

## Dean for Undergraduate Education

The [Office of the Dean for Undergraduate Education](#) (DUE) is focused on assuring and enhancing the quality of the educational experience of MIT students, with particular responsibility for undergraduate education. DUE provides mission-critical functions for the Institute, creates new services and capabilities, and defines new ways of thinking about education. The unit supports and enhances integrated student learning, both inside and outside the classroom, through student-focused as well as faculty-focused educational initiatives. DUE's scope includes:

- Delivering the essential capabilities of admissions, financial services, and registration
- Partnering with faculty to enhance learning through educational innovation and assessment
- Expanding global educational opportunities
- Encouraging hands-on experiential learning and promoting student success through advising, effective learning strategies, and other forms of support
- Increasing student diversity at all educational levels

Eleven offices comprise DUE: Admissions, Educational Innovation and Technology (OEIT), Experiential Learning, Faculty Support, Global Education and Career Development, Minority Education (OME), Registrar, Reserve Officers' Training Corps, Student Financial Services (SFS), Teaching and Learning Laboratory (TLL), and Undergraduate Advising and Academic Programming (UAAP). This introduction describes some of the year's enterprise-wide highlights, while the individual office reports that follow provide detailed descriptions of their areas.

### Reviewing Strategic Direction

In AY2012, DUE completed the strategic planning review that it began in spring 2011. The goal was to reconsider the 2006 plan in light of evolving circumstances and lay out refreshed directions that advance DUE's mission to "enroll, educate, and inspire some of the brightest students in the world with a passion for learning so they become the next generation of creative thinkers and leaders in a global society." The revised plan takes into account the addition to DUE of five units since 2007 and responds to changes in higher education, the nation as a whole, and at MIT.

DUE engaged its mission partners in the review, most notably the Division of Student Life (DSL), the Office of the Dean for Graduate Education (ODGE), Information Systems and Technology (IS&T), and the faculty through DUE's Faculty Advisory Committee. While the process reaffirmed many of the 2006 priorities, several new emphases and needs emerged or intensified. For example, input from the DUE Faculty Advisory Committee, the DUE Visiting Committee, and students who took part in focus groups lent a sense of immediacy to the ongoing efforts to improve undergraduate advising in ways that enable students to get to know faculty outside the classroom. Faculty and the visiting committee urged DUE to define and expand its role in educational technology/

residential education initiatives. The advent of MITx, MIT's online learning initiative, and other developments in digital learning affirmed the creation of a new educational technology theme to support e-learning efforts underway at MIT.

DUE ended the year with a plan that is fresh and relevant, and which includes the sharpened set of six strategic themes:

- Transforming learning through research, best practices, and innovations in pedagogy, curricular materials, and assessment
- Catalyzing the Undergraduate Educational Commons: maintaining excellence, increasing innovation, improving communication
- Valuing and leveraging diversity, benefitting from a true meritocracy
- Leveraging educational technology for educational effectiveness and change
- Empowering students to leverage their experiences and maximize their confidence to become creative, innovative and global-ready leaders
- Evolving the Student Information System (SIS) to support a dynamic educational experience for faculty, students, and staff

Each crosscutting theme has goals and metrics on a five-year timescale, which will enable DUE to focus its resources to most effectively enhance education at MIT. The past year's planning process also entailed developing a new vision statement and set of core values to which staff across the unit contributed. The revised plan is at <http://due.mit.edu/about-due/strategic-plan>.

### **Hosting the DUE Visiting Committee Biennial Review**

The MIT Corporation visiting committee for DUE made its biennial visit in March 2012. Sixteen out of 17 committee members participated, including five in similar positions to dean Daniel Hastings's at Stanford University, Yale University, Princeton University, the California Institute of Technology, and Harvard University; the president of Harvey Mudd College; and the former president of Wellesley College.

Prior to the committee's visit, DUE's communications manager worked with the DUE leadership team and Institutional Research staff to create an extensive data report, *The Undergraduate Experience at MIT*. This document provided a quantitatively-based understanding of curricular and cocurricular experiences and clearly highlighted where MIT is succeeding and where it has work to do. Noting the quality and usefulness of the report, MIT Corporation chairman John Reed distributed copies to all Corporation members.

Besides interacting with the dean, DUE leadership, and the chancellor, the committee heard from important stakeholders at a lunch with undergraduates and a breakfast with faculty who are closely engaged in issues of undergraduate education.

During its time on campus, the visiting committee focused on DUE's role and strategy in three critical areas: online learning and the residential community, promoting student success, and advising and mentoring students. The written report, submitted to the Executive Committee and the dean for undergraduate education in June, contained valuable perspective and recommendations on these subjects and raised good questions. DUE will consider its input when developing strategies that support its mission.

### **Supporting Underrepresented Minority Students**

DUE intensified efforts to create a supportive environment for underrepresented minority (URM) students, as part of its commitment to support the academic and personal success of all MIT students. Data from Admissions, SFS, the Registrar, Institutional Research, and other sources quantified the fact that MIT enrolls some of the best academically prepared URM students in the country. DUE noted that a high percentage of URM students (84% for students entering in 2005) succeed academically and graduate from MIT within six years; the URM graduation rate falls far below the 95% of non-URM students who graduate. This disparity exists regardless of incoming academic and socioeconomic profile.

The DUE Valuing and Leveraging Diversity theme vision, which was revised this year, set the goal to "increase the overall MIT graduation rates by narrowing the gap in non-minority and minority rates," with the metric of achieving a 5% differential by 2016. Based on incoming student metrics, DUE estimates a 10% gap for cohorts entering in 2010 and 2011. During the year, Dean Hastings worked with the directors of OME and TLL and others to understand the disparity and launch new efforts to bring about changes to increase URM students' academic success. These efforts included:

- Continuing to sharpen the predictive value of incoming student metrics
- Piloting and assessing Interphase EDGE (Empowering Discovery/Gateway to Excellence), OME's rigorous residential academic program for admitted freshmen who are primarily URM students
- Introducing a more intrusive/proactive advising system for early intervention of students showing signs of academic struggle
- Creating an Undergraduate Research Opportunities Program (UROP) fair to facilitate faculty connections and increase participation in undergraduate research
- Discussing URM issues with the faculty

DUE's study of URM and non-URM academic outcomes provided useful insights both about existing OME programs and the path forward. DUE continued to explore alternatives outside MIT through interaction with peers, especially those in science, technology, engineering, and mathematics (STEM) fields, and through research that drew on the literature about how to enhance the success of URM students. The OME Faculty Advisory Committee (OMEFAC), led by professor Edmund Bertschinger, took up this challenge and worked closely with DUE leadership to understand the problem, develop better measures of student success, and inform and engage the MIT community more broadly.

## Admitting Students Who Thrive at MIT

Office of Admissions staff selected an outstanding new class of undergraduates. To quote dean of admissions Stuart Schmill, “The [MIT] applicant pool keeps getting stronger even as it gets bigger.” This year’s 8.9% acceptance rate was a record low, with a record high number of applications (18,109). There was a decrease in early applications, arguably affected by changes in Harvard University’s and Princeton University’s early action programs. In August, about 1,130 freshmen will officially join the MIT community as the Class of 2016. The Office of Admissions section of this report describes the composition and demographics of this diverse and talented cohort.

DUE’s goals for an MIT undergraduate education invariably inform the admissions process. In the past decade, the selectivity of that process has increased dramatically as the number of applicants grew by 70% and the admission rate dropped below 10%. The depth, breadth, and quality of the applicant pool have made DUE more conscious of the need to sharpen the tools used in the selection process.

Admissions staff worked on developing a way to make evidence-based decisions to help ensure that students be admitted who will thrive at MIT. In April, the Faculty Committee on Undergraduate Admissions and Financial Aid joined Dean Schmill in asking faculty to describe characteristics they value most in MIT undergraduates and to identify current or former students who represent the kind of student they would like to see more of. All 1,747 faculty members and instructional staff received the online survey link. Approximately 9.5% responded, with 166 faculty members naming 487 students and the characteristics that made each student stand out. Survey results were used to review and revise the admissions reader ratings rubric. Further analysis and ongoing discussion with faculty will continue to inform admissions directives.

To add to the understanding of what contributes to students’ ability to thrive at MIT, DUE developed new MIT-specific questions for the 2012 senior and freshman surveys administered by Institutional Research. The new questions asked about sense of self, aspirations, and skills and abilities not fully covered in other sections. The responses will inform an understanding of the MIT undergraduate experience.

## Enhancing Student Advising and Mentoring

Improving undergraduate advising and mentoring continued to top the list of DUE priorities and challenges. It was the focal point of several DUE initiatives and a frequent topic of discussion among faculty and staff involved in defining and supporting the advising system at MIT, as well as a main theme of the DUE Visiting Committee proceedings described earlier in this report. DUE focused on improving advising and mentoring to facilitate more consistent and frequent interaction between students and advisors to allow students to make real connections and promote meaningful mentoring relationships, while taking into account that faculty seemed to have more demands than ever before.

DUE defined the advising challenge broadly (from first year through career, and encompassing mentoring) and took steps to enlist the requisite faculty leadership and explore different approaches:

- The Faculty Committee on the Undergraduate Program (CUP) and DUE discussed the role of faculty advisors and defined appropriate expectations for students and faculty in terms of advising and mentoring.
- The chair of CUP, the faculty chair, the chancellor, and the dean for undergraduate education agreed to introduce the issues related to advising to department heads and faculty at school council and departmental meetings.
- DUE engaged in a review of residence-based advising in the context of the overall advising system, with the intention of adding flexibility and improving that advising option.
- DUE explored and experimented with hybrid models of advising, involving both professional and faculty advisors.
- The Office of the Registrar and others in DUE worked with IS&T to develop enhancements to the student information that expand a suite of advising tools for students and advisors.
- UAAP, which manages UROP, drove a number of initiatives on mentorship and engaging young researchers to augment and model potential relationships between students and faculty. UROP presents a particularly good venue for student-faculty engagement. DUE plans to explore the idea of setting different expectations for UROP faculty supervisors and how they interact with their students.

DUE's ultimate goal is to evolve the advising system into a web of support for students and facilitate more student/faculty connections beyond the classroom. What is learned from assessments of UAAP's three-year pilot, OME's Interphase EDGE program, freshman learning community advising, outreach to STEM schools, and other sources will help decide which advising models to move forward in concert with the faculty and CUP. Undergraduate students have been and will continue to be involved in this process through CUP and the Student Advisory Committee to UAAP.

### **Supporting Education through a Dynamic Student Information System**

Significant progress was made to evolve the Student Information Systems (SIS) in key areas set by the education systems roadmap that the Information Technology Governance Committee approved in 2010. Led by the Office of the Registrar, in partnership with IS&T and in collaboration with the Office of Admissions, the Office of Faculty Support, and other DUE offices, several high priority projects moved forward this year. These include online registration, which successfully piloted in seven departments in September 2011 and expanded to all departments in spring 2012, and online grading, which initially piloted in Independent Activities Period (IAP) 2011, expanded through fall 2011, and fully implemented this summer.

Faculty contributed greatly to the progress, through their participation in the SIS Faculty Working Group. This group worked closely with the Office of the Registrar and IS&T to gather requirements and feedback, and gain departmental participation in project pilots. With the strong foundation of the roadmap and the DUE-IS&T relationship, DUE will continue to streamline SIS processes in ways that enhance academic life.



## Contributing to MIT's E-learning Strategy

DUE staff contributed significantly to developing and supporting MIT's e-learning strategy to enhance the on-campus educational experience for students. TLL and OEIT provided input to, assessed, and developed applications and materials for online learning initiatives, including several MIT Council on Education Technology (MITCET) experiments. Vijay Kumar, director of OEIT, developed the goals and metrics for DUE's Leveraging Educational Technology strategic theme, which he leads. This theme emphasizes technology-enabled ways to enhance teaching and learning for students and faculty.

The announcement of MITx presented new possibilities, considerations, and issues. Dean Hastings wrote a white paper to senior officers, proposing an education network initiative to address educational issues driven by MITx. Dean Hastings and Kumar coled, and two other DUE office heads participated in MITCET, which president Rafael Reif charged with providing strategic guidance and vision to online learning/residential education issues.

In May 2012, MITCET sponsored the workshop MIT Online Learning and Residential Education. The workshop's goals were to:

- Learn about the progress, costs, and benefits from online learning experiments undertaken this academic year
- Identify specific ways these experiments can help faculty teach in the MIT residential educational system
- Identify projects, experiments, and themes that MIT should consider to further the understanding and implementation of online learning in the MIT curriculum in order to enhance the residential educational experience

Over 100 faculty, as well as some academic staff and students, participated. Presentations and discussions focused on identifying the major considerations for adaptation and diffusion of the innovations presented. Plans are underway for a spring 2013 symposium for leading researchers and educationalists in related fields, to help identify and address major educational research issues stemming from massive open online courses.

## Delivering Effective Communications

In collaboration with ODGE, DSL, and the chancellor, DUE communications efforts were focused on improving student engagement through more frequent and transparent communications. In October 2011, a monthly student life and learning digest e-newsletter was launched to provide updates on key student issues and links to useful Institute resources. The digest has been well received; analytics on the student site show over 1,000 hits on the day each issue is emailed. This unsolicited comment from a graduate student illustrates the impact: "I just wanted to say that I really appreciate these Institute monthly digests. I don't always read them right away, but they provide a nice snapshot of especially the non-academic resources and events at the Institute."

Academic integrity was another focal point. Communications manager Anna Babbi Klein led the Academic Integrity Working Group in updating the MIT Academic Integrity Handbook to address current student practices and faculty expectations and provide detailed, current examples. Moving forward, this working group will collaborate on ways to increase awareness around academic integrity, including an interactive website targeted primarily at undergraduates.

### **Affirmative Action Goals and Successes**

DUE continued to be one of the most diverse organizational units at MIT, with an ongoing commitment to developing a workforce that reflects the rich diversity of the MIT community. The DUE office heads are expected to show leadership in the area of diversity, and this effort is shared across DUE. Every DUE employee shares responsibility for fostering an inclusive work environment in which all employees may do their best work.

As a result of the efforts of the leadership team and hiring managers throughout the organization, DUE succeeded in attracting and hiring underrepresented minorities and women to fill open positions across DUE. In the past year, DUE met its placement goals for women and minorities, and the unit's Diversity Fellows Program fulfilled its recruitment and development goals: a recent Diversity Fellow was retained upon completion of her two-year fellowship in OEIT, and a Diversity Fellow was hired in the Office of Admissions.

The most recent MIT affirmative action plan reported that 62% of all new DUE hires were women and 22% were minorities for November 2010–October 2011. During that period, DUE promoted 23 staff members: 16 (69.5%) were women and four (17.4%) were minorities.

### **Space**

Minor renovations of the Experimental Study Group on the sixth floor of Building 24 were completed this past year. New furnishings, chalkboards, and finishes improved classroom and teaching spaces, while the newly expanded and updated kitchen supports and strengthens the sense of community for that program. Significant space had been identified for the new home of D-Lab (Development through Dialogue, Design, and Dissemination) in the N51-N52 complex. With funding from DUE, the Committee for the Review of Space Planning (CRSP), the Edgerton Center, and a major donor, the space was renovated during the spring semester and D-Lab moved to its new home in May 2012. This new space provides new design/build and teaching space, open community and meeting space, and offices for staff. Its convenient location adjacent to the Edgerton Center—sponsored student clubs and teams and the Singapore University of Technology and Design collaboration allows for sharing of facilities, staff, and ideas. DUE continues to work with CRSP to identify a suitable location for TLL, which has outgrown its current suite in Building 5.

## Budget

Both the Office of the Registrar classroom technology and equipment budget and the D-Lab budget were approved for permanent base funding, to be ramped up over a three- to five-year period. This was important and good news for both offices, and recognized and regularized the activities and budget needs. Headcount and funding for the communications manager was also hardened this year.

DUE ended the academic year confident that its solid plan, strategic direction, excellent staff, and experienced leadership will help MIT realize the transformational benefits of the changes sweeping higher education

**Daniel E. Hastings**

**Dean for Undergraduate Education**

**Cecil and Ida Green Education Professor of Aeronautics and Astronautics and Engineering Systems**

**Elizabeth Reed**

**Senior Associate Dean for Undergraduate Education**

## Office of Admissions

The [Office of Admissions](#) enrolls a diverse and talented undergraduate student body composed of some of the world's most intelligent and creative individuals interested in an education centered on science and technology. The office also coordinates and supports the graduate admissions process across the Institute's 24 graduate departments. The students enrolled add to a vibrant campus community and go on to become leaders and innovators of our global society. The Institute upholds a commitment to meritocracy and fair access to the admissions process for students from all backgrounds.

The admissions office works closely with the offices of Student Financial Services, Undergraduate Advising and Academic Programming, Minority Education, and the Registrar, as well as the Office of the President, the Alumni Association, and the Committee on Undergraduate Admissions and Financial Aid. During Campus Preview Weekend, it coordinates with other offices in DUE, the Division of Student Life, the Department of Facilities, and academic departments. It also supports the admissions process for the Minority Introduction to Engineering and Science program, run by the School of Engineering.

