



CELEBRATING 65 YEARS

OUR FACULTY SPEAK



DEAR FRIENDS,

This year MIT Professional Education proudly celebrates landmark anniversaries of our two oldest programs: Short Programs and the Advanced Study Program. We just finished the 65th season of Short Programs, hosting over 1,000 professionals from more than 60 countries. And the Advanced Study Program is embarking on its 50th year of offering qualified professionals the opportunity to take regular MIT courses on campus on a non-degree basis.

As we've developed this commemorative newsletter, I've been reminded again of the importance of the Institute cultivating two-way lines of communication with practitioners in industry. Our programs help frontline professionals from around the world address their daily challenges, while also giving the faculty who engage with them firsthand insights that inform their teaching and research.



driven enterprise, and better able to fulfill our mission of disseminating knowledge and effecting positive change.”

I hope that as you read about our history, you will also get a sense of how we plan to broaden and deepen MIT Professional Education's global engagement through our newer international and online programs.

Our enduring success is due to the excellence of what MIT as a whole provides—this is why so many engineers, scientists, and other professionals from around the world want to study with us. We hope that you will share our pride as we celebrate our heritage and continue the Institute tradition of “bringing our common knowledge to bear on the world's great challenges.”*

Best Regards,

Bhaskar Pant, *Executive Director*
MIT Professional Education
bpant@mit.edu



Bhaskar Pant
Photo by Stuart Darsch

* Part of MIT's Mission Statement

MIT PRESIDENT RAFAEL REIF

MIT PROFESSIONAL EDUCATION: A STRATEGIC ASSET FOR THE ENTIRE INSTITUTE



The programs that make up MIT Professional Education have benefitted tens of thousands of engineers, scientists, and managers worldwide, and I know from personal experience* that teaching in these programs is richly rewarding for our faculty. And for the Institute as whole, the dividends earned over the past 65 years have been tremendous—we are better connected to the front lines of technology-driven enterprise, and better able to fulfill our mission of disseminating knowledge and effecting positive change. Going forward, the experience and skill of the MIT Professional Education team, and their collaborating faculty members, provide a robust foundation for our work in lifelong learning, and a strategic asset for the entire Institute.

**President Reif was the instructor for the 1997 short program Multilevel Interconnect Process Technologies for Microelectronic Fabrication*

Short Programs

Established 1949

*A.K.A. Summer Session, Professional Institute
2–5 day, on-campus classes*

Over 40 current offerings involving more than 70 MIT faculty members and lecturers

After World War II, with millions transitioning from military to industry, MIT formalized its summertime activities in response to strong demand for non-degree education in technology-oriented subjects: Spectroscopy, Food Technology, Digital Computing, and dozens of others.

Today, after teaching thousands of classes and hosting more than 85,000 students, the former Summer Session is known as Short Programs. As part of MIT Professional Education group, it continues its 65-year heritage of preparing engineers, scientists, and managers to lead their organizations in new directions, and offering MIT faculty the opportunity for active engagement with expert practitioners in their fields.

The same basic class model has endured since the earliest days. The focus is on intensive classroom work, lab exercises, and occasional field trips to relevant area facilities, plus time for discussion of the day-to-day challenges faced by the practitioners from industry and government who attend the classes along with academics from every part of the world.

In addition to helping the attendees, this intensive interaction has given faculty from across MIT valuable insights to share with undergraduate and graduate students, and in many cases sparked new research projects and collaborations.

Content areas have continually evolved, and now include topics from tribology to autonomous robotic systems, and from radical innovation to sustainable business practices, with new ideas constantly being introduced by faculty members.

Short Programs have been adopted for off-campus presentation across the US and in dozens of countries around the world; they serve as a foundation for MIT Professional Education's rapidly growing International Programs.



Advanced Study Program

Established 1964

*A.K.A. Advanced Engineering Study Program,
Center for Advanced Engineering Study,
Center for Advanced Engineering Studies,
Center for Advanced Educational Services*

Provides access to regular MIT classes for engineers, scientists, and managers without requiring entry into degree programs

In 1963, MIT President Julius Stratton noted that a new category of post-graduate student was emerging, at MIT and across the country, and announced that a \$5 million grant from the Alfred P. Sloan Foundation would be used to create a new center “to enlarge the potential of mature engineers and engineering managers now in the profession and help them to cope with the advancing technology of our time.”

