
</tr>
</tbody>
</table>

**Software-intensive**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.009</td>
<td>Fundamentals of Programming</td>
<td>12</td>
</tr>
</tbody>
</table>

**Advanced Level**

*Select at least 12 units of the following:*

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.033</td>
<td>Computer Systems Engineering</td>
<td>12</td>
</tr>
<tr>
<td>6.036</td>
<td>Introduction to Machine Learning</td>
<td>12</td>
</tr>
<tr>
<td>6.045[J]</td>
<td>Automata, Computability, and Complexity</td>
<td>12</td>
</tr>
<tr>
<td>6.046[J]</td>
<td>Design and Analysis of Algorithms</td>
<td>12</td>
</tr>
</tbody>
</table>
Inquiries
Additional information about the department's undergraduate programs may be obtained from the EECS Undergraduate Office (ug@eecs.mit.edu), Room 38-476, 617-253-7329.

Graduate Study

Master of Engineering
The Department of Electrical Engineering and Computer Science permits qualified MIT undergraduate students to apply for one of three Master of Engineering (MEng) programs. These programs consist of an additional, fifth year of study beyond one of the Bachelor of Science programs offered by the department.

Recipients of a Master of Engineering degree normally receive a Bachelor of Science degree simultaneously. No thesis is explicitly required for the Bachelor of Science degree. However, every program must include a major project experience at an advanced level, culminating in written and oral reports.

The Master of Engineering degree also requires completion of 24 units of thesis credit under 6.THM. While a student may register for more than this number of thesis units, only 24 units count toward the degree requirement. Adjustments to the department requirements are made on an individual basis when it is clear that a student would be better served by a variation in the requirements because of their strong prior background.

Programs leading to the five-year Master of Engineering degree or to the four-year Bachelor of Science degrees can easily be arranged to be identical through the junior year. At the end of the junior year, students with strong academic records may apply to continue through the five-year master's program. Admission to the Master of Engineering program is open only to undergraduate students who have completed their junior year in the Department of Electrical Engineering and Computer Science at MIT. Students with other preparation seeking a master's level experience in EECS at MIT should see the Master of Science program described later in this section.

A student in the Master of Engineering program must be registered as a graduate student for at least one regular (non-summer) term. To remain in the program and to receive the Master of Engineering degree, students will be expected to maintain strong academic records.

Four MEng programs are available:

- The Master of Engineering in Electrical Engineering and Computer Science (6-P) program is intended to provide the depth of knowledge and the skills needed for advanced graduate study and for professional work, as well as the breadth and perspective essential for engineering leadership in an increasingly complex technological world.

- The 6-A Master of Engineering Thesis Program with Industry combines the Master of Engineering academic program with periods of industrial practice at affiliated companies. An undergraduate wishing to pursue this degree should initially register for one of the department's three bachelor's programs.

- The Department of Electrical Engineering and Computer Science jointly offers a Master of Engineering in Computer Science and Molecular Biology (6-7P) with the Department of Biology (Course 7). This program is modeled on the 6-P program, but provides additional depth in computational biology through coursework and a substantial thesis.

- The Department of Electrical Engineering and Computer Science jointly offers a Master of Engineering in Computation and Cognition (6-9P) with the Department of Brain and Cognitive Sciences (Course 9). This program builds on the Bachelor of Science in Computation and Cognition, providing additional
depth in the subject areas through advanced coursework and a substantial thesis.

Master of Engineering in Electrical Engineering and Computer Science (Course 6-P)
Through a seamless, five-year course of study, the Master of Engineering in Electrical Engineering and Computer Science (6-P) (http://catalog.mit.edu/degree-charts/master-electrical-engineering-computer-science-course-6-p) program leads directly to the simultaneous awarding of the Master of Engineering and one of the three bachelor's degrees offered by the department. The 6-P program is intended to provide the skills and depth of knowledge in a selected field of concentration needed for advanced graduate study and for professional work, as well as the breadth and perspective essential for engineering leadership in an increasingly complex technological world. The student selects 42 units from a list of subjects approved by the Graduate Office; these subjects, considered along with the two advanced undergraduate subjects from the bachelor's program, must include at least 36 units in an area of concentration. A further 24 units of electives are chosen from a restricted departmental list of mathematics, science, and engineering subjects.

Master of Engineering Thesis Program with Industry (Course 6-A)
The 6-A Master of Engineering Thesis Program with Industry (http://vi-a.mit.edu) enables students to combine classroom studies with practical experience in industry through a series of supervised work assignments at one of the companies or laboratories participating in the program, culminating with a Master of Engineering thesis performed at a 6-A member company. Collectively, the participating companies provide a wide spectrum of assignments in the various fields of electrical engineering and computer science, as well as an exposure to the kinds of activities in which engineers are currently engaged. Since a continuing liaison between the companies and faculty of the department is maintained, students receive assignments of progressive responsibility and sophistication that are usually more professionally rewarding than typical summer jobs.