## Review and Accomplishments

The Office of Admissions received 18,109 applications in AY2012, an increase of 1% over last year, for growth of 46% over the last five years. Admitted students totaled 1,620, which represented 8.9% of the applicant pool. The yield was up significantly, from 65% to 70%, the highest yield ever.



One factor that contributed to the more muted application increase and more significant increase in yield was the return of early admission programs to Harvard University and Princeton University. Four years ago, both universities dropped their early application programs (non-binding early action for Harvard, binding early decision for Princeton) as a way to “level the playing field” for low-income applicants. In AY2012, both schools reinstated their early application programs—both moving to a restricted early action program where students are not obligated to attend if admitted, but are restricted from applying to another early action or early decision program. This accounts for the decline in admitted students who were also admitted to one or more of MIT’s peer schools (Harvard, Princeton, Yale, and Stanford universities) to 32%, from almost 40% the prior year.

The target enrollment for fall 2012 was 1,130 freshmen; with the increased yield there was overenrollment by a handful, and it is expected that 1,135 students will be enrolled, without admitting anyone from the wait list. Applications for transfer admissions grew by 14%, to 563, and of those applicants 32 were admitted and 28 are expected to enroll.

This last year marked MIT’s fourth year as a QuestBridge partner school. QuestBridge, a nonprofit organization that recruits high-achieving students from low-income backgrounds, provided 1,147 applicants to MIT for entry year 2012, and MIT will be welcoming 56 QuestBridge students as part of the Class of 2016.

In 2005, professors Robert Morris and M. Frans Kaashoek, of the Department of Electrical Engineering and Computer Science (EECS), developed a streamlined online graduate application and application review system known as GradApply. Prior to this development, all online graduate application processing was outsourced to external vendors. In AY2012, there was a significant effort to encourage more graduate departments to adopt the EECS system, and for entry year 2012, 14 graduate departments utilized GradApply.

MIT Admissions continued its leadership in online communications. This year, the office successfully launched a major redesign of the admissions website, [mitadmissions.org](http://mitadmissions.org). Over 2.2 million visitors viewed more than 15 million pages on the admissions website. More than seven years after being introduced, the blogs continue to be a very popular part of the site. This year, a suite of videos was added to the web portfolio; these videos were viewed more than 80,000 times.

In AY2012, the Office of Admissions continued with a highly targeted recruitment outreach program. A new publication highlighting the ever-popular admissions blogs was launched, mailed directly to students who, through research and analysis, were determined to be strong candidates for MIT. We visited these students in 44 states through 68 Central Meeting programs, 38 of which were MIT-only and 30 of which were in conjunction with peer schools. These meetings attracted more than 10,000 people. On campus, we welcomed more than 25,000 admissions visitors. The Campus Preview Weekend yield event continued to be popular, with more than 1,100 of the admitted students attending.

The composition of the Class of 2016 reflects the ongoing commitment to student diversity and excellence. Of the freshmen entering in 2012, 46% are women, 24% are underrepresented minorities, 13% are the first generation in their families to attend college, and 10% are international citizens. Students will be coming from 46 states and 54 countries. Ninety percent of the incoming class members have been leaders (president, captain, etc.) of an organization, and nearly a third has founded an organization or business. Forty-four percent were valedictorians, and 92% graduated in the top 5% of their high school class. The freshmen enrolling in 2012 arrive with mean Scholastic Aptitude Test scores of 716 verbal and 765 mathematics, compared with 710 verbal and 762 mathematics last year.

The MIT Educational Council increased the number of alumni interviewers to 3,531. Educational counselors conducted 15,034 interviews, providing interviews for 83% of applicants. The admission rate for students who had an interview (or did not have access to one) was 10.8% but only 1.1% for those who chose not to interview. The pool of interviewers is 19% international and 35% female. This year's group of educational counselors includes members from the Class of 1941 through the Class of 2011, with 73% of the volunteers hailing from the last 30 graduating classes.

In AY2012, there was a continued focus on the use of electronic communications for more cost-effective and targeted outreach. The new document imaging system initially introduced in AY2011 continued to provide improved efficiencies in document handling and streamlined application review and selection processes.

### **Staffing**

In AY2012, the Office of Admissions was composed of 19 administrative staff, 14 support staff, plus one Diversity Fellow: 21 women and 11 men, plus two open six-month support positions. Thirty-eight percent of the staff were underrepresented minorities. The office also continued with the practice of relying primarily on temporary workers to address dynamic staffing needs during peak periods.

**Stuart Schmill**

**Dean of Admissions**

### **Office of Educational Innovation and Technology**

The Office of Educational Innovation and Technology (OEIT) marked the 2012 academic year with several important achievements: the development of DUE's strategic theme [Leveraging Educational Technology](#), and the advancement of the MIT Council on Educational Technology (MITCET) projects for online education. Through these and other efforts, OEIT continues to strengthen its role and reputation as an organization that is making valuable contributions towards improving teaching and learning through innovative technology—a fact that is underscored by positive comments from engaged faculty, the chancellor, and the DUE Visiting Committee.

Credit for these contributions goes to a talented and committed OEIT staff and DUE management team, and the strategic orientation that OEIT has maintained. Yet staff and resources remain a significant challenge, despite the dean's support, due to increased engagement with edX and OEIT's broad role in supporting technology-enabled curriculum development and shaping the delivery environment for the future.

## **Accomplishments**

### ***DUE Strategic Theme for Leveraging Educational Technology***

The development of the DUE strategic theme *Leveraging Educational Technology* documents Institute recognition that educational technology is central to educational impact and change, and offers a plan for creating a modern delivery environment for MIT education. Several recent online initiatives, such as MITx, serve as a backdrop for the projects under this strategic theme, whose major goals are as follows:

- Develop applications to enable and support flexible, modular, and concept-based approaches for deeper learning and alternative learning pathways: transform 15–20 courses through concept and learning objective mapping within the next five years
- Develop interactive content, tools, and services to promote learning experiences that leverage open and online educational resources: develop a collection of exemplary, interactive content/resources using OpenCourseWare (OCW); Software Tools for Academics and Researchers (STAR); science, technology, engineering, and mathematics visualization; and other open resources to support 30 subjects by 2015
- Design and implement learning delivery environments that include configurable, contemporary applications as well as flexible learning spaces: configure 20 spaces to support technology-enabled active and collaborative learning and curriculum innovation initiatives by 2016

### ***Bridging Research and Learning***

OEIT's STAR Group continues to support and improve its software offerings: StarBiochem, StarMolsim, StarGenetics, and StarORF. Over the last academic year, significant improvements were made to StarBiochem, StarMolsim, StarGenetics, and StarCellBio. Usage of the STAR software suite remained steady at MIT, while worldwide usage increased dramatically in AY2012, from 28,069 users to 200,697.

Multiple funds were awarded from the National Science Foundation and the Howard Hughes Medical Initiative (HHMI) to professor Chris Kaiser, professor Graham Walker, and associate professor Jeffrey Grossman, which allowed the STAR program to develop StarCellBio, a new STAR software product for teaching cell biology; begin work with the NanoHub project; and fund an additional Star Group position.

The Star Group continues to face challenges, however, due to resource limitations: StarBacteria, scheduled for spring 2012 release, was delayed. StarCluster, giving researchers access to low-cost cloud computing, reduced its scope. Most importantly,

support and development of StarCellBio is competing with priorities around online MITx biology courses.

### ***Linking Digital Content and Curriculum***

OEIT completed initial development of the [MIT Core Concept Catalog \(MC3\)](#), which enables teachers or learners to navigate open education resources, such as OCW, based on concepts and/or learning objectives. Plans are in place to develop initial user functionality on top of MC3 in direct support of various MIT projects, including but not limited to the Guided Learning Pathways project, led by professor Richard Larson; the Relate project, led by professor David Pritchard; Accreditation Board for Engineering and Technology and other accreditation data; the Teaching and Learning Lab's Singapore University of Technology and Design concept mapping efforts; and the replacement of Crosslinks, led by professors Haynes Miller and Karen Willcox.

This year, OEIT, working with Information Systems and Technology (IS&T), launched a set of projects called MITConnect, designed to build a set of services that allows meaningful integration of educational applications with MIT data and systems. Initial work focuses on an educational role service built on MIT's existing Roles Database. Additional services will support content discovery and curricular topic modeling, and various aspects of assessment.

OEIT collaborated with MIT Libraries/Academic Media Production Services/TechTV to develop a plan for Spoken Media (SM) integration, to provide low-cost transcription services and broad search capabilities, as part of a larger planned TechTV update. OEIT currently runs SM as a pilot sustainable service.

The Artemis (Art for Engineering, Mathematics, and Science) visualization program is in its first year of operation, with an expanding portfolio and growing interest among the MIT community. Numerous three-dimensional animations currently support professor Herbert Einstein's Physical Geology Tutor program, and collaboration between OEIT and University Lyon 1 allows shared content development.

[NB](#) is a browser-based collaborative annotation tool, developed by professor David Karger and his team. With the support of a d'Arbelloff Fund for Excellence in Education grant, OEIT helped NB to transition to an open-source project, building a developer community for long-term support.

OEIT developed a simple tool, called [CaPRéT](#) (Cut and Paste Reuse Tracking), funded by a grant from JISC (formerly known as Joint Information Systems Committee) in the UK, to help educational content providers, such as OCW, better track how content is being reused.

### ***iCampus Student Prize***

OEIT, on behalf of the Council on Education Technology, awarded the [2012 iCampus Student Prize](#) to Danny Ben-David, Class of 2015, for CourseRoad, a user-friendly page where students can map out their classes through their undergraduate careers. The 2012 competition saw 16 submissions and resulted in five first-round winners, a grand

prize winner, and a runner-up (Dormbase). The iCampus Student Prize is an annual competition, endowed by Microsoft Research and MIT, that recognizes the innovative and creative application of technology to improve living and learning at MIT.

### ***MITCET Planning and Experiments***

OEIT continued the significant levels of coordination and support activities for all aspects of the MIT Council on Educational Technology (MITCET) process for planning technology-enabled transformation in the MIT learning experience. To that end, MITCET sponsored a set of experiments for online education in spring 2012, with particular emphasis on modularity in course delivery to allow greater flexibility in time and geography for student access to courses, while enhancing the student learning process:

- A Chemistry Bridge experiment created modules for self-paced learning and review of complex and recurring core concepts.
- An Aeronautics and Astronautics 16.20 and 16.90 experiment moved from lectures to interactive class sessions, while enabling remote student participation, active learning experiences, and self-paced completion of the courses.
- A Mechanical Engineering 2.002 experiment taught a core required class to students at distance by modularizing mechanics and materials into discrete learning experiences.
- An Anthropology module experiment is being launched to use online modules to teach ethnographic research methods, made available as a general MIT online resource for students.

### ***Workshop on Online and Residential Education***

OEIT conducted a MITCET sponsored an [Online Education Workshop](#) in May 2012, which brought together more than 100 MIT faculty and staff to discuss the MIT online initiatives that are underway and their impact and implications for MIT education.

Key themes included the importance of faculty and student engagement, assessments as a rich area for exploration, the need for best practice guidelines around online teaching, interest in using students to better scale online teaching efforts, and various services and infrastructure that would help advance online learning (inexpensive video capture services, an inventory of existing online teaching experiments, and instructional services for working with technology).

### ***Flexible Learning Environments***

OEIT's continued its support of spaces and experimental teaching and learning environments in AY2012. Over 250 workstation images were deployed on computers in physical spaces and on mobile platforms. Sixteen classes and 25 Independent Activities Period (IAP) sessions were hosted in these spaces and supported by OEIT staff.



The first large-scale rollout of Desktop Virtual Machines images met with great success in AY2012, and will allow the agile deployment of educational resources and computing environments on high-end workstations, mobile devices, and thin clients.

OEIT also continues to deploy and evaluate classroom technologies such as screen capture, mobile devices, remote screen casting, and student response systems for enhanced learning outcomes.

OEIT made major contributions in the formulation of the MIT 2030 Teaching and Learning Spaces final report.

### ***Educational Outreach***

OEIT's educational outreach efforts in AY2012 included the following:

#### *Social Media*

OEIT extended its influence in the social networking arena with an OEIT presence on [Facebook](#) and [Twitter](#), and an active blog that is displayed on OEIT's website, and pushed through RSS to the [MITCET](#) and the [Teaching with Technology](#) websites.

The [Gallery of Educational Innovation](#) added new case studies and stories on innovative educational practices and efforts at MIT.

#### *New Media Consortium*

OEIT and IS&T hosted the [New Media Consortium Summer Conference](#) for over 450 attendees. The sessions featured initiatives from institutions across the country, sparking vibrant real-time and online discussions. The conference featured several presentations by MIT faculty and staff, including Media Lab director Joichi Ito, Professor Larson, Media Lab Sponsored Research Staff program officer Sherry Lassiter, and the Program in Writing and Humanistic Studies principal research associate Kurt Fendt, among others.

#### *Conversations on Quality*

OEIT collaborated with the Bill and Melinda Gates Foundation to host [Conversations on Quality: A Symposium on Online Learning in K–12](#), in January 2012, where MIT faculty and over 75 national experts discussed the challenges of online learning environments. The conversations explored shared issues and solutions around quality and relevance in online learning for grades K–12, including learning outcomes, deep learning, accelerated learning, learning access/success of underrepresented students, and more flexible learning. OEIT used the opportunity to identify critical areas for MIT to explore.

#### *Independent Activities Period*

OEIT sponsored 15 Independent Activities Period (IAP) sessions on topics including academic skills and arts, and an innovation session that featured discussion of critical educational values and priorities related to MITCET-led efforts to explore technology-enabled education at MIT.

#### *MIT-Haiti Workshops*

OEIT conducted several [workshops](#) in Haiti on March 28–31, 2012, for faculty- and curriculum-development activities in Haiti, following the [MIT-Haiti Symposium](#), in

October 2010. MIT faculty and staff presented active learning [workshops](#) for biology and physics through the STAR tools, Technology Enhanced Active Learning, and Open Education to over 50 educators from Haitian universities and schools. A general planning session identified the infrastructure, support, and other resources needed to implement these workshops on a larger scale. The workshops were regarded as highly useful and led to requests for an ongoing program of engagement.

#### *Additional Outreach Activities*

STAR staff participated in workshops for K–12 students and teachers for the Department of Biology, the Whitehead Institute for Biomedical Research, and high school faculty/student workshops at area high schools. The group received a Jobs for Youth JFYNetWorks Innovation award for its work with area high schools.

OEIT, with other DUE colleagues, has participated in discussions with the White House Initiative on Historically Black Colleges and Universities on the topics of improving graduation rates and admission to elite graduate programs and professional schools.

OEIT collaborated with the Open University, Anne Arundel Community College, and the University of Maryland University College on [Bridge to Success](#), which is funded by an Educause Next Generation Learning Challenges (NGLC) grant, and designed to bring Open University's introductory courses to US community colleges. OEIT provided expert guidance on open education practices and is using this opportunity to inform MIT initiatives such as OCW and MITx.

OEIT continues to explore cooperative activities with select institutions and agencies: memoranda of understanding were established with University Lyon 1, the Open University of Catalonia, and Amrita University, in India, for specific educational technology areas.

#### *Staffing*

AY2012 was marked by two key staff transitions. Senior strategist for educational outreach Iiyoshi Toru left MIT to join the Center for the Promotion of Excellence in Higher Education, at Kyoto University, as a professor. Andrew McKinney left OEIT to join the Mobile Learning Lab as a senior architect/developer.

OEIT continues to make substantial progress towards developing a financial, staffing, and operational strategy for configuring OEIT as an increasingly soft-funded organization through the engagement of its staff in a range of grant-funded initiatives, such as HHMI, alumni funds, MITCET, the Bill and Melinda Gates Foundation, and Educause NGLC.

However, resources for OEIT remain a challenge, particularly base funding for additional staff required to meet the increasing demand for OEIT's engagement in supporting faculty with their online educational technology needs, including MITx.

**M. S. Vijay Kumar**  
**Director, Office of Educational Innovation and Technology**  
**Senior Associate Dean**

## Office of Experiential Learning

### Highlights and New Directions

The [Office of Experiential Learning](#) brings together the Edgerton Center, Concourse, the Experimental Study Group (ESG), and Terrascope. Its director is J. Kim Vandiver, dean for undergraduate research and director of the Edgerton Center. The faculty directors for Concourse, ESG, and Terrascope are, respectively, professors Bernhardt Trout, Alexander Slocum, and Samuel Bowring. Each director has provided separate annual reports, which follow this brief introduction.

### Edgerton Center

The mission of the [Edgerton Center](#) is to uphold the legacy of Harold “Doc” Edgerton— inventor, entrepreneur, explorer, and longtime MIT professor—by promoting hands-on and project-based learning; supporting student clubs and teams; involving students in international development projects; supporting individual student inventors; maintaining MIT’s expertise in high-speed and scientific photography; and improving K–12 education at local, state, and national levels.