From its base in Building 9, the Center for Advanced Engineering Studies began hosting groups of fellows each academic year starting in 1964, while also becoming an early entrant in multimedia education, producing widely used video courses and accompanying texts. Milestones include a collaboration on total quality management with pioneer W. Edwards Deming, and interactive CD-ROM courses created during the 1990s.

In 1995, the CAES was reorganized and renamed the Center for Advanced Educational Services, with responsibility for the Advanced Study Program (ASP) and the Summer Session (later Short Programs). The new CAES dived quickly into distance learning, taking advantage of newly available World Wide Web and satellite capabilities to offer programs worldwide.

Another reorganization in 2003 moved the ASP back to its original home in the School of Engineering, under a new Office of Professional Education Programs, now known as MIT Professional Education, where it has continued its work, serving about 75 fellows annually; alums as of 2014 total about 2,500.



65 YEARS OF IMPACT ON THE WORLD, AND FROM THE WORLD

FACULTY, PARTICIPANTS, INSTITUTE
ALL REAP UNIQUE BENEFITS
*“WE LEARN AS MUCH FROM THEM
AS THEY DO FROM US”*



MIT Professional Education—
International Programs in
Santiago, Chile
Photo by Clara Piloto,
director global programs

“Lifelong learning” has been a top-of-mind topic at MIT since 1949, when the Institute’s summer programs were formalized into the Summer Session. Since then, more than 100,000 engineers, scientists, and managers have bolstered their knowledge by taking classes through the programs that now comprise MIT Professional Education.

“It opened a window for new ideas,” “An invigorating experience and particularly useful investment of my time,” “This course went to the heart of creating innovation within organizations.” These are just some of the glowing reviews received over the years.

At the same time, hundreds of MIT faculty members have found that participation in MIT Professional Education programs has improved their research and teaching abilities, by providing them with insights and perspectives that only front-line practitioners can provide.

“We learn as much from them as they do from us. Practitioners tell you about the real problems that no one has worked on before, the new problems that didn’t exist when the textbook was written,” says Professor of Engineering Systems Richard Larson, who gave his first Summer Session guest lectures to emergency services managers in 1972. The experience, he says, was the genesis of the first book project he participated in; more recent classes, including his current Crisis Management and Business Continuity, have connected him with top-tier managers from Disney, the FBI, the City of New York, and other organizations around the world, which enables him to share firsthand knowledge with his MIT students.

“In the process engineering world, knowledge comes from practice and not a lab,” adds Ford Professor of Engineering Emeritus Earl Murman, who joined MIT Aeronautics and Astronautics after a distinguished career in industry and taught the Lean Enterprise class on campus and internationally from 2007 until last year. “Lean thinking has its roots in the Japanese auto industry; that’s why MIT went there to study and codify it. If you’re not rubbing shoulders with practitioners in a field like that, you’re not getting access to the real source of knowledge.”

SCHOOL OF ENGINEERING DEAN IAN WAITZ EDUCATION THAT PREPARES PEOPLE TO MAKE A DIFFERENCE



“Part of MIT’s mission is to provide exceptional educational programs that prepare people to make a difference in the world, whether they’re undergraduates, graduate students, or practicing professionals. We’re proud that MIT Professional Education is carrying out this work in so many avenues and in such innovative ways.”

Born the Same Year as ILP

Indeed, it’s no coincidence that MIT’s establishment of the Summer Session (later dubbed the Professional Institute and now known as Short Programs) took place in the same year, 1949, as the formation of the Institute’s research-oriented Industrial Liaison Program. As former MIT President Charles M. Vest put it in a 1999 commemorative talk, “Both proposals were deeply rooted in the basic values of MIT, and both were designed to help faculty into greater direct contact with senior leaders and decision-makers in industry and government.”