The 6-A program is primarily designed to work in conjunction with the department's five-year Master of Engineering degree program. Internship students generally complete three assignments with their cooperating company—usually two summers and one regular term. While on 6-A assignment, students receive pay from the participating company as well as academic credit for their work. During their graduate year, 6-A students generally receive a 6-A fellowship or a research or teaching assistantship to help pay for the graduate year. The department conducts a fall recruitment during which juniors who wish to work toward an industry-based Master of Engineering thesis may apply for admission to the 6-A program. Acceptance of a student into the program cannot be guaranteed, as openings are limited. At the end of their junior year, most 6-A students can apply for admission to 6-PA, which is the 6-A version of the department's five-year 6-P Master of Engineering degree program. 6-PA students do their Master of Engineering thesis at their participating company's facilities. They can apply up to 24 units of work-assignment credit toward their Master of Engineering degree. The first 6-A assignment may be used for the advanced undergraduate project that is required for award of a bachelor's degree, by including a written report and obtaining approval by a faculty member.

At the conclusion of their program, 6-A students are not obliged to accept employment with the company, nor is the company obliged to offer such employment.

Additional information about the program is available at the 6-A Office, Room 38-409E, 617-253-4644.

Master of Engineering in Computer Science and Molecular Biology (Course 6-7P)
The Departments of Biology and Electrical Engineering and Computer Science jointly offer a Master of Engineering in Computer Science and Molecular Biology (6-7P) (http://catalog.mit.edu/degree-charts/master-computer-science-molecular-biology-course-6-7p). A detailed description of the program (http://catalog.mit.edu/interdisciplinary/graduate-programs/computer-science-molecular-biology) requirements may be found under the section on Interdisciplinary Programs.

Master of Engineering in Computation and Cognition (Course 6-9P)
The Departments of Brain and Cognitive Sciences and Electrical Engineering and Computer Science jointly offer a Master of Engineering in Computation and Cognition (6-9P) (http://catalog.mit.edu/degree-charts/master-computation-cognition-course-6-9p). A detailed description of the program (http://catalog.mit.edu/interdisciplinary/graduate-programs/computation-cognition) requirements may be found under the section on Interdisciplinary Programs.

Predoctoral and Doctoral Programs
The programs of education offered by the Department of Electrical Engineering and Computer Science at the doctoral and predoctoral level have three aspects. First, a variety of classroom subjects in physics, mathematics, and fundamental fields of electrical engineering and computer science is provided to permit students to develop strong scientific backgrounds. Second, more specialized classroom and laboratory subjects and a wide variety of colloquia and seminars introduce the student to the problems of current interest in many fields of research, and to the techniques that may be useful in attacking them. Third, each student conducts research under the direct supervision of a member of the faculty and reports the results in a thesis.

Three advanced degree programs are offered in addition to the Master of Engineering program described above. A well-prepared student with a bachelor's degree in an appropriate field from some school other than MIT (or from another department at MIT) normally requires about one and one-half to two years to complete the
formal studies and the required thesis research in the Master of Science degree program. (Students who have been undergraduates in Electrical Engineering and Computer Science at MIT and who seek opportunities for further study must complete the Master of Engineering rather than the Master of Science degree program.) With an additional year of study and research beyond the master’s level, a student in the doctoral or predoctoral program can complete the requirements for the degree of Electrical Engineer or Engineer in Computer Science. The doctoral program usually takes about four to five years beyond the master’s level.

There are no fixed programs of study for these doctoral and predoctoral degrees. Each student plans a program in consultation with a faculty advisor. As the program moves toward thesis research, it usually centers in one of a number of areas, each characterized by an active research program. Areas of specialization in the department that have active research programs and related graduate subjects include communications, control, signal processing, and optimization; computer science; artificial intelligence, robotics, computer vision, and graphics; electronics, computers, systems, and networks; electromagnetics and electrodynamics; optics, photonics, and quantum electronics; energy conversion devices and systems; power engineering and power electronics; materials and devices; VLSI system design and technology; nanoelectronics; bioelectrical engineering; and computational biology.

In addition to graduate subjects in electrical engineering and computer science, many students find it profitable to study subjects in other departments such as Biology, Brain and Cognitive Sciences, Economics, Linguistics and Philosophy, Management, Mathematics, and Physics.

The informal seminar is an important mechanism for bringing together members of the various research groups. Numerous seminars meet every week. In these, graduate students, faculty, and visitors report their research in an atmosphere of free discussion and criticism. These open seminars are excellent places to learn about the various research activities in the department.

