Dean for Undergraduate Education

The Office of the Dean for Undergraduate Education (DUE) advocates for education by providing mission-critical functions for the Institute, creating new services and capabilities, and defining new ways of thinking about education. The unit supports and enhances integrated student learning, inside and outside the classroom, through student-focused as well as faculty-focused educational initiatives. DUE's scope is both broad and deep. It 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; promoting student success through advising, effective learning strategies, and other forms of support; and increasing student diversity at all educational levels.

The following offices report through DUE: Admissions, Educational Innovation and Technology, Experiential Learning, Faculty Support, Global Education and Career Development, Minority Education, Registrar, Reserve Officers' Training Corps, Student Financial Services, Teaching and Learning Laboratory, and Undergraduate Advising and Academic Programming.

Renewed Attention to Core Mission

In AY2011, DUE came to terms with the budget reductions of the past two years and regrouped in ways that preserved its greatest strengths and defined where it needs to be in the future, with a focus on the next three to five years. DUE completed much of the groundwork to focus renewed attention on its core mission: to enroll, educate, and inspire some of the world's brightest students with a passion for learning and sense of self so they become the next generation of creative thinkers and leaders in a global society. Across DUE, an exceptional staff was dedicated to promoting the excellence of a science- and technology-centric education, ensuring access and opportunity without regard to financial resources, upholding rigorous academic standards, advancing academic innovation, supporting students and faculty, and serving as a catalyst for learning, exploration, and discovery.

Some of the year's highlights are cited in this introduction. Many more are described in detail in the individual office reports that follow.

Strategic Planning Review

In January 2011, at the request of the dean for undergraduate education, DUE initiated a strategic planning review of the extant plan created in 2006. Since the 2006 plan was developed, the higher education environment and the nation as a whole have changed greatly, marked by extreme economic turmoil, demographic shifts, and both new opportunities and threats. Internally, several new units were added to DUE; changes in Institute leadership, issues, and priorities occurred; and DUE reached many milestones related to its original strategic themes. These and other factors pointed to the timeliness of renewing its strategic plan.

The dean looked to the entire DUE community for ideas that would inform the strategic planning process. Through weekly emails, staff views were solicited on topics such as the first-year experience, student-faculty engagement, use of educational technology, and building student confidence. Staff responses reflected their acquired wisdom and creativity, and included ideas that will be used as the new strategic plan is finalized and implemented over the next year.

While the review process reaffirmed much of the 2006 strategic plan, new themes, emphases, and needs emerged, driven by forces and trends within the current environment. DUE developed a sharpened set of priorities, which included a new educational technology theme and a refocused learning theme. It was decided to combine and fine-tune several existing themes and to develop programs and initiatives that emphasize a culture of staff development in DUE. The academic year ended with many of the elements of the strategic plan in place. Remaining steps include defining the parameters of the educational technology theme and its interrelation with the learning theme as well as with other e-learning initiatives at MIT. A new theme will be developed that combines global learning and the holistic student experience, along with a vision statement that expresses DUE's aspirations.

A New Emphasis on Educational Technology

Over the course of AY2011, DUE intensified its commitment to contribute to MIT's formulation of an e-learning strategy for the Institute. Educational technology was identified by the DUE leadership team as a priority and a new DUE strategic theme. The new theme will emphasize technology-enabled ways to support the educational enterprise and will help MIT explore online education's potential to maximize teaching and learning for its students and faculty. It will focus on three key elements of the MIT strategy: interactive and collaborative learning experiences that leverage open educational resources; flexible, modular, and concept-based approaches that support deeper learning; and learning delivery environments that include configurable, modern applications as well as flexible learning spaces. A particular goal of the DUE theme is to contribute to efforts to amplify and extend MIT's residentially based education through integrating digital technologies and online resources.

This educational technology–focused theme supports the MIT Council on Educational Technology's (MITCET) strategic purpose and direction. MITCET was chartered by the provost to enhance the quality of MIT education by encouraging appropriate and transformative applications of technology on and off campus. The dean for undergraduate education both co-chairs and staffs MITCET. This year, MITCET developed several experiments on modularity that will be executed in the next year with the Department of Mechanical Engineering and the Department of Chemistry.

Advising and Supporting Students

Considerable work was undertaken on issues of advising underrepresented minority students. While efforts to address this issue are ongoing for DUE, they were addressed in new and different ways, within a more strategic context. Across DUE, staff experimented with new approaches to advising and supporting students. Many of these

experiments were informed by data, broad and deep discussion, and efforts to define goals for providing a supportive environment for students.

At a July 2010 retreat, the leadership team and members of the Office of Minority Education (OME) Faculty Advisory Committee reviewed and discussed Consortium on Financing Higher Education data on student self-confidence and factors that may affect academic success, with special consideration of the experience of underrepresented students. This dialogue with faculty and other discussions on these topics produced ideas that were piloted later in the year. The Office of Undergraduate Advising and Academic Programming (UAAP) implemented several of the pilots, including an Undergraduate Research Opportunities Program (UROP) Expo, targeting potential first-time UROP participants (in collaboration with OME); a freshman award ceremony, recognizing achievements of students at the earliest stage of their MIT career; an experimental freshman academic advising center, through which UAAP staff advised 180 freshmen; and a more intensive advising experience with OME for students with multiple fifth-week flags. All these initiatives were seen as successful and will be continued in the year ahead.

The expertise of OME and the Teaching and Learning Lab (TLL) enabled DUE to look hard at programs to help underrepresented students, to experiment and introduce significant changes to some of the programs, particularly the flagship Interphase program—a rigorous seven-week summer residential, academic, and community-building program for admitted MIT freshman. OME and TLL staff worked together to rethink content, curriculum, pedagogy, infrastructure, and marketing of Interphase's summer bridge opportunity for incoming freshmen who are primarily underrepresented students. The emphasis of the Interphase redesign was to extend the program's effect on participants' academic success across their undergraduate trajectory. As of summer 2012, the program will have a new name: Interphase EDGE (Empowering Discovery/Gateway to Excellence), reflecting the goal of providing students with a way to get an edge on their MIT experience and to catalyze their academic success beyond MIT.

During the past year, under the leadership of UAAP director Julie Norman, Student Support Services (S^3) implemented many of the recommendations that the S^3 Strategic Planning Group presented in their June 2010 report to the dean. This has resulted in widespread improvements to S^3 policies and procedures. At the time of the report, S^3 and Student Disabilities Services had recently moved from the Division of Student Life (DSL) to DUE to become part of UAAP. The UAAP section of this report provides specific information about the evolution of an office that plays a critical role in supporting the emotional well-being and academic success of students, and the ability of faculty to respond appropriately to students in distress.

DUE's Office of Global Education and Career Development (GECD) administers MIT's prehealth advising system. The prehealth staff and other stakeholders have grappled with the challenge of creating a more sustainable prehealth advising model for MIT students and alumni applying to medical (and other health-related) schools. Last year, GECD took a significant step to meet that challenge by gaining stakeholder approval to implement a prehealth faculty committee that will oversee prehealth education

and advocate for MIT applicants to health profession schools. The committee, led by professor John Essigman, is expected to bring more consistency to advising and to the writing of recommendation letters, and will increase and sustain faculty involvement. There are strong advantages to grounding the prehealth advising system in the faculty: faculty are familiar with the MIT curriculum, are better positioned to influence their colleagues' participation (faculty representation has declined over the years, so more MIT applicants were advised by alumni and community physicians), and their participation affords students the opportunity for faculty engagement at a decisive time in students' lives.

