PROFESSIONAL EDUCATION

NEWSLETTER

IN BRIEF

Advanced Study Program

For the fall 2013 semester MIT Professional Education welcomed students to the Advanced Study Program (ASP) from 12 countries including: Albania, England, Singapore, Bulgaria, France, Thailand, India, United States, China, Korea, and Vietnam. ASP was also pleased to have representatives from the following companies: Accenture, GE Healthcare in India, GE Aviation, Bose Corporation, WiTriCity Corp, and the Bank of Thailand.

This year the Advanced Study Program looks forward to celebrating its 50th anniversary!

International Programs

MIT Professional Education held courses in Chile, India, and Italy last year. *Radical Innovation*, a Short Programs course taught by Sanjay Sarma, was held in Rome and Milan in February and later in India. *Lean Enterprise* and *Lean Health Care* were taught by Earll Murman and Hugh McManus in Santiago in March. Executive Director Bhaskar Pant also attended the MIT ILP conference *New Urbanism for China: Innovation and Technologies That Will Change the Ways Cities Develop and Grow* held in Beijing. He discussed urbanism-related training needs with industry and government officials while there.

Short Programs

For the 65th summer, MIT Professional Education—Short Programs will offer over 40 courses to working professionals from around the world. Short Programs continues to support MIT initiatives with courses in energy, manufacturing, and innovation. The popular engineering leadership track now consists of four courses. In conjunction with MIT's Lincoln Laboratory, Short Programs continues to offer a series of hands-on radar and robotics courses.

DEAR FRIENDS,

Bhaskar Pant
Photo by Stuart Darsch

We began the New Year with a first for MIT Professional Education—the announcement of the pioneer online education course for professionals. The course addresses a very important topic on the minds of professionals today—that of managing a deluge of data that so many around the world gather. The course, *Tackling the Challenges of Big Data*, under the banner of a new line of offerings called Online Programs, opened for registration on Jan. 9th and features 12 prominent researchers and thought leaders from MIT's renowned Computer Science and Artificial Intelligence Laboratory. At press time well over 3,000 professionals (40% international) from every continent had registered for the course.

Illustrating our commitment to address issues and topics that are of current importance to the business and professional communities, we highlight two short courses from last summer. The first, *Crisis Management and Business Continuity* led by Professor Richard Larson, featured a crisis case study titled "The Boston Marathon Bombings: Exemplary Response Amid Horror." The case study included a panel of the City of Boston and MIT officials who were directly involved in managing the crisis as it unfolded on that inopportune day last April. The second course, quite different from the first one, involved the training of new and experienced science and engineering faculty from MIT, Harvard, as well as far away universities such as The National University of Singapore, in the area of leadership. The course titled, *Leadership Skills for Engineering and Science Faculty*, led by Professor Charles Leiserson, addressed an ever-increasingly important issue of cultivating "emotional and social elements of leadership among people who love technical things."

MIT Professional Education has had a long-standing relationship with several prominent area companies which send us students for advanced training in a diverse set of technical disciplines. We feature a story on GE Aviation and how they value the participation of their key engineers in our Advanced Study Program. GE Aviation also has a research relationship with several MIT professors, facilitated by MIT's Industrial Liaison Program.

As always, we would love to hear your feedback regarding our newsletter and/or any of our programs.

Best Regards,

Bhaskar Pant

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

ASP student David Erickson, Edison Engineering Development Program Engineer, currently in GE Aviation's "Preliminary Design" group. *Photo by Sarah Foote*

MIT PROFESSIONAL EDUCATION AND GE AVIATION

A RELATIONSHIP THAT WORKS

The Advanced Study Program (ASP) of MIT Professional Education allows professionals and recent graduates to take graduate level courses at MIT to enhance their knowledge and expertise, or to help prepare them for entry into graduate or doctoral programs at MIT and other universities. Each semester, ASP Fellows (as they are called) from around the globe and a variety of industries including engineering, science, manufacturing, and business, enroll in graduate level courses in one or more of the five schools at MIT. Many Fellows continue to work full-time while taking one to four courses each semester at the Institute.

Tish Miller, director of the Advanced Study Program, said the program works with several local area companies to bring their high-performing employees to campus, and is mutually beneficial for both parties. "ASP Fellows can select from more than 2,000 courses at MIT. Many come to campus with a study plan already in mind that will help them grow and advance at their current employer. And many want to build a foundation in a certain subject or subjects before they apply to graduate school at MIT or elsewhere," Miller said.

ASP collaborates with GE

The Advanced Study Program has a long-standing relationship with GE Aviation in Lynn, Mass. GE Aviation has sent over 20 employees to ASP over the last 13 years, and has developed a relationship not only with ASP, but with several MIT professors to work on research projects developed in conjunction with MIT's Industrial Liaison Office.