### K–12 Outreach

The Edgerton Center began a program 17 years ago to bring fourth- through eighth-grade students from the Cambridge public schools to MIT to enrich their studies with hands-on science and engineering activities. The program now hosts approximately 3,000 student visits annually, from public, private, and home schools in the Greater Boston area. The trips are organized as half-day, project-based lessons that are aligned with the required curriculum of the Cambridge Public Schools. Edgerton Center program coordinator Amy Fitzgerald and K–12 education outreach project coordinator Jessica Garrett lead the lessons, with help from several MIT students. When the program began in 1996, MIT was receiving no college applications from Cambridge Rindge and Latin School. Today, it receives eight to 14 applicants per year, and one to three Rindge and Latin students enroll at MIT annually.

Building on the Cambridge success, the center began working eight years ago with the John D. O’Bryant School of Mathematics and Science, in Roxbury, MA. Since 2007, Edward Moriarty, Edgerton Center technical instructor, has been on-site at the O’Bryant School and is in the classroom most days; he has brought many students from O’Bryant School (and other area schools) to the center on Saturdays for wide-ranging, hands-on science, technology, engineering, and mathematics (STEM) projects. Five O’Bryant School graduates have matriculated to MIT since the inception of the program. The center actively helps them maintain their ties with their high school, with the goal of fostering a STEM-centric culture at the school that will become self-sustaining. 2012 MIT graduate and O’Bryant School alumnus Alban Cobi was recently hired to work with Mr. Moriarty to deepen and expand this program. Under Mr. Moriarty’s guidance and leadership, MIT alumni in Alaska and Florida have replicated the Saturday drop-in engineering program.

The Edgerton Center is continuing its collaboration with the Gloucester Public Schools to build interest in STEM fields among middle school and high school students. A key aspect of the program has been building ties between the Gloucester schools and other K–12 groups at MIT, including the Lemelson-MIT Program; the MIT Sea Grant program; the MIT Haystack Observatory; the Scheller Teacher Education Program; the MIT Center for Environmental Health Sciences; the MIT Museum; and the Department of Aeronautics and Astronautics, in the School of Engineering. During summer 2011, the Edgerton Center hosted 40 middle school students for a two-week MIT hands-on summer experience, and contributed to the planning of a technology resource center at a Gloucester middle school.

Finally, the Edgerton Center is in the second year of a program with General Electric (GE), and particularly the GE plant in Lynn, MA. The center's goal is to create a model summer program for girls that can be disseminated to GE plants across the nation. The first pilot offering took place in July 2011, with 25 girls (all rising seventh-graders) from Lynn public schools attending. Women who work with GE attended each day's program and shared stories of their careers with the students, as well as assisting in engaging the girls in hands-on engineering activities. Ms. Garrett and Ms. Fitzgerald of the Edgerton Center staff are consulting with the first two follow-on programs, which are at the Rensselaer Polytechnic Institute and the Milwaukee School of Engineering.

### ***International Development Initiative***

The Edgerton Center is home to two programs focused on international development: the International Development Initiative (IDI), and **D-Lab** (Development through Dialogue, Design, and Dissemination), both launched by senior lecturer (and MacArthur Fellow) Amy Smith. Originally a joint program of the Edgerton Center and the Public Service Center, today IDI stands as a separate entity that serves the MIT community. IDI supports students through programs such as the Technology Dissemination Fellowship and the Yunus Innovation Challenge. The initiative also supports students conducting research as part of the Design for the Developing World program within the International Design Center (itself a collaboration with the Singapore University for Technology and Design [SUTD]). Each year IDI runs a series of networking and showcasing events that contribute to the vibrant international development ecosystem at MIT. IDI manager Laura Sampath also works to better prepare MIT students to be leaders in the international development field.

### ***D-Lab***

The D-Lab program has continued to thrive and grow. It added two new academic offerings to the suite of courses offered, started new research projects in the areas of health and sanitation, and expanded fieldwork in the area of creative capacity-building throughout various African countries. AY2012 was also the first year of D-Lab's Scale-Ups program, which seeks to accelerate the process of bringing technologies to market at scale in the developing world. The program provides teams of innovators and entrepreneurs with seed funding, skill building and mentoring, and opportunities to find and cultivate partnerships. Projects will progress from Phase I (validate needs and create initial prototypes), through Phase II (advancing designs through product and market testing), and into Phase III—implementing the manufacturing and distribution

strategies to bring goods to market, through industry partnerships or through newly formed social ventures led by entrepreneurs from MIT and the developing world.

D-Lab courses continue to be popular with MIT students. Financial support from the provost and the Institute enables D-Lab to move forward with funded instructors and materials necessary for course delivery. This past year, approximately 200 students enrolled in D-Lab classes, predominantly undergraduates. During Independent Activities Period in January 2012, over 40 students traveled to Brazil, Cambodia, Ghana, India, Honduras, and Zambia to work intensively in the field with community partners. Spring break had students in Ecuador identifying design challenges for work in the second half of the semester.

Both IDI and D-Lab benefit from the Edgerton Center's participation in the new SUTD. Professor Vandiver is the principal investigator in the research area of engineering for the developing world. In June 2012, D-Lab moved into newly renovated space in Building N51. The renovation was made possible by a generous gift from Shashank '81 and Medha Karve. The new D-Lab space is adjacent to the SUTD International Design Center, bringing together in one building the hands-on engineering design activities of Edgerton Center's competition teams, D-Lab, IDI, the Gordon-MIT Engineering Leadership Program, the MIT Museum, the MIT Electronics Research Society, and the architecture shop. This center of design and innovation will make MIT the dream educational institution of every parent and child who come to visit.

### ***Hands-on Learning for MIT Students***

#### *Student Clubs and Teams*

The Edgerton Center is home to approximately 10 hands-on student clubs and teams, including the Solar Electric Vehicle Team (SEVT) and the Formula SAE (previously known as Society of Automotive Engineers) team. This past year, SEVT participated in the World Solar Challenge, in Australia. At the race, the team demonstrated extreme resourcefulness and ingenuity, overcoming a major error by their shipping company and designing and building, in 36 hours, a battery array from parts donated by other contestants. Other MIT teams have built small electric vehicles, designed high-capacity rapid-charge batteries for automotive applications, and built an autonomous submarine to seek offshore oil plumes—this last project will be tested this summer off the coast of Fairbanks, Alaska.

#### *Hands-on Academic Offerings*

The Edgerton Center offers 20 to 25 subjects for credit each year, including 12 subjects associated with D-Lab, and 6.163 Strobe Project Lab, taught by assistant director James Bales. The center had 29 people travel from Europe, Africa, and both Americas to attend the 2012 offering of the professional short course 6.51s High-speed Imaging for Motion Analysis.



### **Staffing**

Alban Cobi '12 joined the Edgerton Center staff as a technical instructor, where he will help with STEM outreach to the John D. O'Bryant School of Mathematics and Science (his alma mater), in Boston, and other area schools.

### **Awards**

Professor Vandiver, director of the Edgerton Center, received the Gordon Y. Billard Award "for special service of outstanding merit performed for the Institute."

### **Concourse Program**

**Concourse** is a highly structured and integrated program for freshmen. The curriculum covers the standard science core curriculum (mathematics and physics), offers its own core humanities classes, and integrates both into a larger human context in its weekly freshman advising seminar. The structure of Concourse follows that of the standard curriculum, with scheduled lectures, recitations, problem sets, and quizzes. Small class size (maximum 60 students) and extensive personal interaction with faculty and tutors provide students with the intimate atmosphere of a small school, while retaining access to the vast range of opportunities offered by the Institute as a whole.

### **Personnel**

Members of the Concourse faculty and staff for AY2012 were program administrator Paula Cogliano; instructor John Keck; instructor Robert Winters; senior lecturer Sekazi Mtingwa; senior lecturer Lee Perlman; instructor John Pope; lecturer Linda Rabieh; instructor Steven Lenzner; professor Adam Schulman; and Professor Trout, Department of Chemical Engineering. In addition, 11 undergraduates were employed as tutors and graders.

### **Enrollment**

Concourse had 50 students registering for the fall term. In the spring, enrollment was set at 26.

### **Teaching and Curriculum**

CC.110 Becoming Human: Ancient Greek Perspectives on the Best Life was offered as a communication-intensive Humanities, Arts, and Social Sciences (HASS) subject in the fall term, as well as CC.801 Physics I, CC.1802 Calculus II, and recitations in the calculus sequence (18.01A/18.02A). In the spring term, CC.111 Modern Conceptions of Freedom was offered as a communication-intensive HASS subject, as well as CC.802 Physics II and CC.1803 Differential Equations. In the fall, the Concourse seminar was CC.A10/CC.010, offered as a freshman-advising seminar. The spring seminar was CC.011.

### **Accomplishments**

With the new humanities sequence, Concourse has inaugurated its new curriculum. Despite Institute-wide budget cuts, the program continues to maintain a high level of course offerings. Concourse has attracted the interest of outside donors, such as the

Thomas W. Smith Foundation and the Jack Miller Center, and the program hopes to continue to develop a relationship with both organizations as it grows.

The new curriculum has returned the program to its interdisciplinary beginnings. Having completed the second year with this curriculum, Concourse already has a dedicated group of alumni who actively participate in its extensive Campus Preview Weekend recruitment, and, as a result, has had a high number of applicants for the program two years in a row. To better introduce these incoming students to Concourse's new curriculum and approach, the program redesigned the website. These developments have generated positive feedback—the MIT admissions blog promoted Concourse last spring, and Concourse was awarded the 2011 Irwin Sizer Award for its contribution to MIT education.

## **Experimental Study Group**

### ***Student Statistics***

Sixty first-year students (including two sophomore transfer students) were enrolled for one or more terms in the Experimental Study Group (ESG) this year, with another 29 students waitlisted for the program. Fifty-seven percent of its students were female, 32% were underrepresented minorities, and 25% were international students (from countries including China, South Korea, Nigeria, Rwanda, Spain, St. Vincent, Japan, Kenya, Cambodia, Tanzania, Thailand, and Zimbabwe). ESG enrolled another 93 students (87% of whom were not in ESG as freshmen) in seven pass/fail undergraduate seminars sponsored by ESG in the spring.

### ***Staff and Faculty***

ESG's administration was headed by mechanical engineering Professor Slocum, and included associate director Holly Sweet and program coordinator Graham Ramsay. Lecturer Analia Barrantes, a specialist in physics education research, headed the ESG physics staff and was joined by lecturer Paola Rebusco, who experimented with using astronomy examples to teach freshman physics. The mathematics staff was headed by lecturer Jeremy Orloff and included lecturer Gabrielle Stoy. The chemistry and biology offerings at ESG were taught by lecturer Patricia Christie. In the fall term, lecturer Dave Custer taught ES.033J Science Writing and the New Media. ESG staff were assisted by 42 undergraduates (43% of whom were women), all of whom had participated in ESG's teaching seminar. These teaching assistants provided excellent service to freshmen, learned valuable teaching and leadership skills, and maintained an overall grade point average of 4.6 while doing so.

### ***Educational initiatives***

#### ***New Spring Seminars***

ESG sponsored five new seminars this past spring taught by MIT alumni, ESG staff, and a visiting professor from Harvard University. These seminars included ES.S60 Art and Science of Happiness (Dr. Sweet); ES.S10 Fiber Seminar (Debra Slocum); ES.S20 Polymathy: The World in 10 Curves (visiting lecturer Charles Fadel and ESG alumnus Nadezhda Belova); More Than a Website: Creating Your Own Dynamic Brand on the

Interweb (Mr. Ramsay); and ES.S41 Speak Italian...with Your Mouth Full (Dr. Rebusco). Each class of ES.S41 was videotaped by Mr. Ramsay and is available for viewing on Tech TV.

### *Singapore University of Technology and Design*

Three members of the ESG staff were involved in mentoring faculty from the Singapore University of Technology and Design (SUTD) throughout the year. Dr. Christie supervised SUTD faculty members, who helped teach chemistry in fall 2011 and who participated in the ESG teaching seminar. Dr. Stoy mentored professors Sun Jun, Yu Gu, and Yuen Chau in the fall term, and Professor Jun in the spring term. The faculty members attended 18.01 ESG classes in the fall and 18.02 ESG classes in the spring. In addition, they had weekly meetings with Dr. Stoy for discussion of class material in 18.01 and review of videotaped presentations. Dr. Stoy also led a half-day retreat in November 2011 for ESG mathematics teaching assistants as well as the SUTD faculty visitors. Mr. Custer worked with SUTD writing faculty to help them conceptualize how to bring ESG's community-based learning philosophy into the SUTD writing and engineering curriculum.

### *ESGx: Student-generated Educational Videos*

ESG piloted an experimental project, ESGx, in the spring designed to teach undergraduates the skills required to devise, teach, and create video content for problems taken directly from the MIT core curriculum. Under the direction of Mr. Ramsay, along with close supervision of the ESG teaching staff, five students created a series of five- to nine-minute videos that concisely explain and contextualize specific problems in physics, mathematics, and biology. The resulting videos use illustrations, demonstrations, animations, and commentary that present these problems from the students' perspective and can be found at <http://techtv.mit.edu/collections/webmitedu>.

### *Mathematics Initiatives*

Dr. Stoy taught a recitation of 18.06 Linear Algebra for the first time at ESG this spring, and Dr. Orloff contributed mathematics videos for 6.002x to MITx. He also wrote the MIT OpenCourseWare course (18.03SC), which was based on a combination of ESG 18.03 and 18.03 as taught in the Department of Mathematics. Dr. Stoy supervised mathematics teaching Undergraduate Research Opportunities Program (UROP) projects for ESG teaching assistants Joel Schneider '15 and Abiy Tasissa '12. The UROP projects included production of video material for Dr. Stoy's 18.02 classes and for ESGx.

### *Awards*

Winners of the annual Peter and Sharon Fiekowsky Community Service Award (for outstanding contributions to the ESG community) included freshmen Mario Martinez, Hikaru Miyazaki, Nursen Ogutveren, Prakriti Paul, and Yiping Xing, and sophomore Jonathan Abbott. Winners of the annual Fiekowsky Excellence in Teaching Award (given to graduating seniors who have demonstrated excellence in teaching at ESG over a sustained period of time) included Reuben Aronson, Alban Cobi, Jayson Lynch, Abiy Tasissa, Amanda Turk, and Lizzy Wei. Joel Schneider won an MIT freshman award for distinguished achievement in academics and research for his work in developing mathematics problems sets and videos for Dr. Stoy.

### **Fundraising**

Dr. Sweet is continuing to work with ESG alumni to raise a \$1,500,000 endowment within the next 10 years. This endowment will be used to support student teaching, educational innovation, undergraduate seminars, and community activities not currently covered under ESG's base budget. In addition to an online fundraising effort, she met regularly with the ESG alumni steering committee and staff from the Office of Resource Development, conducted visits to potential donors, and organized an ESG alumni reunion. This year, ESG had a record 52 donors, with significant gifts provided by Allen Baum '74, Ian Eslick '95, Peter Fiekowsky '77, Herb Lin '73, and Gregory Moore '73.

### **Conclusion**

ESG is dedicated to offering undergraduates small group learning in a community-based setting as well as the opportunity to teach and learn in a collaborative, interactive environment. The program is proud of its history of educational experimentation, including its seminar series and publication of books based on materials developed at ESG. In the coming year, it looks forward to working closely with different departments at MIT to continue to develop and promote successful ESG educational experiments to the regular curriculum and to educational settings outside MIT.

### **Terrascope**

One of Terrascope's goals is to teach students how to develop skills most valued by graduate schools and employers: how to analyze and solve complex problems; how to work effectively as part of a multidisciplinary team; and how to communicate complex ideas in a variety of formats, including formal presentations, large interactive exhibits, web pages, and radio broadcast segments. Each year, freshmen propose a solution to a different complex problem in a fall credit-bearing subject (12.000 or Mission 20xx, where xx is their graduation year). While the problem, which forms the focus for the year's curriculum, typically involves aspects of the earth system, Terrascope is designed to be a valuable experience for all students no matter what their chosen field of study. Core science and mathematics subjects are taken outside the program. Program faculty and staff advise all students who initially join the program each fall.

### **Program Highlights**

In AY2012, in 12.000 Solving Complex Problems, 39 students worked in teams to identify ways to understand the problems posed by disappearing biodiversity and develop ways to prevent its loss. Their solutions and the fall's final presentations can be found at <http://web.mit.edu/12.000www/m2015/>.

In Terrascope's spring subject, 1.1016 Communicating Complex Environmental Issues, small teams of students built on their fall experience by developing prototypes, models, and demonstrations of ideas and technologies related to their exploration of biodiversity. Their work was presented to the public in a "Bazaar of Ideas."

Students in SP.360 Terrascope Radio produced a radio segment using sound gathered in Costa Rica.

### **Field Trip to Costa Rica**

A group of 35 Terrascope students, faculty, staff, and alumni mentors visited Costa Rica during spring break. This excursion enabled students to gain firsthand experience in a diverse ecosystem facing many of the issues they identified during the semester as crucial to conservation of biodiversity. The visit was funded in part by the Baruch Family Foundation and was conducted in collaboration with the Earthwatch Institute. To learn more about this year's field visit, visit the students' [blog](#) of their experiences.