In March 2011, the deans for DUE and DSL set up the Orientation Review Committee, led by professor Roe Smith, to consider and make recommendations, as needed, for all aspects of freshman orientation. This event supports students by setting the stage for academic preparedness, providing them the first opportunity to build the social networks upon which they rely, and preparing freshmen for the challenges they are about to encounter. The review committee will submit recommendations to the deans by the end of 2011, in time for changes to be implemented in 2012.

Supporting Teaching and Learning

TLL collaborated broadly with faculty and staff to develop and assess innovative pedagogies, educational technologies, and curricula. Besides extensive collaboration with other DUE offices and with faculty in many academic departments, TLL staff participated in numerous national and international initiatives to improve science, technology, engineering, and mathematics (STEM) teaching and learning.

Of particular note, through the MIT-Singapore collaboration, TLL received a grant to develop curricular materials for the new Singapore University of Technology and Design. TLL staff members are developing a set of 30 lectures around pivotal concepts and skills—materials that are likely to have wide applicability to engineering education.

Support for teaching assistants provided through TLL continued to be in demand. The popular Graduate Teaching Certificate Program, created to strengthen the teaching skills of PhD students, particularly those heading for academic careers, attracted great interest. Over 200 students have participated since the program began in 2008, and enrollment has grown each year. For fall 2011, the program anticipates 160 student participants and has 62 students waitlisted.

DUE's Office of Faculty Support (OFS) provides vital support to the faculty in the ongoing coordination and enhancement of the undergraduate curriculum, and in advocacy for effective educational infrastructure and resources. During the past year, OFS broadened and deepened this support, enhancing areas of ongoing responsibility and taking on significant new responsibilities for administering the Humanities, Arts, and Social Sciences (HASS) Requirement and the MacVicar Faculty Fellows program.

One of OFS's ongoing responsibilities is administration of the Institute's subject evaluation process. As of AY2011, MIT's subject evaluation system is entirely online, and a new Who's Teaching What (WTW) web-based application is being used to improve

the quality of teaching data and the ease with which it is collected. These applications, which eliminate nearly 40,000 paper forms each term, were developed through a four-year partnership with Information Services and Technology (IS&T.)

Modernizing the Student Information System/Digital MIT

Led by the Office of the Registrar and with the essential involvement of key members in DUE and IS&T, considerable progress was made to modernize the student information system. Last year several paper processes were converted to streamlined online processes, with important benefits to faculty, students, and staff.

The choice and sequence of projects was guided by the Education Systems Roadmap 2011–2014, which was approved by the Information Technology Governance Committee in October 2010. The roadmap contains a three-year timeline that evaluates specific projects against the strategic considerations, community expectations, logical sequencing (from both functional and technical perspectives), and amount of community impact. DUE succeeded in launching the two important roadmap projects described above, which OFS administers: Subject Evaluation and WTW. New operational efficiencies also included the advent of paperless admissions and Sunapsis deployment for the International Students Office. DUE is moving to online grading and online registration (to be piloted for students in seven courses in fall 2011), with plans to expand to all departments by spring semester 2012.

DUE is positioned for another successful year of delivering on the Education Systems Roadmap, with priority projects identified and several already launched. These will include online advising tools, phase 2 of online grading, and elimination of all paper forms and petitions. Resource planning is underway and a productive relationship is in place with IS&T.

Helping Students Go Global

Largely through the work of GECD, DUE continued to advance the goal of enabling most MIT undergraduates to participate in a significant global experience. The Class of 2010 reported 33.1% participation in one or more educational experiences abroad, up from 29.7% for 2009 graduating seniors. Unofficial results from the Class of 2011 are even more positive. They indicate that 41.2% of graduating seniors participated in a global education experience while at MIT.

Financial support is invariably a major enabling condition for participation in global education programs, and in particular for ensuring equitable access to opportunities. Last year, new financial support for global education through Campaign for Students funds and a new major gift significantly increased interest and enrollment in global programs, particularly during Independent Activities Period (IAP) and summer. A generous gift from the Victor and William Fung Foundation, established by Victor Fung ’66 and William Fung, gave 35 students the opportunity to travel to Greater China to foster personal and institutional linkages between MIT and the Greater China region, and to cultivate their global leadership capacities.

Enrollment Management: Admissions and Financial Aid

Through the Enrollment Management Group (EMG), led by DUE, a number of important plans were formulated. Admissions developed, and EMG approved, a plan to increase the class size to 4,500 over three years, starting with 1,120 freshmen and 40 transfer students in AY2012. EMG also addressed the long-standing question of whether and how MIT should admit more international undergraduates, a question raised by the DUE visiting committee during its last meeting.

In fall 2010, dean Daniel Hastings charged a working group to preliminarily assess how increased enrollment may impact DUE in the short and long terms. UAAP associate dean Michael Bergren chaired the group, which comprised representatives from each DUE office. The working group concluded that while increased enrollment is unlikely to present new challenges, it will exacerbate existing issues, including some that were made more acute by the budget cuts. The group called for ongoing analysis of DUE programs and services and use of resources to ensure that MIT continues to deliver what was promised to undergraduates when they were admitted.

The executive director of Student Financial Services, Elizabeth Hicks, worked with vice president for finance Israel Ruiz, and dean of admissions Stuart Schmill to develop a sustainable funding model for financial aid for the next few years. Their plan, which included an analysis of expected impacts of financial aid changes (especially increased student self-help), was accepted by EMG after intense discussion and some caveats. DUE and EMG will carefully monitor the consequences of these changes.

Communications

The past year's communications efforts focused on delivering effective communications for many key DUE initiatives. DUE's communications manager collaborated with IS&T to develop and implement an Education Systems Roadmap communications plan to promote understanding and acceptance of systems enhancements among faculty, students, staff, and alumni. Similarly, a partnership with IS&T focused on keeping students in the loop about immediate and long-term plans of the Athena Working Group. Communications efforts in support of the Higher Education Opportunity Act Textbook Information Provision aimed to increase faculty awareness and use of the new tip.mit.edu system.

In collaboration with DSL, the Office of the Dean for Graduate Education, and the chancellor, the communications manager continued to focus on improving student engagement. This effort included more opportunities for face-to-face interactions as well as more frequent and transparent communications around key issues. Several student focus groups, which addressed questions on how best to communicate with MIT students, via both traditional mechanisms and social media, provided the foundation for refining existing approaches and launching new ones. A monthly student life and learning digest was developed and will be launched in September 2011. It will be emailed to all students and will provide updates on key student issues and links to useful Institute resources.

Affirmative Action Goals and Successes

DUE continues 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 has been successful 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 the Office of Educational Innovation and Technology, and a Diversity Fellow was hired in the admissions office.

The most recent MIT Affirmative Action Plan reported that 65% of all new DUE hires were women and 41% were minorities for November 2009–October 2010. During that period, DUE promoted 10 staff members: eight (80%) were women and two (20%) were minorities.

Space

DUE's budget and space director, Jeanne Hillery, coordinated improvements to several DUE spaces in AY2011.

Minor renovations of both the OME suite in Building 4 and OME's Tutorial Services Room (TSR) in Building 12 were made between December 2010 and January 2011. After many years of advocating for additional space for OME, DUE received sufficient space from an adjacent vacated suite, which prompted reconsideration of the flow and function of the office. A minor reconfiguration allowed the addition of a well-defined reception/programming space and additional private offices for staff who meet with students one-on-one. The TSR was updated and reconfigured, creating distinct spaces for tutoring and staff, storage space, and a student lounge area that students use during the day, when the TSR is not open for tutoring services.