"The Advanced Study Program has seen students from GE come to campus and thrive," Miller said. "They take the knowledge they learn here at MIT back to GE and apply it to their work almost immediately. Some GE employees are accepted into graduate school at MIT. The working relationship we have with GE helps string all the professional development beads together."

Ken Gould, engineering manager and supervisor of the Advanced Course in Engineering Program at GE Aviation, agrees with Miller's assessment. "The great thing about ASP is that students can pass the knowledge they have obtained [on campus] to others at GE. Advanced courses and ASP allows them to take the fundamental concepts in their university training and bridge that gap so they can apply these concepts in an industry setting. ASP accelerates their development so they can be creative, innovative contributors at an earlier point in their careers."

Gould completed his master's degree in aeronautical engineering at MIT in 2006 and understands the challenges of working and going to school at the same time. While enrolled at MIT, Gould took aero engineering courses that allowed him to take a deep dive in certain topics while continuing to work. "I took a course on compressible fluid dynamics that was directly applicable to a project I was involved with at GE Aviation. It was the perfect coupling. I was able to better understand the concepts because I was able to apply them at work in a real-time basis," said Gould, who would later earn a patent for the work on exhaust system design.

Engineering Research

As a graduate student, Gould worked with MIT senior research engineer Choon Tan on a research project involving turbo shaft engines for helicopters.

MIT PROFESSIONAL EDUCATION AND GE AVIATION

A RELATIONSHIP THAT WORKS

The two developed an advanced aerodynamic simulation to help improve the performance and durability of the compressor early on in the design phase.

"GE relies on innovation and advanced technology to develop better products for our customers. One way achieve this is by conducting research," Gould said. "By sending employees to ASP, MIT helps contribute to GE's goals. It is a win-win situation because students can develop their skills at MIT not only in the classroom but on the research projects GE sponsors at MIT."

While participating in the Advanced Study Program, David Erickson continued his work on helicopter engines at GE. "ASP is a great way to test out MIT classes before you apply to graduate school," he said. "It's a great way to see for yourself if MIT is a good fit. You can meet with potential advisors and discuss possible research projects before you apply to MIT for graduate school—it helps you get ahead."

Erickson, who was recently accepted into the master's degree program in aeronautical engineering at MIT, has begun to work with Dr. Choon Tan on a manufacturing research project. "I'm working with Dr. Tan on a centrifugal compressor operability project—which means looking at different things that prevent a centrifugal compressor from being able to operate in certain parts of the flight envelope or in certain operating conditions, and how you can expand the range of operation. We have some ideas we just started working on and the goal is to understand how we can reduce vibration to improve compressor performance and durability."

A mutually beneficial relationship

MIT's Industrial Liaison Program (ILP) works with GE and other local companies to facilitate for them a variety of research projects on campus, said Sheri Brodeur, senior Industrial Liaison Officer at MIT.

ILP works closely with several offices and departments at MIT to maximize each company's relationship with the Institute. Brodeur works with MIT Professional Education, campus recruiting, and labs and research centers to help GE effectively interact with MIT. "By sending students to ASP, GE has access to the data and knowledge that a regular graduate student might not have because they can connect the research back to the company. It's a very good model," Brodeur said

Bhaskar Pant, executive director, MIT Professional Education, said, "We work with a number of different industries and companies to bring students to campus. ASP Fellows can take real MIT courses and continue to work if they choose to do so. Students gain a world-class education in variety of fields of interest. They truly take a drink from the fire hose while here at MIT and then to have the opportunity to work on research projects brought in by ILP member companies such as GE, allows all the pieces to come together well!"

MIT PROFESSIONAL EDUCATION LAUNCHES FIRST ONLINE PROGRAM

- **REGISTRATION IS AVAILABLE AT:** *onlinex.mit.edu/bigdata.* The course can be taken by individuals across all industries or by large groups of employees from the same organization.
- **FOR GENERAL QUESTIONS, EMAIL:** *onlinex@mit.edu*

MIT will offer its first online professional course, *Tackling the Challenges of Big Data*, to a global audience beginning March 4, 2014. The four-week online course, aimed at technical professionals and executives, will tackle state-of-the-art topics in big data ranging from data collection, storage, and processing to analytics and visualization, as well as address a range of real world applications. Leading the course will be 12 faculty experts from the world-renowned MIT Computer Science and Artificial Intelligence Laboratory (CSAIL) at the School of Engineering.

The course will be offered through MIT Professional Education, the arm of MIT that provides professional education and training for science, engineering, and technology professionals worldwide. It will be the first of a new line of professional programs called Online Programs, to be delivered globally using the open-sourced online education platform, edX. The course will provide companies and organizations the ability to offer training and education to their employees on a topic that confronts most industries today. Upon completion, participants will receive an MIT Professional Education certificate of completion and access to MIT Professional Education's expansive professional alumni network. The course will be offered at $495.