Research activities in electrical engineering and computer science are carried on by students and faculty in laboratories of extraordinary range and strength, including the Laboratory for Information and Decision Systems, Research Laboratory of Electronics, Computer Science and Artificial Intelligence Laboratory, Laboratory for Energy and the Environment (see MIT Energy Initiative), Kavli Institute for Astrophysics and Space Research, Lincoln Laboratory, Materials Research Laboratory, MIT Media Lab, Francis Bitter Magnet Laboratory, Operations Research Center, Plasma Science and Fusion Center, and the Microsystems Technology Laboratories. Descriptions of many of these laboratories (http://catalog.mit.edu/mit/research) may be found under the section on Research and Study.

Because the backgrounds of applicants to the department’s doctoral and predoctoral programs are extremely varied, both as to field (electrical engineering, computer science, physics, mathematics, biomedical engineering, etc.) and as to level of previous degree (bachelor’s or master’s), no specific admissions requirements are listed. All applicants for any of these advanced programs will be evaluated in terms of their potential for successful completion of the department’s doctoral program. Superior achievement in relevant technical fields is considered particularly important.

Master of Science in Electrical Engineering and Computer Science
The general requirements for the degree of Master of Science (http://catalog.mit.edu/mit/graduate-education/general-degree-requirements) are listed under the section on Graduate Education. These degrees are open to those able students in the doctoral or predoctoral program who seek more extensive training and research experiences than are possible within the master’s program. Admission to the engineer’s program depends upon a superior academic record and outstanding progress on a thesis. The course of studies consists of at least 162 units, 90 of which must be from four classroom subjects per term. The subjects are wholly elective and are not restricted to those given by the department. The program of study must be well balanced, emphasizing one or more of the theoretical or experimental aspects of electrical engineering or computer science.

Electrical Engineer or Engineer in Computer Science
The general requirements for an engineer’s degree (http://catalog.mit.edu/mit/graduate-education/general-degree-requirements) are given under the section on Graduate Education. These degrees are open to those able students in the doctoral or predoctoral program who seek more extensive training and research experiences than are possible within the master’s program. Admission to the engineer’s program depends upon a superior academic record and outstanding progress on a thesis. The course of studies consists of at least 162 units, 90 of which must be from a list of subjects approved by the Graduate Office, and the thesis requirements for a master’s degree.

Doctor of Philosophy or Doctor of Science
The general requirements for the degree of Doctor of Philosophy or Doctor of Science (http://catalog.mit.edu/mit/graduate-education/general-degree-requirements) are given under the section on Graduate Education. Doctoral candidates are expected to participate fully in the educational program of the department and to perform thesis work that is a significant contribution to knowledge. As preparation, MIT students in the Master of Engineering in Electrical Engineering and Computer Science program will be expected to complete that program. Students who have received a bachelor’s degree outside the department, but who have not completed a master’s degree program, will normally be expected to complete the requirements for the Master of Science degree described earlier, including a thesis. Students who have completed a master’s degree elsewhere without a significant research component will be required to register for and carry out a research accomplishment equivalent
to a master’s thesis before being allowed to proceed in the doctoral program.

Details of how students in the department fulfill the requirements for the doctoral program are spelled out in an internal memorandum. The department does not have a foreign language requirement, but does require an approved minor program.

Graduate students enrolled in the department may participate in the research centers described in the Research and Study (http://catalog.mit.edu/mit/research) section, such as the Operations Research Center.

**Financial Support**

**Master of Engineering Degree Students**

Students in the fifth year of study toward the Master of Engineering degree are commonly supported by a graduate teaching or research assistantship. In the 6-A Master of Engineering Thesis Program with Industry, students are supported by paid company internships. Students supported by full-time research or teaching assistantships may register for no more than two regular classes totaling at most 27 units. They receive additional academic units for their participation in the teaching or research program. Support through an assistantship may extend the period required to complete the Master of Engineering program by an additional term or two. Support is granted competitively to graduate students and may not be available for all of those admitted to the Master of Engineering program. The MEng degree is normally completed by students taking a full load of regular subjects in two graduate terms. Students receiving assistantships commonly require a third term and may petition to continue for a fourth graduate term.

**Master of Science, Engineer, and Doctoral Degree Students**

Studies toward an advanced degree can be supported by personal funds, by an award such as the National Science Foundation Fellowship (which the student brings to MIT), by a fellowship or traineeship awarded by MIT, or by a graduate assistantship. Assistantships require participation in research or teaching in the department or in one of the associated laboratories. Full-time assistants may register for no more than two scheduled classroom or laboratory subjects during the term, but may receive additional academic credit for their participation in the teaching or research program.

**Inquiries**

Additional information concerning graduate academic and research programs, admissions, financial aid, and assistantships may be obtained from the Electrical Engineering and Computer Science Graduate Office, Room 38-444, 617-253-4605, or visit the EECS website (http://www-eecs.mit.edu).