A two-part renovation of the Experimental Study Group (ESG) on the sixth floor of Building 4 was begun. The first phase focused on improvements to teaching and community spaces, including a major cleanup and replacement of tables, chairs, and chalkboards. The result is a bright, clean space where carefully preserved wall art by former ESG students retains the unique ESG feel. Phase 2 of the project is scheduled for IAP 2012 and will focus on the community kitchen and installation of a card-key access system for this 24/7 facility.

Significant space has been identified for the new home of D-Lab (Development through Dialogue, Design, and Dissemination) in the N51-N52 complex. Identifying a source of funds to renovate the space is underway, with renovations likely to occur in 2012.

Forward Momentum

In the last months of AY2011, MIT saw a number of leadership changes, including the appointment of professor Ian Waitz as dean of engineering and professor Eric Grimson as chancellor. With this new leadership in place, DUE has Institute colleagues dedicated to its highest priorities: the education and welfare of MIT students, and a commitment to improving the quality of teaching.

Through the excellent and committed work of DUE staff, important relationships are being strengthened and next steps clarified. Though DUE faces much uncertainty, the unit continues to advance its strategic priorities. Exciting initiatives are underway, and numerous opportunities and challenges inspire a forward momentum.

Daniel E. Hastings
Dean for Undergraduate Education
Professor of Aeronautics and Astronautics and Engineering Systems

Elizabeth Reed
Senior Associate Dean for Undergraduate Education

Office of Admissions

The MIT 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 the 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, DSL, 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.

AY2011 Review and Accomplishments

The Office of Admissions received 17,909 applications in AY2011, an increase of 8% over last year, for growth of 58% over the last five years. Admitted students totaled 1,742, which represented 9.7% of the applicant pool. The yield was up slightly, from 64% to 65%, in an increasingly competitive field, with nearly 40% of admitted students receiving offers of admission from one or more of the following universities: Harvard, Yale, Princeton, and Stanford.

MIT expects to enroll approximately 1,130 freshmen in fall 2011. Applications for transfer admissions decreased slightly to 492, and of those applicants 56 were admitted and 49 are expected to enroll. The number of admitted and enrolling transfer students more than doubled from last year, as a result of an intentional effort to gradually increase the undergraduate student body to 4,500 students over the next three years. In future years, the number of transfer students will return to that of previous years, approximately 25 per year.

This last year marked MIT's third year as a QuestBridge partner school. QuestBridge, a nonprofit organization that recruits high-achieving students from low-income backgrounds, provided 926 applicants to MIT for entry year 2011, and MIT will be welcoming 49 QuestBridge Scholars as part of the Class of 2015.

In AY2011, the admissions office continued with a more focused and cost-effective recruitment outreach program. These efforts included streamlined mailing programs, collaboration with peer institutions on group travel initiatives, increased student caller programs, and a greater focus on the campus visit experience for students and parents. During the recruitment travel programs, admissions staff visited over 60 cities around the nation and the world, and 2,500 students in over 200 high schools. On-campus visit program options were increased for students and parents, and over 25,000 visitors attended an on-campus information session and tour. The admissions recruitment website now has more than 3,900 blog entries, primarily from MIT students, with 178,000 comments, primarily from prospective students, averaging 225,000 unique visits per month. The blogs—personal accounts of life at MIT—continue to be the most popular feature of the site. Moving forward, the admissions office will continue to focus on mailing and travel programs and will increase the use of electronic communications, such as expanded student caller programs, increased email outreach, and live, interactive webcasts.

The admissions office also launched a webcast initiative to provide online admissions information sessions to prospective students who may not otherwise be able to attend a regional information session or visit the MIT campus. The office conducted 21 webcasts targeted to domestic and international geographic regions as well as underrepresented populations, and reached over 2,700 students. Additional webcasts were held in the spring for admitted students and parents, including the first Spanish language information session.

The composition of the Class of 2015 reflects the ongoing commitment to student diversity and excellence. Of the freshmen entering in 2011, 45% are women, 24% are underrepresented minorities, 14% are the first generation in their families to attend college, and 10% are international citizens. Students will be coming from 46 states and 59 countries. Over 90% of incoming class members have been leaders (president, captain, etc.) of an organization, and nearly a third has founded an organization or business. Forty-three percent were valedictorians and 90% graduated in the top 5% of their high school class. The freshmen enrolling in 2011 arrive with mean SAT scores of 710 verbal and 762 math.

The MIT Educational Council increased the number of alumni interviewers to 3,294 this year. Educational counselors conducted 14,028 interviews, providing interviews for 76% of applicants last year. The admit rate for students who had an interview or who did not have access to an alumni interview was 12.4% but only 1.4% for those who chose not to interview. The pool of interviewers is 18% international and 34% female. This year's group of educational counselors includes members from the Classes of 1941 to 2010, with 71% of the volunteers hailing from the last 30 graduating classes.

AY2011 marked the second year of significant budget reductions for MIT operations. Overall, reductions and budget reallocations in the Office of Admissions has focused on increasing the use of electronic communications for more cost-effective and targeted outreach, while at the same time increasing the number of admissions officers in response to increased applications to MIT in recent years.

One major improvement in the operational efficiency of the office was the development and implementation of a document imaging system for applications and an electronic application review and selection system. The new processes and systems have streamlined the application management processes, improving the efficiency of document handling systems and providing admissions officers more time for the application review and selection process. In AY2012, the office will work with Information Services and Technology to further enhance the application imaging system to include a dynamic application assignment, review, and tracking system.

Staffing

In AY2011, the Office of Admissions was composed of 19 administrative staff, 14 support staff, plus one Diversity Fellow: 21 women and 10 men, plus three open six-month support positions. Thirty-two percent of the staff were underrepresented minorities. The year-round support staff was reduced by two, and admissions officers were increased by one. 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

In AY2011, the Office of Educational Innovation and Technology (OEIT) made considerable progress in its core mission of improving teaching and learning at MIT through developing and disseminating innovative uses of technology. Through several important transitions and engagements, and despite the disadvantage of a substantially reduced budget and a greater reliance on soft funding, OEIT managed to strengthen its role (and the perception of its role) as a high-performing organization making important contributions to the Institute's efforts to explore and employ technology for sustainable educational innovation. Credit for these contributions goes to a talented and committed

OEIT staff and DUE management team, and to the strategic orientation OEIT has maintained.

Accomplishments

- Progress on initiatives launched last year in three strategic areas: bridging research and learning, linking digital content to the curriculum, and fostering communities of innovation and practice.
- Efforts directed towards strengthening and aligning the organization's human resources.
- Significant engagement with the MIT Council on Educational Technology (MITCET) on institutional planning efforts for exploring the potential of educational technology for new learning opportunities.

Bridging Research and Learning

OEIT's Software Tools for Academics and Researchers (STAR) group continues to support and improve its software offerings: StarBiochem, StarHydro, and StarMolsim, StarGenetics, StarORF. Over the last year, StarBiochem released Version 2, StarMolsim was revised to run on the nanoHub infrastructure for computationally intensive analysis, StarBiogene was moved to the Broad Institute's infrastructure for hosting and support, StarGenetics had a number of significant revisions, and StarHydro has a new faculty sponsor. StarBiochem was replaced by StarGenetics as the STAR group's most popular product.

The STAR software suite usage at MIT remained steady during the past year. The total number of users worldwide once again more than doubled over AY2011, to almost 28,069 from 12,500 during AY2010.