"MIT Professional Education is pleased to be able to offer a unique and comprehensive online course addressing a very important challenge facing industry today," said Bhaskar Pant, executive director of MIT Professional Education. "With the teaching power of a 'who's who' list of thought leaders on the subject from CSAIL, I am confident this course will allow industry players to not only learn of new approaches to big data, but will spark innovative thinking among teams charged with finding solutions to big data challenges."

"Big Data technologies will help us better understand and improve the world around us," said Daniela Rus, Andrew (1956) and Erna Viterbi Professor of Electrical Engineering & Computer Science, director of CSAIL and co-director of the online course. "*Tackling the Challenges of Big Data* will provide a one-of-a-kind learning experience for professionals looking to learn about the tools and skills they need to solve their big data problems."

Sanjay Sarma, director of the MIT Office of Digital Learning and the Fred Fort Flowers & Daniel Fort Flowers Professor of Mechanical Engineering, said, "I am thrilled with MIT Professional Education's online course offering of *Tackling the Challenges of Big Data* as part of MIT's digital learning portfolio. Our goal is to expand access to MIT's knowledge and expertise globally via online courses. A course on a high interest topic such as big data is a perfect way for us to begin addressing the learning needs of working professionals who may not otherwise be able to come to MIT to attend courses."

MIT PROFESSIONAL EDUCATION LAUNCHES FIRST ONLINE PROGRAM

FACULTY CO-DIRECTORS

DANIELA RUS

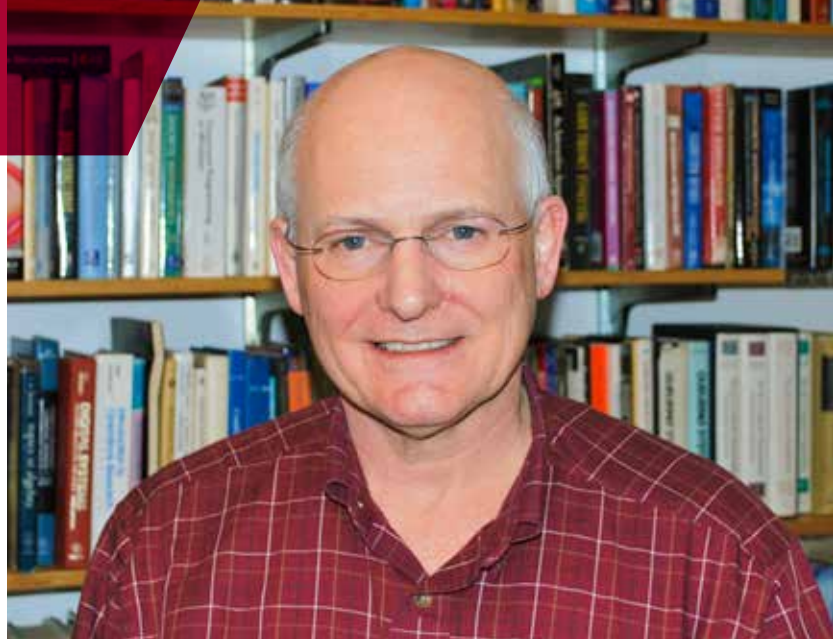
Professor, Electrical Engineering Computer Systems

Rus is Professor of Electrical Engineering and Computer Science and Director of the Computer Science and Artificial Intelligence Laboratory (CSAIL) at MIT. Rus' research interests include distributed robotics, mobile computing, and programmable matter. At CSAIL, she has led numerous groundbreaking research projects in the areas of transportation, security, environmental modeling and monitoring, underwater exploration, and agriculture. Her research group, the Distributed Robotics Lab, has developed modular and self-reconfiguring robots, systems of self-organizing robots, networks of robots and sensors for first responders, mobile sensor networks, techniques for cooperative underwater robotics, and new technology for desktop robotics. They have built robots that can tend a garden, bake cookies from scratch, cut birthday cake, fly in swarms without human aid to perform surveillance functions, and dance with humans.

SAM MADDEN

Professor, Electrical Engineering Computer Systems

Madden is a computer scientist specializing in database management systems. He is the faculty director of MIT's Big Data Initiative at CSAIL and co-director of the Intel Science and Technology Center (ISTC) in Big Data at CSAIL. Recent projects include CarTel, a distributed wireless platform that monitors traffic and onboard diagnostic conditions in order to generate road surface reports, and Relational Cloud, a project investigating research issues in building a database as a service. In 2005, Madden was named one of *Technology Review* magazine's "Top 35 Under 35." He is also cofounder of Vertica (acquired by HP).