### **Staff**

Samuel Bowring, Robert R. Shrock professor of geology and MacVicar Faculty Fellow, directs Terrascope; he taught 12.000 Solving Complex Problems with help from teaching assistant Seth Burgess, a large group of undergraduate teaching fellows, and alumni mentors. Martin Polz, professor of environmental and civil engineering, was lead faculty member for 1.016 Communicating Complex Environmental Issues and was assisted by lecturer Ari Epstein and technical instructor Steven Rudolph. Lecturer Epstein also taught SP.360 Terrascope Radio. Debra Aczel was the program administrator.

#### **J. Kim Vandiver**

**Director, Office of Experiential Learning and the Edgerton Center**  
**Dean for Undergraduate Research**  
**Professor of Mechanical and Ocean Engineering**

#### **Bernhardt Trout**

**Director, Concourse**  
**Professor of Chemical Engineering**

#### **Alexander Slocum**

**Director, Experimental Study Group**  
**Neil and Jane Pappalardo Professor of Mechanical Engineering**

#### **Samuel Bowring**

**Director, Terrascope**  
**Robert R. Schrock Professor of Geology**  
**MacVicar Faculty Fellow**

### **Office of Faculty Support**

In AY2012, the Office of Faculty Support (OFS) focused on its mission of helping faculty develop and coordinate the undergraduate curriculum and educational programming, supporting faculty governance, and providing information and infrastructure related to undergraduate education. Special activities included assumption of the MacVicar Faculty Fellows Program's administration; assessment and support for innovative Humanities, Arts, and Social Sciences Exploration (HEX) subjects within the Humanities, Arts, and Social Sciences (HASS) Requirement; adding Course 6 to the Institute-wide



subject evaluation system; and leadership of the Online Registration Phase II project of enrollment management. OFS staff continued the essential work of supporting the Committee on Undergraduate Programs (CUP), its standing Subcommittee on the Communication Requirement (SOCR) and Subcommittee on the HASS Requirement (SHR), and other key groups addressing the undergraduate curriculum, including the Undergraduate Officers Group; overseeing the central budget for the Communication Requirement (CR); managing the selection process for and distribution of curriculum development funds; administering and developing policies for the online subject evaluation system; and supporting faculty innovation in education.

### **MacVicar Faculty Fellows Program**

The [MacVicar Faculty Fellows Program](#) was moved to OFS, where its administration can be led by a MacVicar Fellow, dean Diana Henderson, who directs OFS. Dean Henderson and her team worked to increase the number of nominations for Fellows, the sense of community among Fellows, and attendance at public events offered by the program. A larger number of nominations, including a record number of female nominees, resulted, as did greatly increased attendance at public events.

In the fall, dean of engineering Ian Waitz, a MacVicar Fellow, addressed a standing room only audience on “Thoughts on the Future of Engineering Education at MIT.” His speech was followed by a reception, which was one of four activities for Fellows held in the fall, including a luncheon, an informal gathering, and a meeting with the Undergraduate Officers Group to discuss MITx, MIT’s online learning initiative, with provost Rafael Reif.

MacVicar Day, on March 16, 2012, began with the announcement of four new MacVicar Fellows: associate professor William Broadhead, of the Department of History; professor Leslie Pack Kaelbling, of the Department of Electrical Engineering and Computer Science (EECS); professor David Kaiser, of the Program in Science, Technology, and Society; and professor Nancy Lin Rose, of the Department of Economics. They were welcomed by other Fellows at a luncheon, then introduced by dean Daniel Hastings at a public symposium entitled *Innovations in Undergraduate Education at MIT: Past, Present, and Future—In the Tradition of Margaret MacVicar and Robert Silbey*. Moderated by Dean Henderson, the symposium honored MIT’s long tradition of excellence in teaching and paid special tribute to Professor Silbey, a champion of undergraduate education and a MacVicar Fellow, who died in October 2011. Speakers included professor Linda Griffith, of the Department of Biological Engineering; professor John Essigmann, of the Department of Chemistry; Professor Broadhead; associate professor Arthur Bahr, of the Literature Section; Joel Yuen ’07, PhD candidate in chemical physics at Harvard University; and professor Robert Redwine, of the Department of Physics. MacVicar Day concluded with a faculty reception at Gray House, the Institute president’s home, where the new Fellows received awards from President Reif.

An end-of-year Fellows luncheon was held in May. The MacVicar team included associate dean Mary Enterline, administrative assistant Deborah Boldin, information technology (IT) consultant Matthew Davies, and administrative assistant Brian Nelson, all from OFS; administrative assistant Daniel Nocivelli, from the Teaching and Learning

Laboratory; and administrative analyst Judy Leonard, from the Office of Educational Innovation and Technology.

### **Enrollment Management**

As part of the Online Registration Phase initiative, a project team was formed in spring 2012 to address enrollment management concerns, such as space limitations, caps on class sizes, and prerequisite enforcement. Dean Henderson serves as business lead, with assistance from OFS Associate Dean Enterline, associate dean Anna Frazer, and communications/data specialist Rosanne Santucci. The project's aim is to develop tools and information that will help students and advisors find appropriate subjects in a timely fashion, aid instructors in determining which students need to be accommodated in limited enrollment subjects, and assist departments in allocating resources.

Team members interviewed faculty and staff from eight departments to identify issues currently faced at the department level. In May, the team surveyed all faculty and non-faculty instructors; that data is currently being analyzed. The aim is to compile requirements in the fall.

### **Subject Evaluation**

Departmental participation in the Institute's [subject evaluation](#) system continued to grow, with the addition of EECS in fall 2011. Discussions are underway with Management, the only department that has not fully adopted the Institute system, to expand its participation.

In spring 2012, 927 subjects in 38 departments were evaluated online. There were 13,324 evaluations completed, by 5,229 students, including ratings and comments for 1,729 instructors. The response rate was 59%, excluding registered listeners. Overall ratings of subjects and instructors rose a tenth of a point from previous terms; subjects scored 5.9 and instructors 6.0 (where 1=very poor and 7=excellent).

In addition to the fall, Independent Activities Period (IAP), and spring semesters, the online system was used for the first time for summer subjects during summer 2011. Information Services and Technology's (IS&T's) Data Warehouse staff members developed comparative and longitudinal reports for departments and schools, which has greatly eased the process of analyzing teaching and evaluation data.

In the spring, Dean Henderson convened the Subject Evaluation Advisory Committee, comprising faculty from all five schools and two student representatives, to address policy issues that have arisen. The committee recommended that the number of Institute-wide questions be reduced significantly in order to provide space for department- and instructor-specific questions, and agreed on a set of new questions to be brought to faculty governance for consideration in AY2013. The committee also began discussing access to and use of teaching and evaluation data, now that it is more readily available.

The OFS subject evaluation team includes Associate Dean Enterline, Ms. Santucci, Ms. Boldin, and Mr. Nelson.

## Support of Faculty Governance

OFS staffs and supports CUP and its subcommittees on the Communication and HASS Requirements, providing a valuable link between the work of DUE and the faculty committees responsible for MIT's undergraduate program. OFS staff helped frame discussions, provide background material and data, and draft policy statements, reports, presentations, and other communications from the committees and the faculty chair. The work of these committees is discussed in more detail in the section submitted by the Chair of the Faculty. The CUP, SHR, and SOCR chairs have expressed appreciation of OFS staff and their work in helping to manage the committees' activities. Those OFS staff members include Dean Frazer (CUP), Lauren Reemsnyder (CUP and SOCR), assistant dean Kathleen MacArthur (SOCR), and staff associates Genevieve Filiault (SHR) and Jason Donath (SHR).

Dean Frazer continued to convene regular meetings of staff to a number of the standing committees of the faculty in order to coordinate work and agendas for committee and Institute faculty meetings.

## Administration of the Communication Requirement

In addition to supporting the work of SOCR, OFS coordinates the administration of the [Communication Requirement](#) (CR) in collaboration with the School of Humanities, Arts, and Social Sciences (SHASS), other DUE offices, and those involved in instructional delivery.

In AY2012, SOCR finalized revised descriptions for communication-intensive (CI) subjects in humanities, arts, and social sciences (CI-H) and CI-H writing (CI-HW) and criteria for their review. With these revised criteria, SOCR resumed the review and relicensing of subjects designated as CI-H. New processes, procedures, and a Stellar site (MIT's platform for learning and course management) were developed to accommodate this additional work in OFS and on SOCR's agenda. Ms. Reemsnyder was instrumental in organizing the subject review process. Assistant Dean MacArthur served as the liaison between the subcommittee and instructors, academic units, and the Office of the Registrar regarding both the criteria and the subjects.

Patricia Fernandes, advisor on the CR and CI-H requirements, increased the number of CR advisory messages to students and their advisors. These messages remind students to register for CI subjects, alert students who will be out of compliance with the CR at the end of the term, and encourage students to contact the CR office for advising about their individual pace toward completion of the requirement. In addition, she has been able to provide analysis for SOCR about overall compliance with the pace, and alert the subcommittee to potential policy issues.

## Administration of the Humanities, Arts, and Social Sciences Requirement

In the second year of the transition from the Humanities, Arts, and Social Sciences Distribution (HASS-D) system to the revised HASS-D system within the [HASS Requirement](#), two classes remained under the HASS-D system, while two classes of students entering in fall 2010 and later were under the revised system. Ms. Fernandes

worked with all students to help them complete the requirement, which also includes a concentration component.

Students submitted 1,228 concentration proposals and 1,034 concentration completion forms. Members of the Class of 2012 completed the highest number of concentrations in Economics (234); Music (88); Science, Technology, and Society (51); Spanish (50); and Chinese (47). They completed a total of 212 concentrations in foreign languages (including Spanish and Chinese); History, Literature, Philosophy, Political Science, and Psychology remain popular, each with 40 or more students. Members of OFS (Ms. Filiault, Ms. Fernandes, Ms. Santucci, and Associate Dean Enterline) are working with IS&T on a project to move the concentration forms online.

Support to SHR, provided by Ms. Filiault and Mr. Donath, included managing the SHR subject approval process—over 100 subjects this year; evaluating readmission cases; and working with the Office of Undergraduate Advising and Academic Programming, the Office of the Registrar, staff to SOCR, and the SHASS dean’s office to develop and document an appropriate procedure for evaluation and approval of transfer credit for the HASS Requirement. The staff also supported SHR’s efforts to assess the HASS Exploration (HEX) subjects (formerly first-year focus subjects). They administered a student survey, scheduled and documented faculty interviews, and added subjects to the end-of-term subject evaluations. OFS also organized a meeting during IAP and created an email list for instructors of HEX subjects to exchange ideas. For more information on the HASS Exploration Program assessment, see the Support of Faculty Governance section of this OFS report.

### **Curriculum Development Funds**

Seventeen faculty groups developing new curricula received almost \$373,000 from the [d’Arbeloff Fund for Excellence in Education](#), and from the [Alumni Class Funds](#) supported by the Classes of 1951, 1955, 1972, and 1999. Five projects received d’Arbeloff Fund awards, while 12 grants were made from the Alumni Class Funds. Both funds aim to enhance undergraduate education and are administered by OFS.

The d’Arbeloff Fund was established through a gift from Brit (SM ’61) and Alex (’49) d’Arbeloff. The fall 2011 call for proposals was developed in collaboration with the MIT Council on Educational Technology to focus on initiatives employing modularity, providing opportunities for learning modules of varied duration available at multiple times during the year or appropriate for numerous subjects. Also welcomed were enhancements of subjects in the first-year curriculum and within the General Institute Requirements, in particular proposals to develop new HEX subjects.

Associate Dean Enterline and Ms. Boldin administered the two funds with Mr. Davies for the d’Arbeloff Fund, and Mr. Nelson for the Alumni Class Funds. Ms. Santucci is developing a database of projects.

### **Faculty Outreach**

Throughout the year, Dean Henderson facilitated monthly meetings of the Undergraduate Officers Group, whose agendas included several discussions of MITx

and the future of residential education. The undergraduate officers were also asked to provide input on enrollment management, online registration, the evolution of MIT's learning management system, and changes to freshman orientation. The group heard updates on the presidential search, study abroad programming and resources for student well-being.

OFS continues to value this highly committed group of faculty who contribute extensively to undergraduate education, and the office continues to work hard to promote effective communication and collaborative educational policy development within a decentralized, department- and research-focused institution. Associate Dean Frazer of OFS and administrative assistant Martha Janus from the Office of the Registrar staffed the group.

### **Staff Changes**

In November 2011, OFS administrative assistant Matthew Davies was promoted to IT Consultant I in DUE Desktop Support. Mr. Davies served as the OFS IT liaison and provided administrative and financial support to OFS generally, in addition to his work with specific programs, including subject evaluation, curriculum development funds, and the MacVicar Faculty Fellows Program. Brian Nelson joined OFS in January 2012 as Mr. Davies's replacement and has been an excellent addition to the OFS team.

**Diana Henderson**

**Dean for Curriculum and Faculty Support**

### **Global Education and Career Development**

The mission of [Global Education and Career Development](#) (GECD) is to empower MIT students and alumni to achieve lifelong success through seamless access to transformative global experiences, comprehensive and holistic career services, and mutually beneficial connections with employers and with graduate and professional schools.

GECD continues to work on initiatives identified in its strategic plan beginning in 2008, including five strategic priorities: (1) champion global education, (2) create comprehensive career development programs, (3) develop collaborative partnerships, (4) develop a high-performing team, and (5) employ emergent technology and assessment tools.

### **Changes and New Initiatives**

#### ***Digital MIT***

GECD launched a newly redesigned [website](#) in fall 2011, with a fresh, user-friendly look, improved navigation, and enhanced education and decision tools. Since the launch, the website has received 263,273 visits, an increase of nearly 20% over AY2011, and hosted 190,185 unique visitors, a 22.9% increase. Additionally, the number of page views and



visit duration more than doubled, to 609,036 views and an average duration of one-and-a-half minutes.

### ***Improving Prehealth Advising***

Prehealth Advising supported the launch of the DUE-appointed Prehealth Faculty Committee in fall 2011 to address longstanding issues with the Traditional Advisor Program. Dean Daniel Hastings appointed professor John Essigmann as chair of the six-member faculty committee charged with providing oversight of MIT prehealth education and the evaluation and advocacy of MIT applicants to health profession schools.

During this inaugural year, there were a number of achievements. The committee updated the recommended course list and the staff implemented an online prehealth management system, customized from the new MIT graduate admissions system. Prehealth Advising developed a new letter writer position, to prepare consistent, high-quality institutional endorsement letters. Finally, a faculty committee pilot was conducted in which committee members interviewed 30 applicants and worked collaboratively with the letter writer to create committee letters.

### ***Maximizing Safety and Security***

GECD established the Global Emergency Response Team, an Institute-wide working group designed to identify best practices, issues, and emerging solutions in international risk management and to develop comprehensive risk management protocols and emergency response plans. Global Education has further improved Horizons, MIT's risk management system, which has resulted in usage by all major Global Education undergraduate programs to track student participation and emergency contact information.

### ***Championing Global Education***

Global Education added a new global education opportunity for eight MIT sophomores to experience teaching and student life at Sabanci University, in Turkey, and to visit Istanbul for a week.

### ***Empowered, Global-ready Leaders***

GECD is leading the student engagement initiative Empowered, Global-ready Leaders, a priority identified in DUE's strategic plan. The aim is to help students leverage their experiences and maximize their self-confidence. Specific initiatives include encouraging student learning outside the classroom, strengthening student engagement with faculty, and implementing strategies to increase student confidence, producing graduates prepared to succeed in today's complex world.

### ***Strengthening Employer Partnerships***

Career Services implemented the new Employer Sponsorship Program, beginning with nine sponsors, which will increase engagement with targeted employers and provide increased funding for GECD programs and activities.

## **Key Accomplishments and Activities**

### ***Global Education***

A total of 707 undergraduates participated in global opportunities through 10 MIT programs in AY2012, as compared with 698 in AY2011. The types of experiences include 407 internships, 116 public service and service learning opportunities, 67 research experiences, and 117 study abroad opportunities. The 2011 graduating student survey indicated that 41.2% of graduating seniors reported completing a global experience during their undergraduate studies, an 8.1% increase over the 2010 report. Among respondents who had participated in global experiences lasting 12 weeks or more, 94% reported gains in understanding cultural differences and 89% reported gains in confidence and adaptability.

In AY2012, 117 MIT undergraduates participated in study abroad opportunities, a 25.8% increase over AY2011. This number includes three new non-credit educational trips to Turkey, Russia, and Senegal. Scholarship funding from donors provided for 31 scholarships, directly contributing to increased Independent Activities Period and summer participation rates. Cambridge-MIT Exchange numbers decreased from 19 to 15, due to UK-based financial constraints.

During AY2012, 587 students attended 35 global education-sponsored group sessions and events, and 3,426 individuals participated in appointments, drop-in visits, emails, and Skype or telephone conversations. Of these participants, 896 were unique contacts, with an average of four “touches” per student.

In its second year, the Global Fellows Program at MIT (with Imperial College of London), which trains doctoral students in professional transferable skills, was held in London with 20 students from each school. A survey of MIT participants indicated that 94% would recommend this program, 88% reported improvement in their collaboration and communication skills, and 94% reported improvement in their teamwork skills.