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ADVANCED STUDY PROGRAM BUILDS CONNECTIONS, COLLABORATION STUDY EXPERIENCE BRINGS BRAZIL'S NATURA TO MIT



Romulo Zamberlan

For Romulo Zamberlan, MIT's Advanced Study Program (ASP) presented an important opportunity to expand his professional perspective. He arrived with a background in research and development at Natura, Brazil's second largest cosmetics company, encouraged to enroll by a former ASP student who now heads up the firm's R&D.

"Everything I learned here can be directly exported to my daily work," Zamberlan said after completing the program in 2012. "I am much more prepared [as a] professional after two semesters studying at MIT."

But the ASP experience went far beyond personal growth. Zamberlan was instrumental in helping Natura, a \$3 billion company with a network across South America, become a member of the MIT Media Lab, and the Institute's Industrial Liaison Program. Currently holding the title of US Innovation Manager for Natura, he drove the creation of a satellite office in Cambridge to encourage the flow of new ideas—and to expand the organizational relationship. ▽

"Our Nuclear Plant Safety course has helped educate hundreds of professionals from all over the world since 1966. Its success is a testament to the increasing importance of MIT's professional courses, as industries seek to maximize the benefits of fast-changing innovative technologies



while also thinking about their impact on society."

MUJID KAZIMI

DIRECTOR, CENTER FOR ADVANCED NUCLEAR ENERGY SYSTEMS
PROFESSOR OF NUCLEAR ENGINEERING

PROFESSOR OF MECHANICAL ENGINEERING

"Short programs connect real-world problems with fundamental education. The industrial participants challenge us with the problems of their day jobs, and this carries over to and has profound impact on how we teach our regular MIT students."



CHARLES COONEY

PROFESSOR OF CHEMICAL ENGINEERING

MILESTONES FROM OUR FIRST 65 YEARS



JAMES R. KILLIAN, JR.
MIT PRESIDENT
1948–1959

Killian established the Office of the Summer Session (later known as the Professional Institute and now as Short Programs) in 1949 "to utilize the facilities of the Institute during the summer months to the

advantage of industrial, technical, and scientific people who cannot participate in our year-round academic program, and to provide parts of our regular academic program for members of our student body who wish to remain for study in Cambridge during the summer."

1949

Formal Summer Session courses begin at MIT, emphasizing professional and technical education for members of government, industry, and research institutions

1953

Summer Session registrants come from industry (69%), government (20%), and research and education (11%)

1956

School of Advanced Study established under Professor Martin J. Buerger (Mineralogy and Crystallography); Edwin H. Land named first Fellow and Visiting Institute Professor

1956

Professor James M. Austin (Meteorology) named Director, Summer Session, a post he will hold until 1983

1963

Center for Advanced Engineering Study, later Center for Advanced Engineering Studies, founded with funding from Alfred P. Sloan

1964

Launch of Practicing Engineer Advanced Study Program—certificate program for key technology leaders from industry, government, and education

ABOUT 65 YEARS OF MIT PROFESSIONAL EDUCATION



Danny Wang and Kristala Prather

FIFTY YEARS OF FERMENT

Fermentation Technology, one of the longest-running courses in the Short Programs portfolio, was first offered in 1962 and now boasts over 5,000 alums worldwide. While the name has remained constant, the content has constantly evolved to include the latest biological and biochemical advances.

It's widely known as "Danny Wang's Fermentation Technology class" after Institute Professor Daniel I.C. Wang, who took it over in the mid-1960s from its founder, Professor Richard Mateles of the former Nutrition and Food Sciences Department. Wang continues to direct the class, with Chemical Engineering Associate Professor Kristala Prather handling teaching duties.

In 1976, the course was offered for the first time abroad (in Zurich, Switzerland), and in 1978, for the first time at an industry site (Eli Lilly, Indianapolis, Indiana). Since then it has been taught worldwide, and its content adapted into a 1979 textbook, *Fermentation and Enzyme Technology* (Wiley).