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**Interdisciplinary Programs**

**Computational Science and Engineering**

The Master of Science in Computational Science and Engineering (CSE SM) (https://cse.mit.edu/programs/sm) is an interdisciplinary program for students interested in the analysis and application of computational approaches to designing and operating engineered systems. The curriculum is designed with a common core serving all engineering disciplines and an elective component focusing on specific applications. Current MIT graduate students may pursue a CSE SM in conjunction with a department-based master’s or PhD program. For more information, see the full program description (http://catalog.mit.edu/interdisciplinary/graduate-programs/computational-science-engineering) under Interdisciplinary Graduate Programs.

**Joint Program with the Woods Hole Oceanographic Institution**

The Joint Program with the Woods Hole Oceanographic Institution (WHOI) (http://mit.whoi.edu) is intended for students whose primary career objective is oceanography or oceanographic engineering. Students divide their academic and research efforts between the campuses of MIT and WHOI. Joint Program students are assigned an MIT faculty member as academic advisor; thesis research may be supervised by MIT or WHOI faculty. While in residence at MIT, students follow a program similar to that of other students in their home department. The program is described in more detail (http://catalog.mit.edu/interdisciplinary/graduate-programs/joint-program-woods-hole-oceanographic-institution) under Interdisciplinary Graduate Programs.

**Leaders for Global Operations**

The 24-month Leaders for Global Operations (LGO) (http://lgo.mit.edu) program combines graduate degrees in engineering and management for those with previous postgraduate work experience and strong undergraduate degrees in a technical field. During the two-year program, students complete a six-month internship at one of LGO’s partner companies, where they conduct research that forms the basis of a dual-degree thesis. Students finish the program with two MIT degrees: an MBA (or SM in management) and an SM from one of seven engineering programs, some of which have optional or required LGO tracks. After graduation, alumni lead strategic initiatives in high-tech, operations, and manufacturing companies.

**System Design and Management**

The System Design and Management (SDM) (http://sdm.mit.edu) program is a partnership among industry, government, and the university for educating technically grounded leaders of 21st-century enterprises. Jointly sponsored by the School of Engineering and the Sloan School of Management, it is MIT’s first degree program to be offered with a distance learning option in addition to a full-time in-residence option.
Technology and Policy
The Master of Science in Technology and Policy is an engineering research degree with a strong focus on the role of technology in policy analysis and formulation. The Technology and Policy Program (TPP) (http://tpp.mit.edu) curriculum provides a solid grounding in technology and policy by combining advanced subjects in the student's chosen technical field with courses in economics, politics, quantitative methods, and social science. Many students combine TPP's curriculum with complementary subjects to obtain dual degrees in TPP and either a specialized branch of engineering or an applied social science such as political science or urban studies and planning. For additional information, see the program description (http://catalog.mit.edu/schools/mit-schwarzman-college-computing/data-systems-society) under the Institute for Data, Systems, and Society.

Faculty and Teaching Staff
Asuman E. Ozdaglar, PhD
MathWorks Professor
Head, Department of Electrical Engineering and Computer Science
Professor of Electrical Engineering
Deputy Dean of Academics, MIT Schwarzman College of Computing
Core Faculty, Institute for Data, Systems, and Society

Arvind Mithal, PhD
Charles W. and Jennifer C. Johnson Professor
Professor of Computer Science and Engineering
Faculty Head, Computer Science, Department of Electrical Engineering and Computer Science

Antonio Torralba, PhD
Thomas and Gerd Perkins Professor
Professor of Electrical Engineering and Computer Science
Faculty Head, Artificial Intelligence and Decision-Making, Department of Electrical Engineering and Computer Science

Joel Voldman, PhD
Clarence J. LeBel Professor
Professor of Electrical Engineering
Faculty Head, Electrical Engineering, Department of Electrical Engineering and Computer Science

Professors
Harold Abelson, PhD
Class of 1992 Professor
Professor of Electrical Engineering and Computer Science

Elfar Adalsteinsson, PhD
Professor of Electrical Engineering
Core Faculty, Institute for Medical Engineering and Science

Anant Agarwal, PhD
Professor of Electrical Engineering and Computer Science

Akintunde I. Akinwande, PhD
Professor of Electrical Engineering

Saman P. Amarasinghe, PhD
Professor of Computer Science and Engineering

Dimitri A. Antoniadis, PhD
Ray and Maria Stata Professor Post-Tenure
Professor Post-Tenure of Electrical Engineering

Hari Balakrishnan, PhD
Fujitsu Professor
Professor of Electrical Engineering and Computer Science
(On leave, fall)

Marc A. Baldo, PhD
Dugald C. Jackson Professor
Professor of Electrical Engineering

Regina Barzilay, PhD
Delta Electronics Professor
Professor of Electrical Engineering and Computer Science
Affiliate Faculty, Institute for Medical Engineering and Science

Karl K. Berggren, PhD
Professor of Electrical Engineering

Dimitri P. Bertsekas, PhD
Jerry McAfee (1940) Professor Post-Tenure
Professor Post-Tenure of Electrical Engineering
Core Faculty, Institute for Data, Systems, and Society