### ***Distinguished Fellowships***

Distinguished Fellowships efforts resulted in strong outcomes, with 12 highly competitive fellowship and scholarship awards: one Rhodes Scholarship, one Marshall Scholarship, one Marshall Sherfield Fellowship, two Gates Cambridge Scholarships, two Truman Scholarships, and five Fulbright Scholarships. These represented a slight decrease over the prior year; however, nearly 64% of the applicants were selected for interviews. Especially noteworthy is that MIT has had Rhodes Scholarship winners for the past five consecutive years.

### ***Prehealth Advising***

There were 151 MIT student and alumni applicants (61 undergraduates, five graduate students, and 85 alumni) in the 2011 medical school application cycle, up from 134. Seventy-six percent of all applicants used one or more Prehealth Advising services, down from 82% last year.

### Medical School Acceptance Data, 2011 Application Cycle

Acceptance rate for undergraduate applicants using Prehealth Advising services	80.7%
Acceptance rate for all applicants who did not use Prehealth Advising services	58%
National acceptance rate	46%

There was a 6% decrease in the acceptance rate for undergraduate service users over the prior year. Forty-nine percent of all MIT applicants were accepted to a school ranked among the top 15 primary care or research medical schools.

There were 2,107 Prehealth Advising contacts, including appointments, drop-in visits, Skype, and emails, an 8% increase in contacts from last year. Of these visits, 423 unique students and alumni used the service, with an average of five “touches” per student or alumnus. There were 415 students and alumni who attended 28 workshops and events, a decrease over the prior year. This was achieved despite significant staff turnover.

The Physician Shadow Program grew by nearly half, with 136 students participating in shadow opportunities at local hospitals. Ninety-seven percent of student respondents reported increased understanding of a physician’s typical day, and 100% indicated that they would recommend the program.

### **Career Development Programs**

In AY2012, there were 3,324 career services contacts for individual career counseling services via appointments, drop-in visits, Skype, and emails, an increase of 2% from AY2011. Of these visits, 2,083 were unique users, a 3% increase, with an average of 1.6 “touches” per student.

There were 167 live, in-person career workshops, panel discussions, and seminars presented to 7,193 students and alumni, representing an 18% increase over AY2010. Of these numbers, more than 2,578 graduate and postdoctoral scholars attended. The online workshops web page had 16,976 views.

There were 79 students enrolled in the Freshman/Alumni Summer Internship Program (F/ASIP) course and program, of which 55 completed the first half of the course, with retention similar to AY2011. Students reported significant gains in competencies related to the course, in particular career planning and internship search knowledge and skills.

There were 56 disclosed MIT students and alumni who applied to law school during AY2011. Eighty-two percent of MIT applicants were admitted, a slight increase over the prior year. The average grade point average for accepted MIT applicants was 3.4/4.0. The average Law School Admission Test score was 167.

### **Employer and Recruiting Programs**

The undergraduate employment rate for the Class of 2011 within three months of graduation was 79.8%, and master’s degree recipients had an employment rate of 81%.

The average salary for graduating seniors was \$64,519, a 2.8% increase, and \$105,467 for master's degree recipients, a 5.6% increase over the prior year.

This year's preliminary placement data for the Class of 2012 is favorable, with 82% of undergraduates and 74% of graduate students seeking employment having accepted a job offer. The survey period concludes in September 2012.

The 2011 MIT Summer Experience Survey found that 55% of all undergraduate respondents had completed an internship during summer 2011, with just over 85% indicating that this experience helped them to clarify future career goals and nearly 70% indicating it helped them to identify their skills and abilities. Just over 79% of graduating seniors reported completing an internship during their undergraduate years.

Career Services hosted 307 employers on campus, conducting 4,820 interviews in AY2012, and representing a 6% increase and a 7% decrease over the prior year, respectively. There were 3,659 jobs posted through CareerBridge, representing a 5.2% increase over AY2011. Through iNet, an online internship consortium, 289 registered MIT users had access to 4,703 internship postings.

The 4th Annual Spring Career Fair had 571 student participants, an increase of 10%, with 42 diverse companies represented.

GECD registered 2,132 new employers who posted jobs, attended career fairs, or conducted interviews. New companies included Space Exploration Technologies, Robotex, Under Armour, Joint US-China Collaboration on Clean Energy, and The Mind Company.

## **Personnel and Professional Activities**

### ***Staff Transitions***

During AY2012, four staff members departed GECD: Rachel Greenberg, Shonool Malik, Pamela Piliero, and Nancy Richmond. The following staff members were hired: Jennifer Earls, Christina Henry, and Alyssa Kavanagh. Jordan Siegel was promoted to administrative assistant II; Kimberly Benard and Erin Scott were promoted to assistant directors; Tamara Menghi and Marilyn Wilson were promoted to associate directors; and Deborah Liverman was promoted to director.

### ***Leadership***

Ms. Benard served on the Elections Committee for the National Association of Fellowship Advisors. Malgorzata Hedderick cotaught a freshman seminar on women's leadership, "Good to Great." Ms. Hedderick and Ms. Scott served as freshman advisors. Ms. Menghi graduated from Conexión, a Latino leadership program. Ms. Menghi also served as an Office of Minority Education mentor and in the First Generation College Student program. Career development specialist Ellen Stahl served as an advisory board member for the Career Counselors Consortium for New England.

### **Awards**

Ms. Benard received the Layla Weisner Community Award. Ms. Liverman received a 2012 DUE Infinite Mile Award for Leadership.

### **Committees**

Ms. Benard serves on the joint Division of Student Life/DUE committee. Ms. Liverman served on the Dr. Martin Luther King Jr. Celebration Committee. Ms. Wilson and career development specialist Heather Law participated on the Office of the Dean for Graduate Education task force on professional skill development in graduate students. Ms. Scott served on the DUE Rewards and Recognition Focus Group.

### **Conference Presentations**

In the 2012 National Association of Colleges and Employers Conference, Ms. Liverman presented "One Institution's Approach to Collecting and Using Survey Data." GECD executive director Melanie Parker and financial and information technology support representative Alyssa Tasha copresented "Building an Effective Career Services Brand," and Ms. Parker copresented "Resetting Your Strategic Plan."

### **Future Plans/Issues**

GECD enters the final year of a five-year strategic plan and next year will begin work to develop a plan for the next three- to five-year period.

GECD will work across the Institute on DUE's Empowered, Global-ready Leaders engagement initiative, focusing during AY2013 on a comprehensive study of the MIT experience and its impact on student confidence; continuing the StrengthsFinder multi-office pilot program; identifying strategies to reduce barriers to global education participation; and expanding faculty engagement opportunities.

Prehealth Advising will continue to improve its programs and services by initiating a mentor program, moving to a 2.0 version of the online prehealth advising system, and implementing the new Prehealth Advisory Board letter writing system with all MIT applicants to health profession schools for 2014 matriculation.

For AY2013, GECD has set an extremely important goal to develop or expand 34 sustainable collaborations to increase student preparation and student participation rates, or increase their opportunities.

The F/ASIP course and program will recruit a new faculty advisor to replace program founder Arthur Steinberg.

Career Services will review its support to the increasing specialized master's programs and postdoctoral populations and consider ways to expand programs to better serve these areas of need.

### **Melanie Parker**

**Executive Director, Global Education and Career Development**



## Office of Minority Education

The mission of the [Office of Minority Education](#) (OME) is to promote academic excellence, build strong communities, and develop professional mindsets among students of underrepresented minority (URM) groups, with the ultimate goal of developing leaders in the academy, industry, and society. OME supports MIT's academic mission to provide the best possible education for all students, while serving the nation's need to have underrepresented and underserved students in science and engineering disciplines pursue higher education and achieve success in these fields.

### New Initiatives

The new OME website was launched in January 2012. Created by Indigo Digital, the website provides a more interactive, user-friendly platform for students, parents, faculty, staff, industry partners, and more. The new website can be found at <http://ome.mit.edu/>.

In AY2011, in collaboration with the Office of Undergraduate Advising and Academic Programming (UAAP), OME participated in two Institute-wide initiatives: the Intensive/Intrusive Advising Pilot, and the Undergraduate Research Opportunities Program (UROP) Fair. More details on both programs are outlined below.

The Teaching and Learning Laboratory (TLL) reported in its 2010 MIT Student Predictive Pathways for Success Report that Committee on Academic Performance (CAP) actions were negatively correlated with final grade point averages and graduation rates (for all students, and particularly for URM students). Its findings also revealed that fifth-week flag actions were negatively correlated with CAP actions. This was compelling data, and an intervention plan was developed—the new Intensive/Intrusive Advising Pilot. The strategy is simple but effective: high-touch and intensive follow-up. *All* students who received two or more fifth-week flags in the fall and/or spring semester of their freshman year were contacted via email (and/or phone) by *all* of the following: freshman advisor, UAAP dean, and an OME dean (when applicable). They also received a special letter from the DUE dean encouraging them to take immediate action in order to increase the likelihood of academic recovery. The letter also emphasized available resources such as Seminar XL and tutoring. Student action was not mandatory, but they were “very strongly encouraged” to develop and implement a plan of action for academic success. OME increased the number of Seminar XL-Limited Edition (LE) workshops in order to meet the demand, and the results are promising. For the fall and spring semesters, UAAP reported significantly higher recovery rates and fewer CAP actions than in previous semesters (more detailed results are available from UAAP).

OME and UAAP successfully coordinated MIT's Second Annual UROP Fair on January 26, 2012, in Kresge Auditorium. Participation was high, with 350–400 students participating, many of whom were URMs. MIT faculty, staff, and graduate students from 20 departments showcased their research efforts and informed students about the vast array of research science opportunities available at the Institute. Since implementing the UROP Fair in January 2011, slight increases have been seen in the number of URMs participating in undergraduate research.

Innovations, a new OME initiative that started in fall 2010, gives students one-time volunteer opportunities at organizations located in the Cambridge and Boston areas. This initiative was implemented as a result of students' interest in being involved in the communities surrounding MIT. On October 22, 2011, students volunteered at Haley House, in Roxbury, MA. They prepared meals for patrons, and cleaned and organized the kitchen. By participating in this project, students learned about efforts to fight hunger and homelessness in Boston communities, especially in Roxbury. On March 11, 2012, students volunteered at Cradles to Crayons, located in Brighton, MA.

Laureates and Leaders continues to offer quality programming to students, including faculty research talks, inspirational speakers, faculty panels, roundtable dinners, and workshops. The Fourth Annual Laureates and Leaders Induction Ceremony was held on February 24, 2012; 19 new students were inducted into the program. In June 2012, 16 of the 17 senior laureates graduated from MIT. Of the 17, four will go on to PhD programs, two will enter MS/PhD programs, five will enter master's programs, and four will work in industry. One laureate will be staying an additional term at MIT. There are currently 38 students enrolled in the program.

Master Your Future (MYF), piloted in fall 2010, is a professional development series designed and delivered in collaboration with the Industrial Advisory Council for Minority Education (IACME) and the Global Education and Career Development office. The four MYF modules are Career Paths, Job-finding Skills, Business Etiquette, and Employability. Events and workshops are strategically designed to serve underrepresented sophomores, juniors, and seniors. In AY2011, OME and IACME made significant strides by developing four new workshops tied to the four modules mentioned above (Networking 101, Finding Your Career, Negotiating Skills, and the Business Lunch/Dinner). MYF also noted a significant increase in the number of students served by 256%, from 36 to 128.

This year, Momentum, an interdisciplinary project-based class held during Independent Activities Period, was increased from three to four weeks. The additional week was added based on feedback from student surveys. Thirty-one students participated in the January 2012 session, a significant increase from last year's 12 participants. This year's theme was "portable windmills for electricity generation." Eight student teams worked to design and build a portable windmill, and they presented their final prototypes at the end of the program. IACME representatives judged the presentations and several IACME partners interviewed students for summer internship opportunities. Twenty-three students received interviews. Twelve received offers and 11 accepted offers.

### ***Fund Development***

The Center for Sensorimotor and Neural Engineering (CSNE) proposal was funded by the National Science Foundation in June 2011. CSNE comprises the University of Washington (lead institution), MIT, San Diego State University, the University of British Columbia, the University of Tokyo, and several historically black colleges and universities, community colleges, K-12 schools, and industry partners. OME (in collaboration with the Office of Engineering Outreach Programs) received approximately \$40K from the center to offer enrichment courses, research opportunities,

and seminars that expose students to careers in neural engineering. Financial support also comes from the IACME group, which now comprises 21 corporate, government, and non-profit partners (including Latino Alumni of MIT, and Black Alumni of MIT). Last year, IACME provided over \$75,000 to help underwrite costs associated with OME programs and initiatives, including MYF and Momentum.

### **Functional Enhancements**

The Interphase Program is a rigorous residential academic program for admitted freshmen that takes place the summer before matriculation. The current Interphase model is very successful at doing what it originally set out to do—namely, to help students transition to MIT and to expose them to the rigor of the MIT curriculum, with a specific focus on the first semester of the freshman year. However, the 2010 TLL evaluation also pointed out that the program’s potential to impact long-term academic success was not being maximized. So, the enhanced program, now referred to as Interphase EDGE (Empowering Discovery/Gateway to Excellence), is designed to do just that. It includes an enhanced physics curriculum as well as a pilot of a new writing/communications curriculum.

Interphase EDGE is uniquely designed to impart pivotal concepts that will increase long-term academic success. The program will not only give students an “edge” on their first semester at MIT; it will catalyze their success throughout their tenure at MIT and beyond. Key outcomes of Interphase EDGE include mastery of problem-solving techniques; enhanced oral and written communication skills; knowledge of Institute resources; new peer, staff, and faculty relationships, as well as a network of support; tools to help with the transition from the first year into the department/major of choice; exposure to a vast array of post-graduation opportunities; and holistic development (i.e., students will develop academic, leadership, interpersonal, and professional skills). The launch of Interphase EDGE went extremely well. There were approximately 150 applications for the inaugural cohort of Interphase EDGE scholars. Seventy-eight students were selected to participate in the program (due to budget restraints, approximately 70 students will be selected in future years). During the academic year, these 78 scholars will be advised by OME staff, along with support from UAAP and the first-year learning communities. The Interphase EDGE advising model is one of high-touch and proactive engagement. This should positively impact the Institute’s goal of creating an environment where all students, with a particular emphasis on URM students, thrive.

Seminar XL is an academic enrichment seminar primarily for freshmen that utilizes an innovative and effective small-group learning concept. In Seminar XL, groups of four to six students meet for 90 minutes twice per week during the semester to share their understanding of course concepts and problem-solving methods. A facilitator, typically a graduate student or an upperclassman, guides each working group. First-year students can receive course credit, provided they attend at least 80% of the working group sessions. In fall 2011, several Seminar XL processes were streamlined, including:

- Student sign-up: A quick and easy three-step sign-up process was created, and a computer, located in the OME office, was designated for Seminar XL sign-up.
- Facilitator recruitment/training/evaluation: All facilitators participated in an initial training plus monthly follow-up sessions. Additionally, classroom observations of new facilitators were conducted.
- Weekly worksheet problem set creation and distribution: A returning facilitator was identified as lead facilitator for each subject. The role of the lead facilitator is to create and disseminate the weekly worksheets. OME staff and lead facilitators worked very closely with departments/professors who teach first-year General Institute Requirements to develop the worksheets and upload them to Stellar, MIT's platform for learning and course management. A reservoir is being built of worksheets for all subjects.
- The Seminar XL-LE session was offered for students who received two or more fifth-week flags. To better serve the students, groups were created with three or more students. The LE sessions are currently not offered for credit.

The Tutorial Services Room (TSR) offers tutoring to undergraduate students by appointment and through larger group homework nights. Typically, students seeking assistance are first-year students, although users come from all years. This year, more professors referred students from their respective classes to TSR. This resulted in an increase in usage by both URM and non-URM students. Similar to Seminar XL, TSR processes were streamlined in the following ways:

- Identifying and using an on-call tutor list: This enabled student requests to be better met in a timely manner.
- Assigning a tutor to work with Seminar XL-LE participants who received more than one flag: Students were able to participate in Seminar XL and receive one-on-one help through TSR as well.
- Updating electronic correspondence templates: This enabled decreasing the time from when a student submits a request to when a tutor begins working with the student. In addition, students receive quicker responses and status updates.
- Increasing the number of exam reviews: Based on student feedback, additional review sessions were offered prior to exams.
- Requiring TSR tutors to participate in training sessions and monthly check-in sessions during the fall and spring semesters: Training and check-in sessions were offered in collaboration with TLL.

The Mentor Advocate Partnership (MAP) is a volunteer mentoring program for MIT freshman and sophomore students. MAP seeks to foster the holistic development of students along both academic and non-academic dimensions. This spring marked the fifth full year of this program, with a total of 153 active participants (59 mentors and 94 protégés). This past year, MAP program coordinator Antonio Perry focused on “match quality.” The results have been positive, with substantial increases in satisfaction with the program by mentors and protégés.

## Staffing Changes

A new OME organizational structure was implemented to support the program-focused and student services–driven mission of the office. The primary changes include two program coordinators and a new assistant dean. These staff members facilitate, manage, and evaluate OME’s diverse portfolio of programs and services.