Funding from the Davis Educational Foundation until spring 2011 allowed the STAR program to continue to expand its efforts to create contextual materials and problem sets for MIT faculty and students and to make them freely available worldwide. The work and report from the STAR group received very favorable comments from the foundation. Unfortunately, the end of Davis funding reduced the STAR staff by 0.5 full-time effort.

The STAR group (Charles Shubert, Ivan Ceraj, Justin Riley, and Sara Bonner) collaborated effectively with faculty, research scientists, and technical staff from the Department of Biology, particularly professor Graham Walker. Professor Walker received a Howard Hughes Medical Institute professor grant to support his education group: Lourdes Aleman and Stacie Bumgarner, research scientists in curriculum development and teaching; and Diviya Sinha, a biology instructor also supported by the Davis grant.

Efforts initiated last year to make high performance computing resources easily and cheaply available to support applications at MIT through cluster creation on the Amazon Elastic Computing Cloud were extended through professor James Dicarlo's

lab in the Department of Brain and Cognitive Sciences in the field of object recognition, and with professor Jeffrey Grossman on a cross-disciplinary introduction to modeling course. The funding support for OEIT and Justin Riley's designation as MIT site lead for the National Science Foundation (NSF)–supported nanoHub are recognitions of the exceptional work in this area.

The STAR group expects to release new and updated versions of its educational products, including StarBacteria, in spring 2012, and StarBiochem Version 2.1, in fall 2011. StarCluster is the focus of planned quick start courses for AY2012. A proposal to NSF for the development of StarCellBio, submitted by professor Chris Kaiser and Professor Walker has received favorable early comments.

Resources for STAR continue to present a challenge; specifically, base funding for staff resources is required to support the ongoing development of new STAR software and the enhancement and maintenance of the existing STAR software suite.

Linking Digital Content and Curriculum

OEIT continued to make progress in its efforts to enhance the discovery, access, and interactive use of educational resources to leverage and link content more meaningfully to students' curriculum and learning experience.

Transmedia Systems and Applications Group

MIT Core Concept Catalog (MC3*)* is a set of tools and services that enables teachers or learners to navigate open education resources such as OpenCourseWare (OCW) and other Internet-accessible content based on concepts and/or learning objectives, thereby allowing them to explore alternate learning approaches. OEIT is currently developing an initial MC3 service and applications to support professor David Pritchard's Research in Learning, Assessment, and Teaching Effectively project, and the Spoken Media Browser video search and clipping service. MC3 and related tools are seen as potentially useful to the modular curricula projects proposed by the Department of Mechanical Engineering and the Department of Chemistry, as part of the MITCET-supported institutional educational technology experiments. MC3 is also garnering significant interest nationally—OEIT is discussing potential projects with organizations that include the Bill and Melinda Gates, Qatar, Hewlett, and Khosla foundations, as well as the United States Department of Education.

Initial experiments with the lecture recognizer software developed by the Computer Science and Artificial Intelligence Laboratory have shown the value of even low-quality lecture transcripts for aiding in the discovery of content within videos. OEIT is currently developing the Spoken Media Browser and video transcription search service, including a "video clipper" tool that will be integrated with the MC3 concept relationship service. MC3 and related tools are seen as potentially useful to the modular curricula projects proposed by the mechanical engineering and chemistry departments as part of the MITCET experiments.

A Science, Technology, Engineering and Mathematics (STEM) Visualization program is being explored and developed to address requests by faculty, instructors, and students

for high-quality visualizations for teaching and learning undergraduate core curriculum. This program will include components related to educational curriculum, visualization resources to support faculty and instructors, and technology spaces to support these. 3D animations are currently being developed to support professor Herbert Einstein's Physical Geology Tutor program.

MITConnect is a browser-based application container that would host educational applications that could eventually replace current learning management system functionality. A proposal has been developed to build a proof-of-concept platform and initial tools to demonstrate the value of MITConnect.

This year, OEIT and professor David Karger received further d'Arbeloff funding to continue efforts to make, the collaborative annotation application sustainable as an application and service at MIT.

OEIT advised student Vijay Umapathy in the development of his mechanical engineering project and thesis, "An Adaptive User Interface for Open Educational Content," featuring an iPad application to search through OCW content by concept.

OEIT conducted the 2011 iCampus Student Prize competition, sponsored by MITCET, to recognize the innovative and creative application of technology by MIT students. The 2011 competition, coordinated by OEIT senior educational technology consultant Brandon Muramatsu, was in two rounds. The first round involved the development of working prototypes by students, for a prize of $1,000. First round winners were invited to compete in the final round, for a grand prize of up to $10,000 for delivering fully functional projects. Bookxor was selected as the grand prize winner from a field of five finalists and twelve submissions. The Bookxor team—Peter Reinhardt, Erika Bildsten, Ilya Volodarsky, and Calvin French-Owen (all members of the Class of 2012)—plans to use its $7,500 grand prize to help launch a new startup, ClassMetric.com, based on its project.

MITCET Planning and Experiments

OEIT coordinated and supported all aspects of the MITCET process for planning technology-enabled transformation in the MIT learning experience: data collection and analysis, environmental scan, student and faculty focus groups, engagement with departmental groups for identifying and scoping experiments, as well as communications.

Educational Outreach

OEIT's educational outreach strategy is directed toward the development of communities of interest and practice around innovative pedagogies and educational technology, using face-to-face forums, web technology, powerful multimedia, and knowledge management tools. Educational outreach activities in AY2011 included those listed below.

Educational Collaboration Space

Building on the success of the Math CI Space, the TSA group worked with professor Haynes Miller and his team in the Department of Mathematics to develop the Educational Collaboration Space (ECS), supported by an NSF grant. The ECS is a freely available web-based tool that aims to facilitate exchange of ideas among educators teaching similar classes, record accumulated wisdom, and archive classroom material. Working with the ECS team, OEIT will continue to help disseminate this educational platform as well as help other MIT departments adopt and make best use of it.

Gallery of Educational Innovation

The Gallery of Educational Innovation continues to expand with additional related resources as well as new cases and stories on innovative educational practices and efforts at MIT. The Gallery, which was developed to share best practices and find useful resources and tools for advancing teaching and learning with technology by the MIT community and beyond, now features over 20 projects and five themes (collaboration, active learning, cross media, visualization and simulation, and open education).

Independent Activities Period

OEIT sponsored 15 Independent Activities Period (IAP) 2011 sessions in the areas of educational technology, outreach and innovation incubation, academic skills and resources, and arts. For example, the session "What's Ahead? E-Learning at Institute Level—Insight and Conversation Around It" provided an open forum for MIT faculty, staff, and students to learn about faculty and student responses to how MIT's critical educational values, cultures, and priorities can be supported and enhanced by technology.

MIT-Haiti Symposium

The MIT-Haiti Symposium, organized and cohosted by OEIT, was held on October 21–22, 2010. Over 20 MIT faculty and administrators and 18 Haitian educators and education leaders explored opportunities to leverage MIT's open educational resources and technology-enabled initiatives for improving STEM education in Haiti. Following the meeting, a proposal to fund MIT's engagement in Haiti was submitted to the Clinton Bush Foundation and is now under active review.

Additional Outreach Activities

STAR staff participated in a number of outreach activities, including workshops for K–12 students and teachers for the Department of Biology, the Whitehead Institute, faculty training at Roxbury Community College, and high school faculty workshops at Great Bay Community College in Portsmouth, NH. The group received a JFYNet*Works* award for their K–12 outreach work.