Robert C. Berwick, PhD
Professor of Computer Science and Engineering and Computational Linguistics
Core Faculty, Institute for Data, Systems, and Society

Sangeeta N. Bhatia, MD, PhD
John J. and Dorothy Wilson Professor of Health Sciences and Technology
Professor of Electrical Engineering and Computer Science
Core Faculty, Institute for Medical Engineering and Science

Duane S. Boning, PhD
Clarence J. LeBel Professor
Professor of Electrical Engineering

Louis D. Braida, PhD
Henry Ellis Warren (1894) Professor Post-Tenure
Professor Post-Tenure of Electrical Engineering
Member, Health Sciences and Technology Faculty
DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Vladimir Bulović, PhD
Fariborz Maseeh (1990) Professor in Emerging Technology
Professor of Electrical Engineering

Vincent W. S. Chan, PhD
Joan and Irwin M. (1957) Jacobs Professor
Professor of Electrical Engineering
(On leave, fall)

Anantha P. Chandrakasan, PhD
Vannevar Bush Professor
Professor of Electrical Engineering and Computer Science
Dean, School of Engineering

Isaac Chuang, PhD
Professor of Electrical Engineering
Professor of Physics

Munther A. Dahleh, PhD
William A. Coolidge Professor
Professor of Electrical Engineering and Computer Science
Director, Institute for Data, Systems, and Society

Luca Daniel, PhD
Professor of Electrical Engineering and Computer Science

Konstantinos Daskalakis, PhD
Professor of Electrical Engineering and Computer Science

Randall Davis, PhD
Professor of Computer Science and Engineering

Jesús A. del Alamo, PhD
Donner Professor of Science
Professor of Electrical Engineering

Erik D. Demaine, PhD
Professor of Computer Science and Engineering

Srinivas Devadas, PhD
Edwin Sibley Webster Professor
Professor of Electrical Engineering

Frederic Durand, PhD
Amar Bose Professor of Computing
Professor of Computer Science and Engineering

Dennis M. Freeman, PhD
Henry Ellis Warren (1894) Professor
Professor of Electrical Engineering
Member, Health Sciences and Technology Faculty
(On leave)

William T. Freeman, PhD
Thomas and Gerd Perkins Professor Post-Tenure
Professor Post-Tenure of Electrical Engineering and Computer Science

James G. Fujimoto, PhD
Elihu Thomson Professor in Electrical Engineering

David K. Gifford, PhD
Professor of Computer Science and Engineering
(On leave)

Shafrira Goldwasser, PhD
RSA Professor
Professor of Computer Science and Engineering
(On leave, fall)

Polina Golland, PhD
Henry Ellis Warren (1894) Professor
Professor of Computer Science and Engineering
Affiliate Faculty, Institute for Data, Systems, and Society
Affiliate Faculty, Institute for Medical Engineering and Science
(On leave, spring)

Martha L. Gray, PhD
J. W. Kieckhefer Professor of Health Sciences and Technology
Professor of Electrical Engineering and Computer Science
Core Faculty, Institute for Medical Engineering and Science

W. Eric L. Grimson, PhD
Bernard M. Gordon Professor in Medical Engineering
Professor of Computer Science and Engineering
Chancellor for Academic Advancement

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Professor of Biological Engineering
Professor of Electrical Engineering
Professor of Mechanical Engineering

John V. Guttag, PhD
Dugald C. Jackson Professor
Professor of Electrical Engineering and Computer Science

Jongyoon Han, PhD
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Professor of Biological Engineering

Frederick C. Hennie III, PhD
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Berthold Klaus Paul Horn, PhD
Professor Post-Tenure of Computer Science and Engineering

Qing Hu, PhD
Distinguished Professor
Professor of Electrical Engineering

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Dean, MIT Schwarzman College of Computing
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Thomas D. and Virginia W. Cabot Professor
Professor of Electrical Engineering and Computer Science

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Affiliate Faculty, Institute for Data, Systems, and Society

Daniel Jackson, PhD
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Patrick Jaillet, PhD
Dugald C. Jackson Professor
Professor of Electrical Engineering and Computer Science
Core Faculty, Institute for Data, Systems, and Society

M. Frans Kaashoek, PhD
Charles A. Piper (1935) Professor
Professor of Electrical Engineering and Computer Science

Leslie P. Kaelbling, PhD
Panasonic Professor
Professor of Computer Science and Engineering

David R. Karger, PhD
Professor of Computer Science and Engineering

Dina Katabi, PhD
Andrew (1956) and Erna Viterbi Professor
Professor of Electrical Engineering and Computer Science

Manolis Kellis, PhD
Professor of Computer Science

James L. Kirtley Jr, PhD
Professor Post-Tenure of Electrical Engineering

Leslie A. Kolodziejski, PhD
Professor of Electrical Engineering

Jing Kong, PhD
Professor of Electrical Engineering

Jeffrey H. Lang, PhD
Vitesse Professor
Professor of Electrical Engineering

Hae-Seung Lee, PhD
Advanced Television and Signal Processing Professor
Professor of Electrical Engineering