The only years the course has not been offered at MIT were 1964 and 1966. "Those two years off led to our choosing this year, 2014, to celebrate the 50th anniversary of Fermentation Technology," says Prather. "We look forward to what the next 50 years bring!" ▾

"MIT Professional Education is irreplaceable, because it connects me, on a deep and comprehensive level, with leaders and practitioners in industry. The intense weeks of classroom work and discussion allow me to focus my research and educational activities on high-impact targets that are relevant to urgent real-world needs."



MARKUS BUEHLER
DEPARTMENT HEAD AND
PROFESSOR, CIVIL AND
ENVIRONMENTAL ENGINEERING

"It helps me as an MIT professor to work with practitioners—an FBI agent who's in charge of New England's homeland security, someone in Disney's security operation. When I talk to my students, it's not all hearsay from books and articles, but from talking to people about their life responsibilities."



RICHARD LARSON
DIRECTOR, CENTER FOR
ENGINEERING SYSTEMS
FUNDAMENTALS
PROFESSOR OF ENGINEERING
SYSTEMS



JULIUS R. STRATTON
MIT PRESIDENT
1959–1966

Stratton oversaw the 1963 establishment of the Center for Advanced Engineering Study (now the Advanced Study Program). "Designed to provide a substantial new curriculum of postgraduate work for both

practicing engineers and for professors of engineering, the Center... promises to give form to an altogether new component of engineering education."

1968
Center for Advanced Engineering Study moves into newly constructed Building 9

1974
Summer Session registrants come from industry (57%), government (29%), and education/non-profits (14%)

1974
Sea Grant Program joins Summer Session to offer four-week programs on ship-related subjects

1983
Sixteen attendees from 11 countries participate in seven-week intensive course on "Air Transportation — Management, Economics, and Planning," offered jointly with the Flight Transportation Laboratory of the Department of Aeronautics and Astronautics

1983
Professor Frederick J. McGarry (Materials Science and Engineering, Civil and Environmental Engineering) named Director, Summer Session, a post he will hold for 19 years

1987
Summer Session offers 66 special programs, with about 12% of attendees coming from outside the US

68
1967-1989

“We’ve had a summer course on advanced drug delivery systems for 35 years that has trained thousands of people. It’s wonderful to see that so many of these have become leaders.”



ROBERT LANGER
DAVID H. KOCH INSTITUTE PROFESSOR
DEPARTMENT OF CHEMICAL ENGINEERING

“Our product families and platforms course, entering its eighth year, has created a global community of professionals who leverage the curriculum’s concepts in strategy, platform architecture, and design for commonality. Through our social media, alums and a growing group of engaged companies are connecting, sharing insights, and creating value for their firms and customers.”



OLIVIER DE WECK
PROFESSOR OF AERONAUTICS AND
ASTRONAUTICS AND ENGINEERING SYSTEMS

“I teach innovation, and innovation is a two-way street.

I have benefited a great deal from my interactions with the participants in my professional course — as the innovation landscape changes, I have found my class to be as much a venue for an exchange of ideas as a traditional class.”



SANJAY SARMA
MIT DIRECTOR OF DIGITAL LEARNING
PROFESSOR OF MECHANICAL ENGINEERING

“Our Lean Enterprise course has attracted academics from all over the world, who take the knowledge back to their institutions; many of those people have become colleagues. MIT Professional Education has helped us fulfill our original mission of getting the course material into academic programs.”



EARLL MURMAN
FORD PROFESSOR OF ENGINEERING EMERITUS
PROFESSOR EMERITUS OF AERONAUTICS AND
ASTRONAUTICS

1995

Center for Advanced Engineering Studies becomes Center for Advanced Educational Services; it oversees the Advanced Study Program, which hosts 33 foreign and 22 US students during the 1995–96 academic year. Cumulative ASP alums total over 1,700

1995

Beginning of continuous ongoing sponsorship of MIT Summer Philharmonic Orchestra, to enhance the program participant experience, and nurture the Institute’s rich musical tradition

1996

Responsibility for the Summer Session is transferred from the Graduate Education Office to the CAES, and the program is renamed the Professional Institute

1996

Under the Advanced Study Program, Professor Ernst Frankel teaches Management of Technological Change to seven on-campus students and via live interactive videoconference to 20 students in Argentina