OEIT also hosted Technology-enabled Education at MIT as part of the MIT 150th Open House, which featured project demonstrations, interactive presentations, and on-site consultations to illuminate ways to use technology for innovative pedagogy.

OEIT cohosted the 2011 OpenCourseWare Consortium (OCWC) Global conference with MIT, Tufts University, and the University of Massachusetts Boston. OCWC Global 2011

brought together 240 attendees from around the world (its largest audience so far) to discuss the impact and future directions of OCW.

OEIT continues to explore cooperative activities with select institutions and agencies: the Innovation, Conception, et Accompagnement pour la Pedagogie group at Lyon 1 University for developing educationally relevant 3D visualizations; the Qatar Foundation; and The Open University (United Kingdom) on open education initiatives.

Flexible Learning Environments

OEIT's support of spaces and environments configured for innovative educational experiments and specialized applications continues to flourish. In AY2011, 257 workstation images were deployed in four physical spaces and on flexible mobile devices. Flexible learning environments were employed to support 11 classes and 32 IAP and summer sessions, enhance outreach efforts in the STAR group, and support OCWC Global 2011, the MIT-Haiti Symposium 2011, and alumni grant projects.

Two spaces, Rooms 37-312 and 26-139, are maintained 24/7 as advanced computing spaces for students and are enhanced with self-help facilities. In a successful collaboration with Information Services and Technology (IS&T), OEIT released to the MIT community easily deployable desktop virtual machines.

New initiatives include the creation of the Experimental Learning Environments Laboratory (ELEL) in Room 1-142, iPads in education, thin client deployments of virtual machines, and assessment of interactive student response systems. ELEL is being configured as a multi-use facility to flexibly support curriculum and pedagogical innovations such as project-based learning, as well as a laboratory and demonstration space for testing classroom technologies. These efforts have engaged many groups across the Institute, including IS&T, the Department of Urban Studies and Planning, and the MIT Libraries.

A new set of OEIT job families and job descriptions have been developed with the guidance of the MIT and DUE human resources staffs. These new classifications have been crafted to capture the unique combination of technology expertise, educational background, and non-technical competencies associated with OEIT jobs and growth paths for its staff.

OEIT looks forward to increased institutional engagement in the fulfillment of its core mission as a direct consequence of MITCET's and DUE's identification of educational technology as a strategic theme.

M. S. Vijay Kumar
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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 16 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 seven years ago with the John D. O'Bryant School of Mathematics and Science, in Roxbury, MA. For the last four school years, 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 O'Bryant students (and other area students) to the center on Saturdays for wide-ranging, hands-on science, technology, engineering, and mathematics (STEM) projects. Several O'Bryant graduates have been admitted 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.

The Edgerton Center is in its fourth year of collaboration with the Gloucester Public Schools and the Gloucester Education Foundation to build interest in STEM fields among middle school and high school students. One important 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, MIT

Haystack Observatory, the Scheller Teacher Education Program, the MIT Center for Environmental Health Sciences, MIT Museum, and the Department of Aeronautical and Astronautical Engineering.

Lessons developed at the Edgerton Center have been implemented in fifth-, sixth-, and eighth-grade classrooms; provided hands-on field trips to MIT for all 250 fifth-grade students; encouraged and enhanced afterschool programs; provided materials for hands-on lessons in classrooms; hosted over 150 middle school students for a two-week MIT hands-on summer experience; and contributed to the planning of a technology resource center at the middle school. Gloucester teachers have participated in over 50 professional development activities. A parent of a student in the summer program wrote:

> Can I tell you how much fun my son has been having? Every night there is at least a one-hour 'telling' of all the 'stuff' he did that day. I cannot say enough about the enthusiasm he has been showing. I thank you so much for this program. To come home from work on his first day and hear my son say, 'Mom, I want to go to MIT,' was just incredible for me. Please make room for him in the fall of 2017—we hope to say our son goes to MIT.

Funded by the National Aeronautics and Space Administration's (NASA's) Summer of Innovation program, in 2010 the Edgerton Center offered several hands-on summer programs, serving 118 students. These included the Engineering Design Workshop, a four-week engineering design and fabrication experience for high school students, and the Bridge to Engineering program for students at Boston's John D. O'Bryant School of Math and Science. The latter, a three-day introduction to hands-on projects, was created for rising freshman enrolled in a combined engineering/physics class at O'Bryant.

The NASA program also supported workshops for training teachers in hands-on STEM education. This included assembling and sending out 73 classroom sets of LEGO® atoms and molecules kits to teachers across the country and the world. The sets were designed by Kathleen Vandiver of the Center for Environmental Health Sciences. Each set has 14 LEGO kits, laminated documents, and student sheets and teacher's guide—enough to teach 28 students about chemical reactions and photosynthesis. The kits were assembled by volunteers from MIT, and from local communities and businesses organized by People Making a Difference, an organization run by an MIT alumnus.

Finally, the Edgerton Center has begun a program with General Electric (GE), and particularly the GE plant in Lynn, MA, that will create a model summer program for girls that can be disseminated to GE plants across the nation. The first pilot offering will take place in July 2011, with 25 girls from the Lynn public school system. Along with engaging the girls in hands-on engineering activities, the program allows women who work with GE to attend each day and share stories of their careers with the students.

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, and through mentoring. IDI also runs a series of networking and showcasing events that contribute to the vibrant international development ecosystem at MIT. Laura Sampath, IDI manager, also works to better prepare MIT students to be leaders in the international development field.

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. AY2011 was also the first year of D-Lab's Poverty Innovation Lab, an ambitious program that seeks to complete D-Lab's programmatic approach to poverty alleviation by creating a system that will catalyze the large-scale dissemination of affordable products and services to improve the lives of impoverished people. Technologies with high probability for successful adoption and implementation at scale are identified in three strategic sectors: health, energy, and agriculture.

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 250 students enrolled in D-Lab classes, predominantly undergraduates. Over Independent Activities Period in January 2011, 56 students traveled to Brazil, Cambodia, Ghana, India, Rwanda, Tanzania, and Zambia to work intensively in the field with community partners. Spring break had 21 students in Ecuador and Nicaragua, identifying design challenges for work in the second half of the semester.

Both IDI and D-Lab will benefit greatly from the Edgerton Center's participation in the new Singapore University of Technology and Design (SUTD). Professor Vandiver is the principal investigator in the research area of engineering for the developing world. D-Lab will be relocating to Building N51 and will be 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, Gordon-MIT Engineering Leadership Program (ELP), MIT Museum, 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 the home for approximately 18 student clubs and teams, including the Solar Electric Vehicle Team and the Formula Society of Automotive Engineers (FSAE) race car team. The FSAE team placed eighth at FSAE West in California, its best placement ever (up from 25th the year before). This past year, MIT student teams created three electric or solar/electric vehicles. The electric vehicle team's first all-electric motorcycle came in fourth at the Isle of Man Motorcycle race (electric division), with an average speed of 79 miles per hour. The students in the center's clubs and teams are benefitting from its ties to ELP, which has helped provide team leaders

with funded summer Undergraduate Research Opportunity Program (UROP) projects. These UROP projects are coupled with regular meetings of student leaders across the teams with both Edgerton Center and Gordon Program staff, where student leaders can compare experiences and identify how to be better engineering leaders.

Hands-on Academic Offerings

The Edgerton Center offers 20 to 25 subjects for credit each year, including 6.163 Strobe Project Lab, and 12 subjects associated with D-Lab.