Steven B. Leeb, PhD
Professor of Electrical Engineering
Professor of Mechanical Engineering

Charles E. Leiserson, PhD
Edwin Sibley Webster Professor
Professor of Electrical Engineering

Jae S. Lim, PhD
Professor Post-Tenure of Electrical Engineering

Barbara H. Liskov, PhD
Institute Professor Post-Tenure
Professor Post-Tenure of Computer Science

Tomás Lozano-Pérez, PhD
School of Engineering Professor of Teaching Excellence
Professor of Electrical Engineering and Computer Science

Nancy Ann Lynch, PhD
NEC Professor of Software Science and Engineering
Professor of Electrical Engineering and Computer Science

Samuel R. Madden, PhD
College of Computing Distinguished Professor of Computing
Professor of Computer Science and Engineering
(On leave, fall)

Aleksander Madry, PhD
Professor of Computer Science

Thomas L. Magnanti, PhD
Institute Professor
Professor of Operations Research
Professor of Electrical Engineering
Member, Institute for Data, Systems, and Society

Wojciech Matusik, PhD
Professor of Electrical Engineering and Computer Science

Muriel Médard, ScD
Cecil H. Green Professor
Professor of Electrical Engineering and Computer Science

Alexandre Megretski, PhD
Professor of Electrical Engineering
Core Faculty, Institute for Data, Systems, and Society

Silvio Micali, PhD
Ford Foundation Professor of Engineering
Professor of Computer Science and Engineering
(On leave, fall)

Robert C. Miller, PhD
Distinguished Professor of Computer Science
Professor of Computer Science and Engineering

Sanjoy K. Mitter, PhD
Professor Post-Tenure of Electrical Engineering
Core Faculty, Institute for Data, Systems, and Society
Robert T. Morris, PhD
Professor of Computer Science and Engineering

Joel Moses, PhD
Institute Professor Post-Tenure
Professor Post-Tenure of Electrical Engineering and Computer Science
Affiliate Faculty, Institute for Data, Systems, and Society

Alan V. Oppenheim, PhD
Ford Professor Post-Tenure of Engineering
Professor Post-Tenure of Electrical Engineering and Computer Science

Terry Philip Orlando, PhD
Professor Post-Tenure of Electrical Engineering

Tomás Palacios, PhD
Professor of Electrical Engineering

Pablo A. Parrilo, PhD
Joseph F. and Nancy P. Keihlty Professor
Professor of Electrical Engineering and Computer Science
Professor of Mathematics
Core Faculty, Institute for Data, Systems, and Society

David J. Perreault, PhD
Joseph F. and Nancy P. Keihlty Professor
Professor of Electrical Engineering and Computer Science

Rajeev J. Ram, PhD
Professor of Electrical Engineering

L. Rafael Reif, PhD
President
Professor of Electrical Engineering

Martin C. Rinard, PhD
Professor of Computer Science and Engineering

Ronald L. Rivest, PhD
Institute Professor
Professor of Computer Science and Engineering

Ronitt Rubinfeld, PhD
Edwin Sibley Webster Professor
Professor of Computer Science and Engineering

Daniela L. Rus, PhD
Andrew (1956) and Erna Viterbi Professor
Professor of Computer Science and Engineering
Deputy Dean of Research, MIT Schwarzman College of Computing

Martin A. Schmidt, PhD
Ray and Maria Stata Professor
Professor of Electrical Engineering and Computer Science
Provost

Devavrat Shah, PhD
Professor of Electrical Engineering and Computer Science
Associate Director, Institute for Data, Systems, and Society
Core Faculty, Institute for Data, Systems, and Society
(On leave, spring)

Jeffrey H. Shapiro, PhD
Julius A. Stratton Professor Post-Tenure
Professor Post-Tenure of Electrical Engineering

Nir N. Shavit, PhD
Professor of Electrical Engineering and Computer Science

Charles G. Sodini, PhD
Clarence J. LeBel Professor Post-Tenure
Professor Post-Tenure of Electrical Engineering
Core Faculty, Institute for Medical Engineering and Science

Armando Solar Lezama, PhD
Professor of Electrical Engineering and Computer Science

Collin M. Stultz, MD, PhD
Professor in Biomedical Engineering
Core Faculty, Institute for Medical Engineering and Science
(On leave, fall)

Gerald Jay Sussman, PhD
Panasonic Professor
Professor of Electrical Engineering

Peter Szolovits, PhD
Professor of Computer Science and Engineering
Affiliate Faculty, Institute for Medical Engineering and Science
(On leave)

Russell L. Tedrake, PhD
Toyota Professor
Professor of Computer Science and Engineering
Professor of Aeronautics and Astronautics
Professor of Mechanical Engineering