1996–1997

CAES introduces distance learning, offering certificate professional courses to students in Chile, Venezuela, Argentina, Brazil and Peru

1998

First “Winter Session” classes; 127 students register for January offerings

1999

Summer Session/ Professional Institute 50th anniversary — **“There can be little doubt of the enduring value this program has had for both the Institute and the larger community we serve,”** says President Charles M. Vest



2001

GE Aviation begins ongoing relationship with ASP; to date, 20 employees have attended, with several research projects initiated

2003

School of Engineering creates Office of Professional Education Programs under Associate Dean Professor Dick K.P. Yue to “promote technical excellence through ongoing engagement with communities of practice.” Jennifer Stine is executive director

Custom Programs

Established 2003

For more than a decade, MIT Professional Education has developed and run large-scale, multi-year custom professional development programs for technical employees of prominent companies like BP, Novartis and Accenture. Curricula and programs have been developed by faculty from the School of Engineering, Sloan School of Management and others, with delivery taking place on campus, at company sites, and online. Our corporate clients have recognized the significant contribution of these programs to upgrading the skills of participating employees.

International Programs

Established 2009

MIT faculty serve a global audience, gain insights into emerging markets

Over the past five years, MIT Professional Education has embarked on an ambitious effort to bring MIT faculty members and their unique brand of lifelong learning to strategic growth markets worldwide.

The courses are typically based on existing Short Program offerings that run 2–5 days; international clients have included professionals from corporations, industrial parks, incubators, and academic organizations. The resulting interactions have connected faculty instructors with practitioners from huge multinationals, new startups, and almost every other type of enterprise in locales from Singapore to Chile to Dubai.

“Our mission is to expand globally where we believe MIT expertise is needed the most,” comments executive director Bhaskar Pant. “There’s a tremendous hunger for knowledge that MIT can provide.”

Online X Programs

Established 2014

New initiative draws on decades of online experience

Online learning, offered via the open-source edX platform, is a major strategic initiative of MIT Professional Education. The first online professional course offering, Tackling the Challenges of Big Data, launched in the spring of 2014, with plans calling for additional course offerings in 2014 and beyond.

This expanded use of digital learning technologies draws on nearly 20 years of online education experience at MIT. The Advanced Study Program was a pioneer in this area, offering live, interactive courses via Internet and satellite in the mid-1990s, and many MIT Professional Education faculty members have been active contributors to MIT OpenCourseWare and edX course development.

“Our fundamental mission is to provide greater access to MIT expertise for technology-oriented engineers, scientists, and managers, wherever in the world they happen to be,” says executive director Bhaskar Pant. “The edX platform is a powerful enabler, and I’ve seen firsthand how eagerly our faculty and students are embracing it—I’m tremendously excited about how this will evolve.”

“Creating the first online Professional Education course was **fantastic**—a very collaborative, friendly, visionary, and zestful experience. The MIT-CSAIL faculty enjoyed creating content, the students found great value, and everybody on the BigDataX team looks forward to future projects and collaborations.”



DANIELA RUS

DIRECTOR, MIT-CSAIL
PROFESSOR OF ELECTRICAL ENGINEERING
AND COMPUTER SCIENCE

2007

Accenture Solutions Delivery Academy launched, with over 20,000 Accenture employees worldwide taking part in global training program

2007

Launch of Operations Academy, a program for BP executives, in conjunction with MIT Sloan School

2008

Bhaskar Pant named Executive Director of Professional Education Programs

2009

“Professional Institute” name retired in favor of “Short Programs;” current umbrella name, “MIT Professional Education,” adopted

2009

MIT in Japan Conference offers one-day course on solar energy storage, first program in Japan

2011

First MIT Professional Education program in South America—Professor Earl Murman’s Lean Enterprise

2014

First MIT Professional Education program in the Middle East—“Radical Innovation” by Professor Sanjay Sarma in Dubai

2014

First MIT Professional Education online course, Tackling the Challenges of Big Data, taught by professors Daniela Rus, Sam Madden, and their CSAIL team

“At MIT, the faculty member doesn’t have to look for things to do. But teaching these courses provides some real intellectual and professional rewards.”