**DiOnetta Jones**

**Director, Office of Minority Education**

**Associate Dean for Undergraduate Education**

## Office of the Registrar

The [Office of the Registrar](#) works with faculty members, Institute and faculty committees, departments, staff, and students to guide and assist development and modification of educational policies and procedures in accordance with Institute policy and local, state, and federal laws. The office continues to gather, maintain, interpret, and share information through new technologies, broadened capacities, and enhanced communications in areas the Institute has entrusted to its charge.

## Technological Highlights

The Institute relies on the Office of the Registrar in various and complex ways. In AY2012, the office continued to provide the highest level of service and accuracy. The education systems roadmap challenged the staff to define functional requirements, make design decisions, test, and then implement major Institute-wide improvements to core business.

In partnership with Information Services and Technology (IS&T), the Registrar’s office:

- Deployed online grade submission to all academic departments while concurrently testing the final phases of automation
- Deployed online registration to a pilot group of departments in fall 2011, and the entire community in spring 2012
- Deployed the electronic transcript delivery project in October 2011
- Solidified functional specifications for replacement of the classroom, student, final exam, and ad hoc scheduling system
- Defined the functional specifications for an automated add/drop process

## Educational Policy and Governance

The Office of the Registrar played a major role in advising senior administrators on several complex student issues involving tuition, registration, cross-registration, and degree programs. Highlights included working with MIT Sloan School of Management in implementing the new Master of Science in Management Research degree program; working with the Office of the Dean for Graduate Education on the medical leave policy



for graduate students and leaves of absence for national service purposes; and with the Office of the Provost, the Office of the Vice President for Research, and the International Students Office for continued examining of policies and fee structure for non-Institute visiting students.

The office also engaged in policy review and development with the faculty governance system in several areas, including policies governing undergraduate minors; guidelines, based on the faculty's definition of units, to assist departments in scheduling subjects offered during Independent Activities Period or for less than a full regular term; and the implementation of new guidelines concerning H-level subjects (An H-level subject is a higher-level graduate subject that is an approved subject for a graduate degree). AY2012 also saw the approval of substantial changes to several undergraduate programs, including a restructured 2-A curriculum, a new optional program of research subjects in Course 6, and a restructured minor in Applied International Studies. In addition, consultations took place to resolve outstanding issues concerning the management of subjects offered by Concourse and the Experimental Study Group, an effort that will continue into AY2013. The office provides ongoing staff support to the Committee on Curricula (CoC). The committee reviewed 224 applications for double majors, 12 restricted elective in science and technology (REST) petitions, and one petition for a second bachelor's degree. On behalf of CoC, the Catalog Section also works with the Subcommittee on the Communication Requirement (SOCR) and the Subcommittee on the Humanities, Arts, and Social Sciences Requirement (SHR) to coordinate the complex review of General Institute Requirements (GIRs) for former students who apply for readmission after failing to complete their undergraduate studies within 10 years of original entry. Eleven such cases were reviewed.

### ***Curriculum and Classroom Management***

The dynamic nature of MIT's curriculum was aptly illustrated by the addition of some 183 subjects (85 undergraduate, 98 graduate), coupled with revisions to 683 existing subjects (348 undergraduate, 335 graduate). Represented in these totals are 2,875 revisions, with slightly more than half (53.7%) emerging from the graduate curriculum. In addition, 119 subjects were removed from the catalog, and nine were reinstated. MIT begins AY2013 with a regular curriculum that boasts 3,667 subjects (45.4% undergraduate, 54.6% graduate).

The scheduling of MIT's academic classes is also a high priority for the Registrar's office. The Schedules Section made 4,998 classroom reservations for lectures, recitations, laboratories, and design sessions in support of MIT subjects. The office processed an additional 6,310 reservations for academic activities: exams (including final exams), review sessions, not-for-credit seminars, office hours, tutorials, presentations, etc. The total number of academic reservations (11,308) increased 11.5% from AY2011.

MIT's classrooms are also in high demand as community spaces for meetings, conferences, student groups, continuing education, and registered events throughout the year. The Schedules Section made 12,811 classroom reservations on behalf of the MIT community, a 5.7% increase from AY2011. Although ad hoc reservations account

for 53.1% of all classroom reservations, academic use of classrooms takes priority in scheduling.

### ***Classroom Management Highlights***

The following are operation highlights:

- Renovated a 150-seat lecture hall and a 50-seat classroom in E25
- Built a new 64-seat lecture room in Building 9 and a 57-seat lecture room in Building 3
- Led the effort as client for the design phase of the future renovations of 16 Registrar classrooms in Buildings 2, 4, and E52
- Led the effort as client for the development of six new classrooms in E17
- Air conditioning was installed in Room 24-307, and new acoustical ceilings and indirect lighting in Rooms 5-232 and 5-234
- New carpeting was installed in Rooms E51-057, E51-061, E51-063, and E51-085, and sliding chalkboards were installed in Room 66-156
- Installed new tablet armchairs in Rooms 5-234, 13-1143, and 13-3101
- New video projection screens were installed in 4-251, 56-154, 56-162, 56-167, 56-169, 56-180, and 56-191
- Classrooms 1-150, 10-250, 32-123, 33-319, 33-418, 33-419, 33-422, 48-308, and 48-316 received new video projectors and updated code to MediaLink control systems
- New audio-visual system, including video projector and connection points for laptops, was installed in Rooms 5-231, 5-233, 12-122, 12-142, 14N-325, 56-162, 56-180, 66-144, 66-148, 66-154, and 66-168

### ***Data Request and Academic Calendar Highlights***

In response to student feedback regarding the Academic Calendar, the Office of the Registrar produced separate calendars for undergraduate and graduate students, as well as the overall calendar. Using Registrar staff, all versions were made available on Google and a tool was constructed to allow users to add specific dates to their own electronic calendars.

The Registrar's office provided volumes of data to aid in educational decision making by Institute committees, departments, and visiting committees, including the DUE Visiting Committee. Registrar data expertise was utilized by other DUE offices, and by IS&T, in constructing data gathering and extraction programs for projects such as School of Engineering resource allocation and the Textbook Information Project.

### **Registration**

In AY2012, student enrollment was 10,894, compared with 10,566 in AY2011. There were 4,384 undergraduates (compared with 4,299 the previous year) and 6,510 graduate students (compared with 6,267 the previous year). The international student population, comprising citizens of 115 countries, was 2,909, representing 10.3% of undergraduates

and 37.7% of the graduate population. (Students with permanent resident status are counted with US citizens.)

In AY2012, there were 4,019 women students (1,963 undergraduates and 2,056 graduates) at the Institute, compared with 3,905 (1,948 undergraduates and 1,957 graduates) in AY2011. In September 2011, 506 first-year women enrolled at MIT, representing 45% of the freshman class of 1,128 students.

In AY2012, there were, as self-reported by students, 3,495 minority students (2,178 undergraduates and 1,317 graduates) at the Institute, compared with 3,286 (2,078 undergraduates and 1,208 graduates) in AY2011. Minority students included 538 African Americans (non-Hispanic), 111 Native Americans, 16 Native Hawaiians or Other Pacific Islanders, 878 Hispanic Americans, and 1,952 Asian Americans. The first-year class enrolled in September 2011 included 586 minority students, representing 52% of the class.

### **Degrees Awarded**

Degrees awarded by the Institute in AY2012 included 1,011 bachelor's degrees, 1,605 master's degrees, 17 engineer's degrees, and 573 doctoral degrees—a total of 3,206 degrees (compared with 3,317 in AY2011).

### **Staff**

Assistant registrar Daniel Engelhardt retired in June 2012, after 43 years of dedicated service to the Office of the Registrar and MIT. His commitment to his job was exemplary, as evidenced by the individualized care he gave to each faculty, staff, and student seeking his counsel.

In March, a new staff member, assistant registrar Alpha Sanneh, was welcomed and has assumed Mr. Engelhardt's responsibilities.

Associate registrars Brian Canavan and Peter Hayes and registrar Mary Callahan received an Excellence Award, Innovation Solutions, as members of the Online Registration Project Team.

Registrarial assistant Pauline Blair, communications coordinator Jessie Combs, and coordinator Nate Hagee were recognized with a Team Infinite Mile Award, Customer Service and Collaboration, for their efforts in the implementation of the electronic transcript processing system.

Technical support specialist Christopher DiGuardia received an individual Infinite Mile Award, Innovation and Creativity, for his delivery of new self-service tools to the community.

**Mary Callahan**  
**Registrar**

## Reserve Officer Training Corps

### Air Force Reserve Officer Training Corps

The mission of the [Air Force Reserve Officer Training Corps](#) (AFROTC) is to develop high-quality leaders for the US Air Force (USAF).

#### Accomplishments

The quality of the cadet corps and cadre remained first-class in AY2012, and cadets continued to be recognized by the Air Force for their performance. AFROTC annually identifies those cadets in the top 10% nationally as Distinguished Graduates. Two of nine cadets who graduated in AY2012 earned Distinguished Graduate honors and one was from MIT, a significant honor and achievement for the Institute.

Increasing the size of the cadet corps continues to be a priority. Nine cadets were commissioned in AY2012, and it is projected that approximately 23 cadets will join the program in the fall, the largest incoming classes in over a decade. Part of this success is due to participation in a variety of MIT programs, such as Campus Preview Weekend, the Undergraduate Practice Opportunities Program, Interphase, and Minority Introduction to Engineering and Science.

#### Year-end Enrollment in Air Force ROTC, as of June 2012

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	0	5	6	5	16
Harvard	0	1	1	1	3
Tufts	0	3	0	3	6
Wellesley	0	1	1	0	2
Salem State	0	0	0	0	0
Gordon	0	1	0	0	1
Endicott	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>11</b>	<b>8</b>	<b>9</b>	<b>28</b>

Note: Endicott College has been dropped as no production has existed in 10+ years.

Highlights of the cadet training program include a war game, mentored by six USAF Fellows; Career Day, with 16 active duty officers; KC-135 incentive flight, with 13 cadets; and eight sophomores who went to Maxwell Air Force Base for field training. Finally, the Air Force, Army, and Naval Reserve Officer Training Corps (ROTC) programs combined to conduct a successful Cadet Award Ceremony, a Commissioning Ceremony, and a formal Joint-Service Military Ball.

In addition to the weekly leadership training, one cadet was sent to the National Character and Leadership Symposium and the US Air Force Academy. The cadet wing hosted over 30 voluntary events over the course of the year, including morale and training events.

### **Staffing Changes**

AFROTC staff changes are set to take place during summer/fall 2012, following a year of relative stability. Second Lieutenant Daniel Darlington will leave the program to become an intelligence officer. Technical Sergeant Joyce Woods will depart and be replaced by Technical Sergeant Jason Spon, handling personnel support programs for both the cadre and cadets alike.

**Lieutenant Colonel Theodore G. Weibel**  
**United States Air Force**

### **Army Reserve Officer Training Corps**

The mission of the [Army Reserve Officer Training Corps](#) is to select, retain, train, and commission cadets from MIT, Harvard University, Tufts University, Lesley University, Wellesley College, Salem State University, Gordon College, Gordon-Conwell Theological Seminary, and Endicott College in a two-, three-, or four-year program to prepare them for future leadership roles in the US Army, the nation, and the world. Its vision is to develop leaders of the highest character and values who have the foundations of leadership to lead the US Army and the nation.

### **Accomplishments**

Eighteen officers were commissioned in AY2012 (exceeding the program's Army-assigned viability/commission goal). Two of the 18 officers were from MIT. Six graduates earned the honor of Distinguished Military Graduate, awarded to those in the top 20% of all cadets nationwide. As of May 30, 2012, 72 students were enrolled in the AROTC program, a decrease of seven cadets compared with the same time last year. Over \$1,050,000 was awarded in scholarships for all students in the consortium. AROTC is poised to meet or exceed its Army-directed commission mission for 2012.

#### **Year-end Enrollment in Army ROTC, as of May 2012**

	<b>Freshmen</b>	<b>Sophomores</b>	<b>Juniors</b>	<b>Seniors</b>	<b>Total</b>
MIT	2	3	3	2	10
Harvard	4	0	0	3	7
Wellesley	0	0	1	0	1
Tufts	4	1	1	5	11
Other affiliates	18	7	10	8	43
<b>Total</b>	<b>28</b>	<b>11</b>	<b>15</b>	<b>18</b>	<b>72</b>



Cadets continue to achieve excellence academically, physically, militarily, and morally/ethically. At the annual Leader Development and Assessment Course, conducted at Fort Lewis, WA—attended by more than 6,000 rising seniors nationwide—MIT's cadets exceeded local, regional, and national averages in nearly all measurable areas, as they do every year. The cadets in the program are excellent scholars-athletes-leaders.

The program's instructors continue to excel at classroom leadership instruction and hands-on training of cadets and non-ROTC students. AROTC continues to be a preeminent source of high-quality leadership instruction; the MIT cadre participated in its 15th consecutive year instructing a for-credit special seminar in leadership with the MIT Sloan School of Management during Independent Activities Period.

In AY2012, AROTC conducted the following major events: New Cadet Orientation (September and January); field training exercises at the Fort Devens Army Reserve Forces Training Area (November), and at Camp Edwards (April); a formal dinner (November); a water survival test (October); a military ball (February); and commissioning ceremonies at MIT, Harvard University, Tufts University, Salem State University, Endicott College, and Gordon College.

An overall slight dip in enrollment is expected for next year, as a continued reduction in AROTC scholarship availability occurs due to overall reduction in federal funding.

### ***Staffing Changes***

The AROTC program has undergone a period of cadre turbulence. It welcomed Major Deidre Perrin as the scholarship/recruiting officer, Master Sergeant Jerry McCartney as the senior military instructor, Michael Lutkevich as the senior military science instructor, Captain Paul Lindberg as the executive officer, and Commander Thomas Fohr as the supply technician. Lieutenant Colonel Adam Edwards also joined the battalion, as visiting professor of military science. Sergeant First Class Donald Davis will arrive in September 2012. The cadre will continue to be augmented with part-time reserve officers to enhance the leadership experience and training for cadets. This is nearly a 100% turnover in staff from April–June 2012.

### ***Challenges and Plans for the Future***

AROTC's continued challenge is to remain viable by increasing the number of cadets in the program, especially from MIT and Harvard University. Low MIT and Harvard University cadet enrollment is a significant issue, and lack of four-year scholarship availability is a contributing factor to low forecasted enrollment. The program continues to work with the Office of Admissions and the US Army to address these issues. Despite great efforts by the Admissions office, which offered admission to a large number of AROTC prospects, the matriculation rate of those offered admission remains low (about 20%) because other institutions offered more attractive financial aid packages. Despite this, the Army ROTC is projecting mission success in meeting its Army-directed mission through 2015.

**Lieutenant Colonel Adam Edwards**  
**United States Army**

## Naval Reserve Officer Training Corps

The [Naval Reserve Officer Training Corps](#) (NROTC) program hosted by MIT develops and provides full scholarship opportunities to midshipmen aspiring to become ensigns in the US Navy or second lieutenants in the Marine Corps. The program prepares them mentally, morally, and physically and imbues them with the highest ideals of duty and loyalty. Graduates possess a basic professional background, are motivated toward careers in the naval service, and have the potential for future development in mind and character to assume the highest responsibilities of command, citizenship, and government.

NROTC midshipmen enroll in eight different naval science courses during their time at MIT, including naval engineering, history, doctrine, operations, and leadership. The curriculum is nationally recognized, centrally supported, and taught at many universities throughout the country. Guest speakers are invited to enhance relevancy with evolving trends in technology, national policy, and geopolitics. Coursework is further tailored by the instructors to reflect their individual operational experiences and monitored by the visiting professor of naval science, Captain Steven Benke.

NROTC officers and staff are committed to ensuring that every midshipman balances his or her time and energy to realize the tremendous benefits of an MIT, Harvard University, or Tufts University education. Midshipmen complement their rigorous NROTC commitments with extracurricular activities such as varsity athletics, fraternity and sorority leadership positions, and other school events. Others take an active role in volunteering, counseling, and mentoring.

While the NROTC staff is responsible for mentoring and instructing students, midshipmen build leadership skills running the NROTC battalion. Additionally, they are involved in the planning and implementation of numerous activities and events, including the annual Beaver Cup Regatta, field-training exercises, and tri-service competitions.

**Year-end Enrollment in Naval ROTC, as of June 2012**

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	8	7	5	4	24
Harvard	2	4	2	1	9
Tufts	2	1	0	1	4
<b>Total</b>	<b>12</b>	<b>12</b>	<b>7</b>	<b>6</b>	<b>37</b>

## Accomplishments

Last summer, midshipmen dived aboard submarines, flew in maritime patrol aircraft, piloted aircraft carriers and amphibious assault ships, and landed with the Marines, providing unique and invaluable experience for future naval officers.

The academic year concluded on June 8, with the commissioning of three NROTC students, joined by Air Force and Army ROTC graduating seniors at the US Coast Guard Sector Boston. The Honorable Sean J. Stackley, an MIT alumnus, was the guest of honor and presented the oath of office to all newly commissioned officers.

During AY2012, four midshipmen were commissioned as ensigns in the Navy and one as a second lieutenant in the Marine Corps. Two ensigns will begin their careers as submarine officers: one as a surface warfare officer, and one will continue MIT's reputation for engineering excellence as a naval reactors engineer, in Washington, DC. MIT's newly commissioned second lieutenant will attend Marine officer training at The Basic School, in Quantico, VA.