Bruce Tidor, PhD
Professor of Electrical Engineering and Computer Science
Professor of Biological Engineering

John N. Tsitsiklis, PhD
Clarence J. LeBel Professor
Professor of Electrical Engineering
Associate Director, Institute for Data, Systems, and Society
(On leave)

George C. Verghese, PhD
Henry Ellis Warren (1894) Professor Post-Tenure
Professor Post-Tenure of Electrical and Biomedical Engineering

Cardinal Warde, PhD
Professor of Electrical Engineering
Jacob K. White, PhD
Cecil H. Green Professor
Professor of Electrical Engineering

Ryan Williams, PhD
Professor of Electrical Engineering and Computer Science

Alan S. Willsky, PhD
Edwin Sibley Webster Professor Post-Tenure
Professor Post-Tenure of Electrical Engineering and Computer Science
Core Faculty, Institute for Data, Systems, and Society

Gregory W. Wornell, PhD
Sumitomo Electric Industries Professor in Engineering
Professor of Electrical Engineering
Affiliate Faculty, Institute for Data, Systems, and Society
(On leave, spring)

Nickolai Zeldovich, PhD
Professor of Electrical Engineering and Computer Science

Lizhong Zheng, PhD
Professor of Electrical Engineering

Victor W. Zue, ScD
Delta Electronics Professor Post-Tenure
Professor Post-Tenure of Electrical Engineering and Computer Science

**Associate Professors**

Fadel Adib, PhD
Doherty Chair in Ocean Utilization
Associate Professor of Media Arts and Sciences
Associate Professor of Electrical Engineering and Computer Science

Mohammadreza Alizadeh Attar, PhD
Associate Professor of Electrical Engineering and Computer Science

Guy Bresler, PhD
Associate Professor of Electrical Engineering and Computer Science
Core Faculty, Institute for Data, Systems, and Society

Tamara Broderick, PhD
Associate Professor of Electrical Engineering and Computer Science
Affiliate Faculty, Institute for Data, Systems, and Society

Adam Chlipala, PhD
Associate Professor of Electrical Engineering and Computer Science

Dirk Robert Englund, PhD
Associate Professor of Electrical Engineering and Computer Science

Peter L. Hagelstein, PhD
Associate Professor of Electrical Engineering

Ruonan Han, PhD
Associate Professor of Electrical Engineering and Computer Science

Thomas Heldt, PhD
Associate Professor of Electrical Engineering and Computer Science
Core Faculty, Institute for Medical Engineering and Science
(On leave)

Stefanie Sabrina Jegelka, ScD
X-Window Consortium Career Development Professor
Associate Professor of Electrical Engineering and Computer Science
Affiliate Faculty, Institute for Data, Systems, and Society
(On leave, fall)

Tim Kraska, PhD
ITT Career Development Professor
Associate Professor of Electrical Engineering and Computer Science
(On leave)

Luqiao Liu, PhD
Associate Professor of Electrical Engineering and Computer Science

Yury Polyanskiy, PhD
Associate Professor of Electrical Engineering and Computer Science
Core Faculty, Institute for Data, Systems, and Society

Justin Solomon, PhD
Associate Professor of Electrical Engineering and Computer Science

David Sontag, PhD
Von Helmholtz Professor of Medical Engineering
Associate Professor of Electrical Engineering and Computer Science
Core Faculty, Institute for Medical Engineering and Science

Suvrit Sra, PhD
Esther and Harold Edgerton Career Development Professor
Associate Professor of Electrical Engineering and Computer Science
Core Faculty, Institute for Data, Systems, and Society
(On leave, fall)

Vivienne Sze, PhD
Associate Professor of Electrical Engineering and Computer Science
Caroline Uhler, PhD
Associate Professor of Electrical Engineering and Computer Science
Core Faculty, Institute for Data, Systems, and Society
Vinod Vaikuntanathan, PhD
Associate Professor of Electrical Engineering and Computer Science
(On leave, fall)
Virginia Williams, PhD
Associate Professor of Electrical Engineering and Computer Science

Assistant Professors
Pulkit Agrawal, PhD
Steven G. (1968) and Renée Finn Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Jacob Andreas, PhD
X-Window Consortium Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Adam Belay, PhD
Assistant Professor of Electrical Engineering and Computer Science
Michael J. Carbin, PhD
Assistant Professor of Electrical Engineering and Computer Science
Henry Carrigan-Gibbs, PhD
Assistant Professor of Electrical Engineering and Computer Science
YuFeng Chen, PhD
D. Reid Weeden Jr. ’41 Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Manya Ghobadi, PhD
TIBCO Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Song Han, PhD
Robert J. Shillman (1974) Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Phillip John Isola, PhD
Bonnie and Marty (1964) Tenenbaum Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Stefanie Mueller, PhD
Assistant Professor of Electrical Engineering and Computer Science
Assistant Professor of Mechanical Engineering
(On leave, fall)
Anand Natarajan, PhD
Assistant Professor of Electrical Engineering and Computer Science
Farnaz Niroui, PhD
E. E. Landsman (1958) Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Jelena Notaros, PhD
Assistant Professor of Electrical Engineering and Computer Science
Kevin O’Brien, PhD
Emanuel E. Landsman (1958) Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Jonathan M. Ragan-Kelley, PhD
Edgerton Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Negar Reiskarimian, PhD
X-Window Consortium Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Arvind Satyanarayan, PhD
NBX Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science
Julian Shun, PhD
Douglas Ross (1954) Career Development Professor
Assistant Professor of Software Technology
Mengjia Yan, PhD
Homer A. Burnell Career Development Professor
Assistant Professor of Electrical Engineering and Computer Science