FRED MCGARRY

DIRECTOR, SUMMER
SESSION/PROFESSIONAL
INSTITUTE
1983–2002
PROFESSOR OF
MATERIALS SCIENCE AND
ENGINEERING

Like What You See? Join Us!

All MIT faculty members are warmly invited to propose new courses for MIT Professional Education's portfolio; benefits include greater connection to advanced practitioners in your field, new insights on teaching, and research opportunities.

→ **CHECK OUR WEBSITE,**
[http://shortprograms.
mit.edu/faculty](http://shortprograms.mit.edu/faculty) FOR
DETAILED INFORMATION

→ **IF YOU HAVE AN IDEA
FOR A SHORT PROGRAM**
(A 2- TO 5-DAY COURSE),
PLEASE CONTACT ANNA MAHR
AT amahr@mit.edu.

This connection is one reason so many distinguished faculty participate in MIT Professional Education programs. The current group of about 75 includes Institute Professors Daniel I.C. Wang and Robert Langer and School of Engineering department heads Professor Markus Buehler (Civil and Environmental Engineering) and Professor Klavs Jensen (Chemical Engineering).

The teaching roster is also rich in MacVicar Faculty Fellows, who are honored for exceptional teaching ability: Professor Sanjay Sarma (Mechanical Engineering), Associate Professor Kristala Prather (Chemical Engineering), Professor Edward Crawley (Aeronautics and Astronautics), and professors Charles Leiserson, Steven Leeb, and Vladimir Bulović (Electrical Engineering and Computer Science).

Intellect and Infrastructure

In addition to Short Programs, MIT Professional Education, which was established in 2003 under the School of Engineering, also oversees the Advanced Study Program (ASP), which dates to 1964 and currently offers about 75 fellows annually the opportunity to take regular Institute courses on a non-degree basis. More recent additions include Custom Programs, which develops training programs for specific industry or government clients (including Accenture and BP); International Programs, which offers short courses on-site in locales worldwide; and Online X Programs, an initiative for global online learning launched in 2014.

This combination of intellectual firepower and educational infrastructure positions MIT Professional Education as a strategic asset for the Institute as a whole. The recent report of the Institute-Wide Task Force on the Future of MIT Education recommended a bolstering of infrastructure for MIT Professional

“MIT Professional Education provides a great opportunity for professionals to stay current and explore new areas—the courses are an excellent way to become immersed in the latest technology trends and challenges.”



ERIC EVANS
DIRECTOR, MIT LINCOLN
LABORATORY
ATTENDEE, SHORT PROGRAM IN
APPLIED CYBER SECURITY

Education and the Sloan School's Executive Education program, and a reduction in barriers to offering more programs and engaging more faculty.

International and Online—“Our Next Frontier”

MIT Professional Education executive director Bhaskar Pant, who served on the task force, notes that while there will always be a prominent place for the long-standing on-campus programs, “international and online programs are very much our next frontier, with a focus on addressing global audiences and issues, particularly in emerging economies. There is great hunger for knowledge in these economies, and they're also places that our faculty and students are keen to understand better.” Early steps in this direction include the recent hosting of a custom course for South African transport managers and a program in Dubai for would-be Middle East entrepreneurs.

As part of this evolution, said Pant, “we'll also be experimenting with online and blended learning (a combination of online and traditional classroom teaching). These models can enable greater access and more time-efficient learning for professionals around the world who want to benefit from MIT expertise.” ▾

“MIT Professional Education has been a great education partner for the ILP here on campus and at our events around the world.

Their specialized courses for professionals across industries perfectly complement our overall mission, providing important avenues for extending productive dialogues between our members and MIT faculty.”



KARL KOSTER
EXECUTIVE DIRECTOR OF CORPORATE RELATIONS/
INDUSTRIAL LIAISON PROGRAM

**For more information on these programs, visit
professionaleducation.mit.edu**

MIT Professional Education
Massachusetts Institute of Technology
238 Main Street, Building E48-401
Cambridge, MA 02142



PROFESSIONAL EDUCATION