Charles E. Leiserson
Photo by Sarah Foote

THE ART AND SCIENCE OF TEACHING TEACHERS

FOR MORE INFORMATION ABOUT *LEADERSHIP SKILLS FOR ENGINEERING AND SCIENCE FACULTY*, VISIT: *shortprograms.mit.edu/lsf*

When MIT professor Charles Leiserson noticed a gap in the leadership education of science and engineering faculty, he worked to create a course that would fill the void.

Leiserson began teaching *Leadership Skills for Engineering and Science Faculty* (LSF), an MIT Professional Education—Short Programs course, more than 10 years ago. The response to the course has been extremely positive—with participants coming from all over the United States and places as far away as Mexico and Ghana to attend the course on MIT's campus.

"I wanted to take human centered material and put it in context for science and engineering faculty, in a way that would affect the way people deal with different and changing environments," said Leiserson, professor of Computer Science and Engineering in MIT's Department of Electrical Engineering and Computer Science and a Margaret MacVicar Faculty Fellow.

Leiserson met his co-instructor, Chuck McVinney, a consultant who works to create sustainable organizations, at Akamai Technologies when it was a startup. Leiserson quickly discovered that the group of technology experts assembled there didn't know how to work as a team. As a result, feelings were hurt, and the work did not progress as planned. McVinney was brought in to conduct leadership workshops and the problem was quickly resolved.

"When I got back to MIT, I asked why we weren't teaching the same material to our faculty," Leiserson said. He teamed up with McVinney, and adapted the industrial setting workshops to academia, and offered the new workshop to people in Leiserson's lab. Later, Leiserson worked with MIT Professional Education to offer the course on a larger scale.

"We helped MIT faculty leverage their technical skills and that made a huge difference," Leiserson said. "It was a great opportunity to bring in the emotional and social element to people who love technical things. The participants in the class had a greater appreciation and awareness of how rich and different people can be."

Leiserson enjoys teaching the two-day course because it provides him with the immediate opportunity to see participants' response. "We have a unit on mental diversity—different thinking styles. If you're in engineering or science, it's not something that you've likely come across before. It's wonderful to see that 'Aha!' moment," he noted.

"It's human centered and it's fun to put it in a context that people in science and engineering can appreciate and understand. It can affect the way they deal with their environments when they go back to their own universities," Leiserson said, adding, "The Short Programs course fills the gap. In the course, we role-play fairly common situations such as issues of emotions and motivation—which come up all the time in their work. This helps senior faculty learn about the anxieties of junior faculty, and helps junior faculty learn how to deal with common issues their students may face."

When the two co-instructors ask participants in their class what they would give them for a grade, over 95 percent said they would mark them an 'A' or an 'A+'.

McVinney and Leiserson have also taught LSF as a custom course to faculty members at Harvard University, University of California, Berkeley, Carnegie Mellon University, and the National University of Singapore.

Marathon panel.
Photo by Sarah Foote

ONE YEAR LATER

REMEMBERING THE EVENTS OF APRIL 2013

TO WATCH THE VIDEOS FROM THE PANEL SESSION OR REGISTER FOR THE COURSE, VISIT: *shortprograms.mit.edu/cm*

While the tragedies of April 15 and April 18, 2013, are forever etched into the minds of the greater-Boston and MIT communities, 46 participants in the MIT Professional Education course *Crisis Management and Business Continuity* had the opportunity to hear first-hand accounts of the events on Boylston Street and MIT's campus from several key responding organizations, news outlets, an MIT alumnus, and several others on July 18, 2013 at the Stata Center.

The panel, titled "The Boston Marathon bombings: Exemplary Response Amid Horror," was moderated by WBUR's Deborah Becker, and included Edward Davis, Boston Police commissioner; James Hooley, chief of Boston EMS; Dr. Paul Biddinger, chief, Division of Emergency Preparedness, medical director, Emergency Department Operations, Massachusetts General Hospital; Imad Mouline, SB '91, CTO, Everbridge, a Mass and Emergency Notification software company; Joe Sciacca, editor-in-chief of the *Boston Herald*; and Peter Casey, programming and news director, WBZ radio. William VanSchalkwyk, managing director, Environment, Health, and Safety Headquarters Office, MIT; and Helen Privett, business continuity manager at GMO, were also on hand.

New Office Location in Kendall Square

MIT Professional Education has moved and is now located at 238 Main Street on the east side of MIT's campus. Come visit us in our new home. The new office location, E48-401, is located in the heart of Kendall Square–across the street from the MIT Coop and steps from the subway.

VISIT US IN OUR NEW HOME: *whereis.mit.edu/?go=e48*