Staffing

In AY2011, there were several important staff changes in the Edgerton Center. Sandra Lipnoski was promoted to administrative officer, while Paula Cogliano left the center to become program administrator for Concourse. Three new instructors joined the staff: Dennis Nagle and Nathan Cooke (IDI/D-Lab), as well as Peggy Eysenbach (working with the K–12 effort). Sue St. Croix is the new administrative officer for IDI, and Anna Young joined the IDI administrative staff.

Awards

Three Edgerton Center staff members received awards in AY2011: Sandra Lipnoski received a DUE Infinite Mile Award for community and customer service, Jessica Garrett received an MIT Excellence Award for Greening MIT, and Professor Vandiver received the Arthur C. Smith Award for contributions to undergraduate student life and learning.

Concourse Program

Concourse is a highly structured and integrated program for freshmen. The curriculum covers the standard science core curriculum (mathematics, physics, and chemistry) and integrates it into a larger human context (as represented by the humanities classes). 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 the vast range of opportunities offered by the Institute as a whole.

Personnel

Members of the Concourse faculty and staff for AY2011 were: Cheryl Butters, program administrator (through January 2011, when she retired after 35 years of service to the program), Concourse; Paula Cogliano, hired as program administrator (effective January 1, 2011), Concourse; John Keck, instructor of educational research and support, Concourse; John Lewis, senior lecturer, Department of Mathematics; Sekazi Mtingwa, senior lecturer, Concourse, and director of academic programs, Office of Minority Education; Jeremy Orloff, lecturer, School of Science; Lee Perlman, senior lecturer, Concourse; John Pope, instructor, Concourse; Linda Rabieh, lecturer, Concourse; Gabrielle Stoy, lecturer, School of Science; professor Bernhardt Trout, Department of Chemical Engineering. In addition, 13 undergraduates were employed as recitation instructors, tutors, and graders.

Enrollment

Concourse had 41 students registering for the fall term. In the spring, enrollment was set at 34.

Teaching and Curriculum

SP.319 Becoming Human: Ancient Greek Perspectives on the Best Life was offered as a humanities, arts, and social sciences (HASS) subject in the fall term, as well as 8.01 Physics I, 18.02 Calculus II, recitations in the calculus sequence (18.01A/18.02A), and a Concourse recitation in 3.091 Introduction to Solid-State Chemistry. In the spring term, SP.320 Modern Conceptions of Freedom was offered as a communication-intensive HASS subject, as well as 8.02 Physics II and 18.03 Differential Equations. In the fall, the Concourse seminar was SP.323 The Foundations of Modern Science and the Connection with the Whole of Human Knowledge, offered as a freshman advising seminar. The spring seminar was divided between SP.324 Foundations of Leadership and Success for MIT Students, and SP.325 Benjamin Franklin Forum.

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 and has begun to expand its humanities offerings with funds from outside sources, including the Charles G. Koch Charitable Foundation, the Apgar Foundation, the Thomas W. Smith Foundation, and the Jack Miller Center.

The new curriculum introduced by Professor Trout has brought the program closer to its interdisciplinary beginnings, but in a more sustainable, standard class framework. It has further redesigned the Concourse website to be more user-friendly and to reflect the new curriculum and approach.

Experimental Study Group

Student Statistics

Fifty-four first-year students were enrolled for one or more terms in the Experimental Study Group (ESG) this year, with another 55 students waitlisted for the program, the highest percentage of applicants in ESG's 42-year history. Forty-four percent of students were female, 30% were underrepresented minorities, and 20% were international students. In addition, ESG enrolled another 80 students (most of whom were not in ESG as freshmen) in seven pass/fail undergraduate seminars sponsored by ESG.

Staff and Faculty

ESG's administration was headed by mechanical engineering professor Alexander Slocum and included associate director Holly Sweet and program coordinator Graham Ramsay. The administration was supported by regular meetings with ESG's alumni steering committee. After 25 years of heading the physics staff at ESG, senior lecturer Peter Dourmashkin left ESG in January 2011 to work full-time in the Department of Physics. Analia Barrantes, a specialist in physics education research, is now heading the ESG physics staff and was joined in the spring by Paola Rebusco, also a specialist in

physics education. The mathematics staff was headed by Jeremy Orloff and included Gabrielle Stoy. The chemistry and biology offerings at ESG were taught by Patricia Christie. In the fall term, David Custer taught 21W.732 Science Writing and the New Media: Engineering Communication in Context. The ESG staff was assisted by 45 undergraduates (53% women and 22% minority students) who had participated in ESG's teaching seminar. These teaching assistants not only provided excellent service to freshmen but learned valuable teaching and leadership skills.

Educational Initiatives

Dr. Dourmashkin and Dr. Barrantes were awarded a Class of 1954 Funds grant to develop a program to provide additional academic support for MIT students who had done poorly on the mathematics diagnostic exam. Over summer 2010, they developed material for a seminar connected with 8.01 Physics, which was aimed at enhancing students' problem-solving abilities by reviewing mathematical concepts and teaching different mathematical procedures applied to physics problems. The seminar was taught for the first time in fall 2010, to a class of seven students in ESG and 55 students in technology-enabled active learning (TEAL) in the regular curriculum. Over 90% of these students reported that the classes helped them to better understand concepts and how to start solving a problem. Improvements to the material will be made over the summer, with similar classes to be taught in fall 2011.

During spring 2011, Dr. Christie and Dr. Stoy served as teaching mentors for Wan Hong Jean Yong and Sun Jun, faculty members from SUTD. SUTD faculty sat in on biology and mathematics classes in ESG; taught some classes; and saw how interactive, small group learning could be introduced into the teaching environment at SUTD. Mr. Custer was involved in helping SUTD plan a writing curriculum for freshmen that includes engineering communication in the context of hands-on projects. ESG intends to continue the collaboration in fall 2011 with additional faculty from SUTD.

In an experiment pursuing MIT's mission of finding ways to combine undergraduate student life and learning, Dr. Sweet teamed up with Donna Denoncourt, director of Residential Life Programs, and developed and taught a six-unit seminar in spring 2011 on SP.271 Beta-Testing Your Life at MIT: The Psychology of Emerging Adulthood. Dr. Sweet and director Denoncourt submitted a proposal about the seminar to the annual conference on emerging adulthood, which was accepted for its October 2011 conference, to be held in Providence, RI. Other new seminars developed by staff included SP.233 More than a Website: Creating Your Own Dynamic Brand on the Interweb, taught by Mr. Ramsay. New undergraduate seminars developed and taught by undergraduates included SP.294 Trading at MIT (Jonathan Smith '11).

ESG explored several energy initiatives, including integrating more energy-related examples into mathematics, physics, chemistry, and biology problem sets, and documenting the design, building, and testing of an energy-saving device as part of the curriculum for 21W732 Science Writing and the New Media. In an effort to integrate core academics with student interests, ESG instructors started an experiment in spring 2011, in which 20 percent of each problem set grade can be boosted by students' developing a question (and possible solution) on any topic that interests them. Problem sets will be collected and catalogued for future use as needed.

Awards

Winners of the annual Fiekowsky Community Service Award (for outstanding contributions to the ESG community) were Zachary Hynes, Nyasha Madziva, and Andrew Wang. 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) were Kiran Yemul, Alexandra Piotrowski, Agata Wisniowska, Zachary Fallows, Jing Li, and Melissa Gymrek.