NROTC hosted numerous high-profile visits and distinguished guests during AY2012. These included:

- Professor James Esdaile, a fellow at Harvard University's Belfer Center for Science and International Affairs
- Dr. Jonathan Shay, author of *Achilles in Vietnam*
- The Honorable Sean J. Stackley, Assistant Secretary of the Navy for Research, Development, and Acquisition
- Captain Thomas Kiss, Commanding Officer, USS *Monterey* (CG-61)

MIT midshipmen also had the opportunity to meet the Honorable Raymond "Ray" Maybus, Secretary of the Navy, during the Harvard University 2012 Commissioning Ceremony.

### **Staffing Changes**

NROTC bid fond farewell to Captain Curtis Stevens, Commanding Officer, and Commander Thomas Fohr, Executive Officer, who both retired with over 30 years of service.

Lieutenant Jeff Ransom earned a master's degree from MIT's Supply Chain Management program and will carry that experience to his next tour as the Engineering officer onboard submarine USS *Pittsburgh* (SSN-720). Lieutenant Dominic Kramer achieved a master of arts in law and diplomacy at The Fletcher School at Tufts University, returning to the fleet as the operations officer onboard guided missile destroyer USS *McFaul* (DDG-74).

This spring, NROTC welcomed aboard Lieutenants Matthew Minck and David Lueck, who will succeed Lieutenants Ransom and Kramer.

Commander Jan Scislowicz succeeded Commander Fohr as executive officer, following a tour combating piracy with the multinational Combined Maritime Forces, in Bahrain. Captain Stevens has been relieved of his duties as commanding officer after serving as officer-in-charge of Space and Naval Warfare Systems Command Detachment, in Norfolk, VA.

The NROTC program eagerly looks forward to continuing its high standards of excellence at MIT with its new family of superbly qualified individuals.

**Captain Steven M. Benke**  
United States Navy

## Student Financial Services

**Student Financial Services** (SFS) ensures the access and affordability of an MIT education. It enables students to finance their education by providing financial information, products, and services; provides a focal point for student contact; and works collaboratively across MIT to make all administrative tasks—not just those associated with education financing—less time-consuming. Its core responsibilities are organized around two major functional areas: billing and collecting tuition, fees, and other Institute charges; and administering student financial aid, including student and parent loans and student employment.

## Operating Activities

### *Tuition, Fees, and Other Major Institute Charges*

Tuition, fees, and other major Institute charges totaled \$566,523,770 in AY2012, an 8.0% increase over the previous year, and broke down as follows:

Tuition	\$484,929,279
Student life fee	\$2,796,840
Housing	\$52,731,400
Dining/TechCASH	\$8,389,507
Health plan/insurance	\$15,133,118
Medical/dental charges	\$218,895
Late payment fees	\$514,976
Miscellaneous charges	\$1,809,755

Graduate tuition was \$309.9M, or 63.9% of total tuition, and undergraduate tuition \$175.1M, or 36.1% of total tuition.

### *Other Student Accounts Activities and Receivables*

In FY2012, 632 students/families financed more than \$15.8M through the new MIT Monthly Payment Plan, administered by Tuition Management Systems.

As of June 30, 2012, the student accounts receivable balance, netting out credit balances and exclusive of advance summer term billing, was \$1,813,822.

Students are eligible for refunds when the credits on their student account exceed their charges. In FY2012, 4,734 refunds, totaling \$22.8M, were issued to students.

### ***Student and Parent Loan Activities and Receivables***

SFS administers MIT's Educational Loan Plan, which provides loans to eligible employees to help finance undergraduate or graduate education of eligible dependent children. In AY2012, \$2.1M was loaned and \$1.7M collected. The year-end receivables balance for this program continued to climb, rising 6.7%, to \$6.9M.

The overall education loan notes receivables as of June 30, 2012, including but not limited to Federal Perkins Loans, MIT Educational Loans, MIT Technology Loans, and MIT Parent Loans, decreased 0.2%, to \$52.8M. Uncollectible loan receivables of \$41,328 were written off, including \$575 in uncollectible Federal Perkins Loans.

### **Undergraduate Student Financial Aid**

MIT believes that parents and students have primary responsibility, to the extent that they are able, for paying the costs of an undergraduate education. The Institute recruits and enrolls the most talented and promising students, without regard to their financial circumstances. It awards aid only for financial need and does not award undergraduate scholarships for academic or athletic achievements or any other nonfinancial criteria. MIT guarantees that each student's demonstrated financial need is fully met.

In AY2012, the annual price of an MIT education totaled \$55,670 per student—\$40,732 for tuition and fees; \$11,775 for room and board; an estimated \$2,763 for books, supplies, and personal expenses; and a per student average of \$400 for travel. With 4,363 undergraduates enrolled, the collective price for undergraduates was \$243M. Of this amount, families paid \$121.1M, or 50%, and financial aid covered the remaining 50%. Since MIT subsidizes the cost of educating undergraduates through its tuition pricing and continues to be the largest source of financial aid to its undergraduates, the Institute is the primary source for paying for an MIT undergraduate education and families the secondary source.

For students with family incomes under \$75,000 a year, the Institute continues to ensure that scholarship funding will allow them to attend MIT tuition-free, a policy put in place in 2008. In AY2012, 33% of undergraduates (1,450 students) received scholarships and grants from all sources equal to or greater than tuition.

In AY 2102, 20% of undergraduates (882 students) received a Federal Pell Grant. Based on a policy the Institute put in place in 2006, the Institute in essence matches the Pell Grant dollar for dollar by allowing students to use the grant to reduce their loan and/or term-time job expectation.

Eighty-nine percent of undergraduates (3,901 students) received \$121.8M in need- and merit-based financial aid. This includes scholarships, grants, student loans, and employment from institutional, federal, state, and private sources. In the past five years, total aid to undergraduates has increased 30.4%. Need-based aid recipients make up 64% of MIT undergraduates.



### ***Sources of Undergraduate Student Financial Aid***

MIT was the largest source of financial aid to its undergraduates in AY2012, providing 78% of the aid undergraduates received. Ninety-three percent of the aid MIT provided was scholarships, 7% student employment, and less than 1% student loans.

The federal government was the second largest source of financial aid to MIT undergraduates in AY2012, providing 13% of the aid undergraduates received. Undergraduates received Federal Pell Grants, Federal Supplemental Educational Opportunity Grants, Robert C. Byrd Scholarships, Reserve Officer Training Corps Scholarships, Federal Direct Subsidized and Unsubsidized Stafford Loans, Federal Perkins Loans, and Federal Work-Study, including Federal Work-Study Community Service.

Private sources of financial aid—including charitable and civic organizations, corporations, foundations, banks, and other financial institutions—provided the remaining 9% of all aid undergraduates received in AY2012. This included private scholarships and alternative student loans (so called to distinguish them from federal loans). State aid is not a significant factor in financing an MIT education, even though several states, including Massachusetts, allow residents to receive a state scholarship while attending MIT.

### ***Undergraduate Scholarships and Grants***

Scholarships and grants from all sources totaled \$105.5M, with 74% of undergraduates (3,238 students) receiving scholarships. MIT awarded \$87.9M in need-based scholarships to 61% of undergraduates (2,669 students). The average MIT scholarship grew roughly \$1,000 per recipient, to \$32,917. Approximately 70% of MIT scholarships were funded from restricted sources, and 30% came from the general Institute budget or unrestricted sources.

### ***Undergraduate Student Loans***

During AY2012, 22% of undergraduates (969 students) borrowed \$8.2M. For those students borrowing, the average loan was \$8,480. Approximately 41% of graduating undergraduates in the Class of 2012 (408 students) borrowed at some point during their education. Their debt ranges from \$150 to \$165,902, with the 90th percentile at \$45,241. The average total debt is \$20,794, and the median debt is \$14,897.

### ***Undergraduate Student Employment***

Sixty-three percent of undergraduates (2,744 students) earned wages from on-campus employment and employment under the Federal Work-Study Program, including both on- and off-campus programs. Their wages totaled \$8.2M, or an average of \$2,971 per student worker.

### **Undergraduate Parent Loans**

Approximately 4% of undergraduate families (195 parents) borrowed \$4.1M through a parent loan program administered by MIT. Federal Direct PLUS loans accounted for 95% of the dollars borrowed. For those parents borrowing, the average loan was \$21,146.

### **Graduate and Professional Student Financial Aid**

Graduate and professional students are provided with tuition support in connection with research assistantships, teaching assistantships, and fellowship appointments. Tuition revenue support from MIT funds is considered financial aid but is not included in this report, as SFS does not administer these sources of support.

Graduate and professional students are eligible for need-based financial aid, including student loans as well as student employment under the Federal Work-Study Program, both of which are administered and reported by SFS. In AY2012, loans totaled \$43.2M, an increase of approximately \$1.7M from the prior year, with 14.2% of graduate and professional students (901 students) borrowing an average of \$47,997. Graduate student employment earnings under the Federal Work-Study Program, including on- and off-campus programs, totaled \$2.2M, with 2.9% of graduate and professional students (184 students) earning \$11,654 on average.

### **Other Accomplishments**

As part of its reorganization SFS created two new teams: a customer service team and a financial aid delivery team. The customer service team launched a call center and an email center so that generic phone calls and emails are directed to a central location. This makes it easier to track volume and response time, but more importantly allows SFS to determine root causes of questions and to be more proactive in outreach to minimize future inquiries. This team is also responsible for all records management.

The financial aid delivery is responsible for ensuring accurate and timely processing and receipt of external sources of financial aid for undergraduate and graduate students.

SFS now has an associate director dedicated to supporting PowerFAIDS, the financial aid software. SFS developed greater synergy with Information Systems and Technology (IS&T) as regards oversight of the PowerFAIDS database and servers.

In partnership with IS&T, SFS completed three modernization projects. First, SFS is issuing student account refunds as direct deposits into student accounts. Second, SFS is providing entering freshmen online financial aid award letters through the MIT admissions portal. Third, SFS is in the process of bringing up new sponsor billing functionality for student accounts.

The hourly student appointment project, of which the executive director was a sponsor, successfully launched new functionality for the MIT community to hire and terminate student employees.

The executive director also served as a non-federal negotiator in the Department of Education's negotiated rulemaking for president Barack Obama's "pay as you earn" initiative.

With respect to federal compliance issues, the executive director led the effort to name and train department and school liaisons for the Textbook Information Provision, as well as led an effort to implement the new federal satisfactory academic progress rules.

### **Staffing**

There were significant staffing changes throughout AY 2012 due to a major reorganization within SFS. As the year began, David O'Brien joined SFS as the senior associate director for customer service, Susan Sullivan as the senior associate director for financial aid awarding and application, Michael Albano as the associate director for PowerFAIDS, Emma Wilcox as an assistant director for financial aid awarding, and Nicole Darvirris and Andrea Vojtisek as counselors for financial aid delivery. Ryan Callahan was promoted to a senior assistant director of financial aid awarding, and Jocelyn Heywood to assistant director for education loan collection. David Andre took on new responsibilities as assistant director for student account billing, and Eleanor Wolcott as assistant director for student account collection. Emily Bassett joined the new customer service team in her capacity as a student services representative. As the year ended, Evelyn Browne retired and Diana Ubaldo was promoted to Ms. Browne's position as counselor for education loan collection. Of the 32 positions currently filled, 69% are female, 25% minority, and 19% underrepresented minority.

**Elizabeth M. Hicks**

**Executive Director, Student Financial Services**

### **Teaching and Learning Laboratory**

The [Teaching and Learning Laboratory](#) (TLL) was founded in 1997 as a resource for faculty, administrators, and students who share a desire to improve teaching and learning at MIT. Its mission is to collaborate with members of the MIT community to promote excellence and innovation in teaching and learning throughout the Institute and to contribute to MIT's standing as a leader in science and engineering education.

This report details TLL achievements in four areas: applied research and assessment in science, technology, engineering, and mathematics (STEM) teaching and learning; contributions to educational innovation at MIT and to the teaching and learning enterprise; participation in national and international activities in STEM higher education; and collaborations with other DUE offices and DUE's strategic partners. The following achievements for AY2012 are highlighted:

The first two dozen "concept vignettes" for the Singapore University of Technology and Design (SUTD) were completed. These 15-minute videos, narrated by MIT faculty and graduate students, focus on the pivotal concepts in science and engineering that provide

a foundation for an undergraduate education in engineering and design. Funding has been renewed for a second set of videos; these are scheduled to be completed in spring 2013.

Also for SUTD, the Engineering Curriculum Map was developed and depicts the pivotal concepts and critical skills within first-year science and engineering courses and the relationships among them. The map is now being reviewed by leaders in STEM education. Their feedback will be used to write journal articles and conference papers that detail the innovative approach to curriculum design employed to produce the map and concept vignettes.

In collaboration with edX, MIT's online learning enterprise, TLL will: (1) provide expertise in teaching and learning that can strengthen the edX experience and platform; and (2) launch research on massive online open courses (MOOCs). Specifically, TLL will collaborate with researchers at Harvard University and MIT to initiate a study of 6.002x. The laboratory is awaiting the National Science Foundation's review of a joint MIT-Harvard proposal.

TLL educational researchers have designed and implemented studies of the first three MIT Council on Educational Technology (MITCET) experiments in online learning. Data is being analyzed as of this writing.

TLL's partnership with the Office of Minority Education (OME) to strengthen Interphase EDGE (Empowering Discovery/Gateway to Excellence), a signature program that contributes to the academic success of minority students at MIT. This summer, a second major curriculum innovation was introduced, the communication/writing course.

TLL continues to be involved in significant efforts nationally and internationally to improve STEM higher education.

### **Research and Assessment**

Applied research into STEM learning has been part of TLL's portfolio since its inception; this area of TLL expertise, however, is being increasingly called upon, particularly in relation to edX. TLL is pleased to be leading a study that will explore the large data sets generated by 6.002x to better understand the educational value of MOOCs. As stated above, TLL will collaborate with Harvard University and MIT researchers on this study, which will contribute both to strengthening edX and to formulating a larger research agenda for the study of MOOCs.

In addition, TLL educational researchers are assessing the results of three experiments in educational technology begun under the auspices of MITCET. The laboratory is also involved in the assessment of a wide-scale curricular reform effort in Course 2 to introduce a modular curriculum; this initiative includes the use of educational technology as well. The table below lists many of the TLL research projects undertaken this year.

## Teaching and Learning Laboratory Assessment Studies

Subject/study	Scope of investigation	Client	Status findings	Researcher
Experiments in Online Teaching and Learning	Study of use and satisfaction with experiments in Courses 2, 5, and 16	MITCET	Data under analysis	G. Stump
Energy Minor	Review of first five years of MIT's first interdisciplinary minor	MITEI	Report to be completed August 2012	G. Stump
Interphase EDGE	Assessment of changes in physics course to focus on pivotal concepts in 8.01/8.02 and problem-solving methodologies	OME	Report to be completed September 2012	J. Rankin
Mechanical Engineering (MechE) Modular Curriculum	Study comparing learning outcomes and satisfaction levels of Course 2A students with students taking modular curriculum in fall 2012	MechE (A. Hosoi)	Study under design	G. Stump J. DeBoer
5.111 Curriculum Innovations and Teacher Assistant (TA) Training	Comparative study of impact of curricular innovation on students' attitudes, interests, and behaviors	C. Drennan	Statistical report on curriculum innovations complete; TA training report complete	R. Mitchell
Madrid-MIT M+ Vision Program	Study to assess experience of international fellowship	M. Gray	Studies of fellows' experience at start and midpoint of fellowship complete	R. Mitchell
iQuISE*	Study to assess impact of program on 2009 cohort of postdoctoral associates	K. Berggren	Study complete.	R. Mitchell
Courses 20.020, 3.091, and 6.UAT	Studies to assess impact of curricular and pedagogical innovations in these courses	N. Kuldell D. Sadoway A. Locknar T. Eng	Each study has resulted in a publication or conference paper	R. Mitchell

\*Interdisciplinary Quantum Information Science and Engineering Program



Besides these studies, TLL staff provided expertise to a number of members of the MIT community on assessment and evaluation, including the Office of Undergraduate Advising and Academic Programming (UAAP), the Office of Educational Innovation and Technology (OEIT), OME, Global Education and Career Development (GECD), the Office of the Dean for Graduate Education (ODGE), and faculty members seeking grants from the d'Arbelloff Fund for Excellence in Education.

### **Contributions to Teaching and Learning**

The SUTD concept vignettes, as well as associated instructors' guides and supplemental material, represent an expansion of TLL's work in teaching and learning to include a significant effort in curriculum development. The laboratory is particularly proud of this project, as well as its continued work with OME on curriculum and training for Interphase EDGE. Details on both initiatives are provided below.