Professors of the Practice
Joel S. Emer, PhD
Professor of the Practice of Electrical Engineering and Computer Science

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David J. DeWitt, PhD
Adjunct Professor of Computer Science and Engineering
Butler W. Lampson, PhD
Adjunct Professor of Computer Science and Engineering
Michael Stonebraker, PhD
Adjunct Professor of Computer Science and Engineering

Adjunct Associate Professors
Yael Kalai, PhD
Adjunct Associate Professor of Electrical Engineering and Computer Science

Senior Lecturers
Tony Eng, PhD
Senior Lecturer in Electrical Engineering and Computer Science
Adam J. Hartz, MEng
Senior Lecturer in Electrical Engineering and Computer Science
Gim P. Hom, MS, MS, EE
Senior Lecturer in Electrical Engineering and Computer Science
Katrina Leigh LaCurts, PhD
Senior Lecturer in Electrical Engineering and Computer Science

Lecturers
Zachary R. Abel, PhD
Lecturer in Electrical Engineering and Computer Science

Ana Bell, PhD
Principal Lecturer in Electrical Engineering and Computer Science

Iddo Drori, PhD
Lecturer in Electrical Engineering and Computer Science

Max Goldman, PhD
Principal Lecturer in Electrical Engineering and Computer Science

Silvina Z. Hanono Wachman, PhD
Principal Lecturer in Electrical Engineering and Computer Science

Mauricio Karchmer, PhD
Lecturer in Electrical Engineering and Computer Science

Kimberle Koile, PhD
Lecturer in Electrical Engineering and Computer Science

Joseph Daly Steinmeyer, PhD
Principal Lecturer in Electrical Engineering and Computer Science

Technical Instructors
David L. Lewis
Technical Instructor of Electrical Engineering and Computer Science

Anthony Pennes, SB
Technical Instructor of Electrical Engineering and Computer Science

Scott Poesse, AA
Technical Instructor of Electrical Engineering and Computer Science

Professors Emeriti
Arthur B. Baggeroer, ScD
Professor Emeritus of Mechanical and Ocean Engineering
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3 Com Founders Professor Emeritus of Engineering

Rodney Brooks, PhD
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James Donald Bruce, ScD
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Jack B. Dennis, ScD
Professor Emeritus of Computer Science and Engineering

Murray Eden, PhD
Professor Emeritus of Electrical Engineering

Clifton G. Fonstad Jr, PhD
Vitesse Professor Emeritus
Professor Emeritus of Electrical Engineering

G. David Forney, ScD
Adjunct Professor Emeritus of Electrical Engineering
Core Faculty, Institute for Data, Systems, and Society

Lawrence S. Frishkopf, PhD
Professor Emeritus of Electrical Engineering and Computer Science

Robert G. Gallager, ScD
Professor Emeritus of Electrical Engineering

Carl H. Hewitt, PhD
Associate Professor Emeritus of Computer Science and Engineering

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Elihu Thomson Professor Emeritus
Professor Emeritus of Physics
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John G. Kassakian, ScD
Professor Emeritus of Electrical Engineering

Robert S. Kennedy, ScD
Professor Emeritus of Electrical Engineering

Francis Fan Lee, PhD
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Albert R. Meyer, PhD
Hitachi America Professor Emeritus
Professor Emeritus of Computer Science and Engineering

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Paul L. Penfield Jr, PhD
Dugald C. Jackson Professor Emeritus
Professor Emeritus of Electrical Engineering

Jerome H. Saltzer, ScD
Professor Emeritus of Computer Science and Engineering

Herbert Harold Sawin, PhD
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Professor Emeritus of Electrical Engineering

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Bernard M. Gordon Professor of the Practice Emeritus

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Professor Emeritus of Electrical Engineering

Richard D. Thornton, ScD
Professor Emeritus of Electrical Engineering

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Thomas F. Weiss, PhD
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Professor Emeritus of Health Sciences and Technology

Gerald L. Wilson, PhD
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Professor Emeritus of Mechanical Engineering

Markus Zahn, ScD
Thomas and Gerd Perkins Professor Emeritus
Professor Emeritus of Electrical Engineering