Fundraising

ESG is continuing to work with alumni to raise a $1,500,000 endowment within the next ten years. This year, ESG received life-planning gifts from two ESG alumni (Herbert Lin '73 and Allen Baum '74), which will generate income, as well as build the program's endowment in the future. Dr. Sweet is continuing to work closely with the ESG alumni steering committee to reach this endowment goal, which will be used to support student teaching, educational innovation, undergraduate seminars, and community activities not currently covered under ESG's base budget.

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 its publication of books based on materials developed at ESG. In the coming year, the program looks forward to working closely with different departments at MIT to continue to develop and promote successful ESG educational experiments for the regular curriculum and for educational settings outside MIT.

Terrascope

One of Terrascope's major goals is to teach students how to develop crucial skills in many of the areas most valued by graduate schools and employers: analyzing and solving complex problems, working effectively as part of a multidisciplinary team, and communicating complex ideas in a variety of formats, including formal presentations, large interactive exhibits, web pages, and radio broadcast segments. Each year, freshmen are challenged with 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 90 to 100 students who initially join the program each fall.

Program Highlights

In AY2011, there were 60 students who finished the required fall subject, 12.000 Solving Complex Problems; the loss of students during the semester was related to unanticipated workload and confusion in the registration process. Participants studied issues related to world hunger and developed a comprehensive plan to ensure global food security. Their solutions and the fall's final presentations can be found here.

In Terrascope's spring subject, 1.1016 Communicating Complex Environmental Issues, small teams of students built on their fall experience by pursuing hands-on research or design. Prototypes, models, and demonstrations of ideas and technologies to aid farmers in the developing world were presented to the MIT community in a display called Feeding the World: A Bazaar of Ideas. Work exhibited included a passive-solar crop-drying device, a pedal-powered butter churn, a vertical-farming device, and a solar cooler to store refrigerated cattle vaccines in areas lacking reliable electricity.

Students in SP.360 Terrascope Radio produced a radio segment, "Food for Thought," using sound gathered in India as well as information collected during the year.

Terrascope Field Trip to Sirsi, India

A group of 50 Terrascope students, alumni mentors, faculty, and staff visited Sirsi, India, to learn about systems of food production and distribution in a rural agricultural community. The visit, funded in part by the Baruch Family Foundation and in collaboration with the Earthwatch Institute, was connected to students' yearlong study of global food security. 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, 11 undergraduate teaching fellows, and 21 alumni mentors. Charles Harvey, associate 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.

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Dean for Undergraduate Research
Professor of Mechanical and Ocean Engineering

Bernhardt Trout
Director, Concourse
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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 AY2011, amid ongoing staffing and curricular changes, the Office of Faculty Support (OFS) continued to focus 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 successful transitioning to a new distribution system within the Humanities, Arts, and Social Sciences (HASS) Requirement for freshmen, while maintaining the former HASS Distribution (HASS-D) system for upperclassmen; assuming responsibility for administration of the HASS Requirement as a whole; and moving the Institute-wide subject evaluation system completely online. OFS staff continued the essential work of supporting the Subcommittee on the Communication Requirement (SOCR) and other key groups addressing the undergraduate curriculum, including the undergraduate officers; overseeing the central budget for the Communication Requirement (CR); managing the selection process for and distribution of curriculum development funds; and supporting the Committee on Undergraduate Programs (CUP) and faculty innovation in education.

Subject Evaluation

As of fall 2010, MIT's entire subject evaluation system was online. MIT no longer offered paper-based subject evaluations, and the old version of Who's Teaching What (WTW) was phased out. Development of essential new features continued through spring 2011 and is nearly complete.

In spring 2011, 770 subjects in 35 departments were evaluated online, the widest adoption since the inception of the pilot in 2008. This is in part due to the participation of the Department of Mechanical Engineering, which switched to the Institute's system from its own system. There were 10,552 evaluations completed by 4,504 students, including ratings and comments for 1,471 instructors. The response rate of subjects evaluated online was 59%, excluding registered listeners. Overall ratings of subjects and instructors continue to be consistent with those given under the paper system and the five pilot terms of the online system.

In addition to the fall and spring semesters, the online system was used for the first time for subjects during Independent Activities Period (IAP), and it is in the process of being used for summer term subjects, which were not evaluated in the previous paper system. New features rolled out in spring 2011 included finer-grained access to and publication of evaluation results, and the addition of registered listeners as participants in the evaluation process. Information Services and Technology's (IS&T's) Data Warehouse staff members are finishing work on comparative and longitudinal reports for departments and schools—the final phase of development on this project.

At the subject evaluation website, students and others with MIT certificates can search for any result within the Institute-wide paper or online evaluations. Instructors and departmental administrators can access summaries of responses, as well as individual (anonymous) student responses, including quantitative data and comments. Reports can also be broken out by subject number (if a joint or meets-with subject); by respondents who were in specific sections (if students were assigned to sections by the department's

subject evaluation coordinator); or by registration status of respondents (registered listeners and/or for-credit students).

With the increased use of the new evaluation system and awareness of the value of the improved teaching and evaluation data, numerous policy issues have emerged, including advocacy for changes to Institute evaluation questions; strategies for improving response rates; voluntary vs. mandatory participation in the system; and reporting of data across departments, schools, and the Institute. It is expected that in the coming year faculty committees will consider these issues.

The OFS team for the development project included associate dean Mary Enterline, communications/data specialist Rosanne Santucci, and information technology (IT) business analyst Lee Leffler. Administrative assistant Deborah Boldin and IT consultant Matthew Davies this year assumed responsibility as ongoing coordinators for subject evaluation and WTW. All did a first-rate job in implementing a vital and complex system and received positive community reaction.

Support of Faculty Governance

In AY2011, CUP and its subcommittees on the Communication and HASS Requirements were staffed and supported by OFS, providing a valuable link between the work of DUE and those faculty committees with responsibility for MIT's undergraduate program. In addition to continuing work to implement changes to the HASS Requirement, OFS staffers supported the committees in their various reviews of proposals for new components of both General Institute Requirements (GIRs), as well as review of proposals for a bachelor of science (SB) program in computer science and molecular biology and a flexible SB program offered by the Department of Chemical Engineering. Staff in OFS played key roles in drafting policy statements, reports, presentations, and other communications that were released or presented by the committees and the faculty chairs. The chairs have expressed appreciation of the OFS staffers and their work in these processes.

OFS associate dean Anna 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. This year, the group considered how the committees might interact more effectively with the Undergraduate Association regarding student membership.

Administration of the MIT 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. As a part of the changes associated with the implementation of the HASS Requirement, in AY2011 all subjects designated as communication-intensive (CI) in the humanities, arts, and social sciences were reviewed and approved by SOCR for the first time. New processes and procedures were developed to accommodate this additional work in OFS and on SOCR's agenda. The newest staff member, administrative assistant Lauren Reemsnyder, was instrumental in organizing the subject review process. As

part of OFS support of SOCR's initiatives, several members of the office collaborated on the redesign of SOCR's website. Reemsnyder and assistant dean Kathleen MacArthur coordinated and planned the logistics for the subcommittee's first event to celebrate ten years of the CR. The event, titled Innovations in Communication Instruction: Lessons from Ten Years of the Communication Requirement, was held on April 27, 2011, and received positive community response.

In summer 2010, as OFS assumed responsibility for administration of the HASS Requirement as well as the CR, Patricia Fernandes was named to a new position: advisor for the Communication and HASS Requirements. For the CR, she assumed the lead role in auditing students' progress in the requirement, receiving petitions from students seeking exceptions, and advising students on all aspects of the CR. She continues to manage a series of 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.