#### ***SUTD Curricular Materials***

The Singapore University of Technology and Design (SUTD) initiative began with TLL senior staff and postdoctoral associates, who were hired for their expertise both in a STEM field and education, identifying pivotal concepts and critical skills from SUTD's three-semester "freshmore year." The goal of this first stage of the project was to understand how these concepts and skills support learning throughout the SUTD curriculum, generally, and, specifically, how they are connected across disciplines. The result of this process was the Engineering Curriculum Map, which diagrams, for both faculty and students, the crucial ideas and capabilities SUTD students should master in those first three semesters. The map also visually represents the interdisciplinary connections among concepts that may otherwise appear to be from disparate disciplines, relating what can often seem to students as an arbitrary set of topics to the larger context of professional science, engineering, and design. After the map was developed, it guided the creation of 24 concept vignettes, which teach these pivotal concepts and critical skills by utilizing animations, visualizations, and/or demonstrations. Leaders in STEM education are now reviewing the map. The next stages in this project include: (1) revising the map based on feedback and disseminating results in peer-reviewed journals and conference papers; and (2) creating the next set of concept vignettes, which will bring the total produced to 50. It should be noted that the SUTD efforts benefited enormously from assistant director Leann Dobranski's project management.

#### ***Partnership with the Office of Minority Education***

The partnership between TLL and the Office of Minority Education (OME) to improve both Interphase EDGE and Seminar XL/Seminar XL-Limited Edition (LE) continues to be a source of gratification. Last year, TLL designed and implemented improvements to the Interphase EDGE physics course. During AY2012, senior associate director Janet Rankin administered a multi-faceted assessment to determine the extent to which those changes improved student performance in 8.01 and 8.02. Oral exams on problem-solving skills were given individually to 15 students at three times during the year. The results of that assessment are being analyzed currently. In spring 2012, TLL developed a new curriculum for teaching communication/writing, which will be piloted in summer 2012 and will undergo the same rigorous assessment. Finally, TLL continues to participate

in the selection and training of Interphase EDGE facilitators, as well as the training of Seminar XL/Seminar XL-LE tutors.

### **Graduate Teaching Certificate Program**

The demand for space in the Graduate Student Teaching Certificate Program continues to grow. The program was reorganized slightly in AY2012, with the eight workshops offered either over the spring semester or in an intensive two-week version in the summer. Four sections were taught in the spring, and three were scheduled for the summer. (Dr. Rankin teaches the for-credit Course 5.95J Teaching College-level Science and Engineering during the fall semester.) TLL is pleased to include visiting faculty from Nigeria, who were hosted by the MIT Science and Technology Initiatives in both the fall course and the spring workshops. Just under 200 students completed the program in AY2012. The certificate program is managed expertly by Ms. Dobranski.

### **Consultations and Workshops on Teaching and Learning**

TLL continues to work with MIT's schools and departments to provide training in teaching and expertise in STEM education, with excellent results. In the last year, TLL led teaching orientations for new faculty and teaching assistants throughout all the MIT schools, and Dr. Rankin continued to work with faculty and teaching assistants to provide classroom observations and feedback during the year. As mentioned above, TLL has consulted with edX staff, informing them of best practices and research in online learning. Finally, Dr. Rankin and Darshita (Dipa) Shah have consulted on the Department of Chemistry's MITCET initiative.

### **National and International Efforts in STEM Higher Education**

TLL staff members have contributed to MIT's collaborations in building new international universities. These efforts include:

- Design and implementation of workshops for new faculty from the Masdar Institute of Science and Technology (Lori Breslow and Rankin)
- Participation in Teach the Teachers, a year-long program led by professor Richard de Neufville for new faculty who will teach at SUTD (Breslow and Rankin); in addition, Dr. Breslow will be in residence at SUTD for two weeks during summer 2012
- Collaboration with professor Duane Boning on educational initiatives associated with Skolkovo Technical University (Rankin and Shah).

TLL also met with visitors from 32 countries.

### **Academic Accomplishments**

#### ***Publications***

Angela Locknar, Rudolph Mitchell, Janet Rankin, and Donald Sadoway. "Integration of Information Literacy Components into a Large First-year Lecture-based Chemistry Course." *Journal of Chemical Education* 89, no. 4 (2012): 487–491.

### **Presentations**

Lori Breslow presented “Curriculum Design for the 21st Century” at the Institute for Innovation in Higher Education, under the auspices of the Academic and Professional Programs for the Americas (LASPAU), Harvard University, 2012.

Lori Breslow presented “Course Design Based on Learning Outcomes” at the Program for Strengthening Teaching and Learning in the STEM Fields, under the auspices of LASPAU, Harvard University, 2012.

Lori Breslow and John Belcher presented “What We Know About Student Learning and How We’ve Used It at MIT” at the California Institute of Technology, Pasadena, CA, 2012.

Lori Breslow presented “Eight Ways Educational Technology Can Foster Learning” at the Workshop on MIT Online and Residential Education, Cambridge, MA, 2012.

Janet Rankin presented “Interactive Teaching and Learning in the STEM Disciplines” for LASPAU, Harvard University, 2012.

Janet Rankin and Lori Breslow presented “Dialogues in the Disciplines” at the New England Educational Assessment Network, Amherst, MA, 2012.

### **Teaching**

Lori Breslow: 15.279 Management Communication for Undergraduates, Fall 2011

Lori Breslow: 15.289 Communication Skills for Academics, Independent Activities Period 2012

Janet Rankin: 5.95J Teaching College-level Science and Engineering, Fall 2011

### **Collaborations with DUE Offices and Institute-wide Partners**

Members of the TLL staff provided expertise on teaching, learning, and assessment to a number of DUE offices and DUE’s strategic partners. This work included the aforementioned efforts with OME; workshops for graduate students, coordinated through UAAP, ODGE, and GECD (Rankin); workshops for the Freshman/Alumni Summer Internship Program TAs and mentors, coordinated through GECD (Rankin); assessment of the UAAP advising pilot (Glenda Stump); EdTech Fair, organized by OEIT (Dobranski); and teaching chemistry in Interphase EDGE (Shah).

### **Staff Changes**

- Glenda Stump joined TLL as associate director for assessment and evaluation.
- Darshita (Dipa) Shah was promoted from postdoctoral associate to associate director for teaching and learning.
- In addition to Dr. Shah, three new postdoctoral associates were hired: Colin Fredericks, Jennifer DeBoer, and Jennifer French. Dr. Fredericks is now a post-

doctoral associate with professor David Pritchard; Dr. French and Dr. DeBoer remain with TLL.

- Postdoctoral associate Peter Hyland left to accept a faculty position in the Department of Physics at Austin College, Sherman, TX.

TLL wishes to acknowledge the support of administrative assistant Daniel Nocivelli in all the initiatives described above.

**Lori Breslow**

**Director, Teaching and Learning Laboratory**

### **Office of Undergraduate Advising and Academic Programming**

The [Office of Undergraduate Advising and Academic Programming](#) (UAAP) sets a standard of excellence in providing quality student-centered services to all undergraduates to enhance their academic success, social adjustment, and assimilation to the Institute. To achieve that vision, UAAP provides programming, access to Institute resources, and services that recognize the many needs, diversity, and uniqueness of students at MIT. This includes coordinating freshman pre-orientation and orientation programs; facilitating academic advising and mentoring relationships; cultivating learning skills; providing access to academic and personal support through Student Support Services (S3) and Student Disabilities Services (SDS); and promoting leadership development. Additionally, the Undergraduate Research Opportunities Program (UROP) management, operation, and oversight are UAAP responsibilities, as are the coordination of Independent Activities Period (IAP) and staff support to the Committee on Academic Performance. UAAP plays a leading role in the DUE Empowering Students to Leverage Their Experience strategic theme.

### **New Initiatives**

UAAP completed year two of a three-year experiment, and five UAAP staff advised a randomly selected cohort of 175 freshmen. A matching control cohort was also selected. The assessment from years one and two indicated positive results. The experiment will continue through the Class of 2016, will be evaluated, and a decision will be made on how to proceed.

UAAP also organized and offered a professional development series not only for UAAP staff but also for its collaborators and colleagues across campus. Program topics and speakers included:

- Jennifer Bloom, clinical professor and director of the Higher Education and Student Affairs master's degree program, and Claire Robinson, associate director of the Student Success Center, University of South Carolina: "Building an Academic Coaching Model on Your Campus: A Case Study"

- Mark DiVincenzo, deputy general counsel in the Office of the General Counsel: “Title IX Training”
- Deborah Rivlin, The Children’s Room, Arlington, MA: “Supporting Emerging Adults Coping with Grief and Loss”

A First Generation Student Project (FGP) was initiated in May 2011, and its programming and resources continue to be developed to enhance the academic success, professional growth, and personal development of first generation students. FGP is committed to building a sense of community among first generation students, faculty, and staff, and raising awareness of their unique experiences and challenges.

UAAP established a Sophomore Year Experience Committee; the focus of the initiative is to provide second-year students with the resources and tools to help them navigate their second year and enhance the prospect of their overall academic success and personal growth at MIT.

The past year has been spent on development of the Center for Academic Excellence, a virtual resource for MIT undergraduates interested in gaining and refining the skills and tools necessary to maximize academic potential. The online center will launch in mid-August 2012.

UAAP assumed responsibility for the Amgen Foundation US Program Office, with oversight for the Amgen Scholar summer research program at 10 leading US universities. This responsibility includes coordinating all marketing and communication among the 10 universities and the foundation; developing the annual report; coordinating the annual summer symposium for the Amgen Scholars at the University of California, Los Angeles; and distributing alumni travel grants.

### **Functional Enhancements**

With Information Services and Technology (IS&T), UAAP is working to build a comprehensive database for all UAAP functionalities, replacing seven databases that support freshman advising, fifth-week flags, and academic performance, as well as S3 and SDS. Three of six functional builds were completed this year; the remaining three will be completed in AY2013.

UAAP has partnered with IS&T on development of a new system that supports the publication and cataloging of non-credit IAP activities. The system will offer activity organizers and more functionality in scheduling and publishing activity descriptions and logistics, while offering the general community the ability to navigate IAP listings with greater ease and expedience. The new system will be introduced for IAP 2013.

Within S3, the medical withdrawal process was reviewed and the involuntary medical withdrawal process was repositioned to fall within the purview of DUE.

The Review Committee on Orientation, composed of faculty, students, and senior staff from DUE and the Division of Student Life (DSL), completed a comprehensive review of orientation. The committee defined critical outcomes for orientation that ensure that



students connect with other students and feel welcome in their residential communities; are appropriately registered for first-semester classes; and know how to access resources when facing academic, personal, or medical issues. The report, presented to the DUE and DSL deans and the chancellor, offered specific recommendations that will be implemented for orientation 2012.

With the opening of Maseeh Hall in August 2011, the residence-based advising program was expanded to include Maseeh Hall, in addition to McCormick Hall and Next House.

Both S3 and SDS saw an increase in student contacts:

- In AY2012, the deans in S3 took 5,153 appointments, including 752 walk-in visits; this represented a 15% increase in student contacts.
- S3 processed 105 withdrawals (57 medical and 48 voluntary) and readmitted 97 of 139 applicants for readmission.
- For the Class of 2012, 565 of the graduates utilized S3 services sometime during their undergraduate experience.

In the same period, SDS had 758 scheduled contacts with students; this number compares to last year's number. However, complimenting these scheduled appointments and, in response to student requests, a number of group events were pilots and provided additional support to students.

- SDS witnessed an increase in the complexity of student needs for required accommodations and services.
- Requests for accommodations have increased by almost 7% (249 accommodations) over the previous academic year.
- SDS will be vigilant in ensuring that MIT address access for all students as MITx and other innovative course delivery systems evolve.

UAAP continued to participate in fund development efforts and stewardship with respect to UROP gifts and endowment, and funds from the Amgen Foundation, the Lord Foundation, the Webster Foundation, the Baker Foundation, and the Class of 1959. Two gifts were received that support student emergencies. One fund, the Good Samaritan/Mitzvah Fund, is anticipated to potentially be a priority in the Class of 1954 60th reunion gift.

As part of UAAP's continued effort to support the academic success of first-year students, it coordinated information on reviews and departmental study sessions. Additionally, UAAP offered 15 fall learning strategy programs and seven spring programs. With residential life programs, it cosponsored five luncheons with faculty speakers.

Freshmen were advised by 72 faculty plus 112 lecturers, instructors, and administrators; this number includes those who led the 44 freshman advising seminars offered to the Class of 2015—two "super" seminars included D-Lab (Development through Dialogue, Design, and Dissemination) Discovery and the Concourse Freshman Advising

Seminar, which enrolled 29 and 70 students, respectively. There were 409 students who participated in an advising seminar. Advisors were matched with 189 associate advisors who served as peer mentors to the first-year students.

UAAP continued to offer a comprehensive professional development program for freshman advisors, including special workshops for new advisors. Beyond the new advisor training and the orientation advisor training for fall registration, the programs offered to advisors included: Advising First Generation Freshmen; Drop Date and the Struggling Freshman: Timely Advising; Helping the Struggling Freshman: Second Semester Challenges; and Making MAJOR Decisions: Guiding Our Advisees through the Decision-making Process.

Training and ongoing development of associate advisors was an articulated priority. Seven different programs were strategically offered to 189 associate advisors throughout the academic year, including 45 resident associate advisors.

The three recipients of the UAAP 2012 Institute Convocation awards were professor John Belcher (Arthur Smith Award for Lifelong Contributions to Student Life and Learning); professor Edward Greitzer (Baker Award for Excellence in Teaching); and professor Maria Yang (Earl M. Murman Award for Excellence in Undergraduate Advising).

During IAP 2012, 582 noncredit activities and 114 for-credit subjects were sponsored by 37 departments, 27 interdisciplinary laboratories and centers, 48 administrative offices, 45 Association of Student Activities groups, and nine non-student groups.

### **UROP/IROP Activities**

In summer 2011 and the fall and spring terms of 2011–2012, 51% of Undergraduate Research Opportunities Program (UROP) students were female and 49% were male. Of undergraduates graduating with their first degree in AY2012, 88% participated in at least one UROP project during their time at MIT; 85% (197 of 232) of graduating underrepresented minority students participated in UROP. This represents an increase of 5% from last year (80% participated from the Class 2011).

During the above academic year and summer, 4,022 UROP projects were completed—56% of the academic year projects were paid experiences; this percentage remains low compared with the high of 73% seen in AY2002.

UAAP provided \$3,204,597 in direct funding. Its direct funding budget comprises endowment income (41%), expendable gifts (19%), general Institute funds (33%), and foundation grants (7%). The UROP book-value endowment is \$14.9M, represented by 53 named endowed funds and 13 named gifts.

Faculty allocated \$3,665,463 in support of UROP. Faculty funding remained steady from the previous year. In alignment with past years, approximately half of MIT faculty mentor UROP students, and three-quarters of all UROP supervisors are faculty.

UROP remains the primary mechanism for students to engage with faculty outside the classroom.

Since AY2008, the Institute has provided additional funding to financially guarantee one term of UROP support for scholarship recipients during their undergraduate career; in AY2012, the Institute provided \$597K for this purpose. Particular programming effort was dedicated to cultivating interest and participation among underrepresented and first-generation students. Ongoing tracking, data collection, and analysis continue to be reviewed to assess the efficacy of this program.

UAAP approved 24 International Research Opportunities Program (IROP) experiences during the past year. These placements occurred in 14 countries. Additionally, UAAP established summer research exchanges with the National University of Singapore, the Hong Kong University of Science and Technology, and the University of Hong Kong.

### **Future Plans and Initiatives**

The following are currently defined UAAP initiatives for AY2013:

- Organize and host a one-day conference on supporting students with autism in higher education. With faculty, DSL, housemasters, and other campus groups, define strategic priorities and programming for supporting students on the autism spectrum.
- Co-locate SDS with S3, providing opportunities to more comprehensively and effectively support students with diverse needs.
- Collaborate with Academic Media Production Services (AMPS) and first-year instructors to videotape faculty describing the General Institute Requirements; this material will be placed online and will supplement the Core Blitz orientation program.
- With AMPS, identify a diverse set of laboratories and student researchers to feature in UROP profiles. The first profile was released and posted online in mid-June.
- With Mental Health and Counseling, DSL and DUE colleagues, and the student group Students at MIT Allied for Student Health (SMASH), develop a new orientation program designed to address the stigma of help-seeking; assist students to understand how to access resources supporting their own health, including mental well-being; and help students understand how they can care not only for themselves but also for their peers.
  - Revisit and update the academic integrity survey of all academic departments, with the intention of sharing best practices.
- Develop a network of S3 student ambassadors who will serve as a resource to their peers; demystify S3 and Mental Health and Counseling, clarifying campus resources and encouraging students to access S3 when the need arises.
- Play an active role in Institute initiatives on diversity and inclusion, ensuring that the campus develop a full awareness of disability as an aspect of diversity.

## **Staffing Changes**

This year, three individuals resigned from MIT. UAAP hired five staff members, to replace the three departures and fill two new positions, both on non-base funding. The hires included:

- Nicholas Kaempf, administrative assistant with the S3 team, a replacement hire
- Laura Maxim, staff associate with the S3 team, a replacement hire
- Katie Julian, staff associate with the new student programming/advising team, a replacement hire
- Kara Brown, staff associate with the SDS/advising teams, a new hire
- Shendi Xu, staff associate with the Amgen Foundation US Program Office, a new hire

**Julie B. Norman**

**Director, Office of Undergraduate Advising and Academic Programming**  
**Senior Associate Dean for Undergraduate Education**