SOCR and its OFS staff continued their collaboration with the subject evaluation team to include three questions about communication instruction in CI subjects on the online evaluations of all CI subjects in AY2011. Dean MacArthur again served as a liaison between the Writing Across the Curriculum program and the subject evaluation team to include the program lecturers in the online evaluations. These lecturers, funded through the CR budget, provide supplemental communication instruction in CI subjects.

OFS works with DUE leadership to assess budget requests associated with CI in the Major subjects and other components of the requirement, and to allocate necessary support. After careful negotiations and deliberations, OFS was not able to fully realize the 8% reduction to its base budget in FY2011. It met the reduction by expending some of its carryforward from FY2010. In FY2012, the CR budget was reduced by an additional $35,733, to fall within the base budget. As in the past years, OFS staff consulted with stakeholders and SOCR to achieve the necessary cuts, while seeking to preserve the integrity and excellence of the CR as a GIR; this work remains both politically challenging and time-consuming, and MIT is fortunate to have Dean MacArthur and DUE budget and space director Jeanne Hillery taking leadership roles in the process.

Administration of the MIT Humanities, Arts, and Social Sciences (HASS) Requirement

AY2011 marked the first year in the transition from the HASS-D distribution system to the revised HASS distribution system. First-year students entered in fall 2010 under the revised system, while upperclassmen continued under the HASS-D system. As noted above, Patricia Fernandes was named as the new advisor for the Communication and HASS Requirements. She advised students on their progress towards completion of the HASS Requirement, emailed students with reminders to complete concentration proposal and completion forms, and worked closely with the Subcommittee on the HASS Requirement (SHR) and the SHASS dean's office to manage and approve student petitions for substitutions within the requirement. She also oversaw the processing of concentration forms. In AY2011, approximately 2,000 forms were submitted.

OFS staff associates Genevre Filiault and Jason Donath provided support to SHR, contributed data for its discussions, communicated its policy decisions, and helped implement policies where appropriate by developing administrative procedures. They worked closely with SHR, the catalog office, and department catalog coordinators to clarify and process approximately 180 HASS subject proposals for AY2012. The HASS Requirement website has been expanded to include a location to house yearly reports to the faculty on subjects added and removed to the requirement and concentration changes.

This year the subcommittee focused on assessing the First Year Focus (FYF) program and drafting an interim report. Staff worked closely with SHR on these initiatives, including coordinating efforts with the Teaching and Learning Laboratory (TLL) in drafting and administering two surveys related to the FYF assessment: a downstream student survey and a faculty instructor survey. A meeting of FYF instructors during IAP was also coordinated by OFS.

Members of the Class of 2011 completed the most HASS concentrations in Economics (284), Music (97), Spanish (71), Psychology (48), History (47), Political Science (46), and Chinese (46). Foreign languages overall were popular choices, with 204 students completing concentrations in the 10 areas available.

Curriculum Development Funds

In AY 2011, more than $503,000 was awarded to 21 faculty groups developing new curricula. Funding for these awards came 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. Both funds are administered by OFS.

The d'Arbeloff Fund was established through a generous $10M gift from Brit (SM '61) and Alex ('49) d'Arbeloff to support projects designed to enhance and potentially transform the academic experience of MIT's undergraduate students. The fall 2010 call for proposals focused on innovations that address the increasingly international landscape in which students live and work, or that explore the potential of global interactions and new technologies to transform higher education. Also welcomed were proposals for initiatives involving dynamic, effective pedagogy in any of the GIR areas, including subjects for the new HASS distribution categorization, further piloting of FYF subjects in HASS, and CI subjects. Six new projects and one renewal received d'Arbeloff awards.

The Alumni Class Funds provide resources to MIT faculty for innovative educational projects, particularly to enhance undergraduate education. Awards serve as seed money for high-risk initiatives aimed at improving the quality of teaching and enriching the learning experience through creative curricular and pedagogical changes and the imaginative use of technology. Fourteen new one-year grants were made from the Alumni Class Funds.

During their 60th reunion in June, members of the Class of 1951 heard presentations about the impact of their fund. At their class meeting, Marvin Grossman described how the fund was initiated at their 40th reunion, and Dean Enterline and OFS IT consultant

Matthew Davies outlined the application and selection process for projects and featured websites from four recent projects. At a class dinner, senior lecturer Amy Smith, founder of D-Lab (Development through Dialogue, Design, and Dissemination) at the Edgerton Center, spoke about her work and the value of the support she has received from the Alumni Class Funds since she was a graduate student. The class was deeply appreciative of OFS staff contributions.

Mary Enterline, Matthew Davies, and Deborah Boldin admirably administer the two funds. Staff associate Sonia Brathwaite collected data on the impact of previous projects.

Faculty Outreach

Throughout the year, OFS staffed monthly meetings of the departmental undergraduate officers, where agendas touched on changes in the offices of Student Support Services and the Office of Minority Education, and reports from the Educational Opportunities Study Group, the MIT Council on Educational Technology, and the project team for WTW and online subject evaluations. The undergraduate officers were also asked to provide input on planning for uses of teaching technology and the increased class size, strategic planning activities in DUE, and how MIT might improve faculty involvement in advising and academic programming. The group heard several updates on the student information system that included demonstrations of online grading and registration modules, and it discussed a proposal regarding policies for minor programs. OFS continues to value this highly committed group of faculty who contribute extensively to undergraduate education at the department and Institute levels, and the office continues to work hard to promote effective communication and collaborative educational policy development within a decentralized, department- and research-focused institution.

Infrastructural and Staff Changes

In August 2010, in response to the migration of work related to administration of the HASS Requirement into OFS, several positions in the office were restructured. Patricia Fernandes was promoted to advisor for the Communication and HASS Requirements, and in this capacity she assumed primary responsibility for student administration activities, such as advising, petitions, and auditing. In October 2010, Lauren Reemsnyder joined OFS as an administrative assistant, providing support to both CUP and SOCR.

In December 2010, OFS lost two staff members, Sonia Brathwaite and Lee Leffler, whose term appointments ended. Both had served as staff associates for two years during the project to develop the online subject evaluation system and the new WTW application. Brathwaite provided backfill in a number of areas, including support for the curriculum development funds and faculty outreach projects, revision of the website Academic Guide for Undergraduates and Their Advisors, and the design of various other websites. Leffler served as part of the project team, specializing in testing, documentation, and training; he has moved to the education systems section of IS&T, where he will continue to work with OFS as a business analyst.

Collectively, OFS continued to provide effective, efficient, and dedicated service to DUE and MIT even during a time of budgetary stress and major organizational change. I am honored to serve as their office director.

Diana Henderson
Dean for Curriculum and Faculty Support

Office of Global Education and Career Development

The mission of the Office 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 with mission stakeholders, (4) develop a high-performing team, and (5) employ emergent technology and assessment tools.

Despite personnel shortages, the GECD staff continues to innovate and deliver unique and thoughtful service to the MIT community. Whether providing advice or identifying technical solutions to improve the student experience, staff members display dedication and caring throughout their work.

Changes and New Initiatives

GECD, led by assistant directors Marilyn Wilson and Kimberly Benard and associate director Deborah Liverman, collaborated with Imperial College London to hold the Global Fellows Summer Program at MIT to train doctoral students from both universities in professional transferable skills, with a focus on collaboration. Held in June 2011, the program had 19 doctoral students from Imperial College London and 13 from MIT as participants, with 92% of MIT participants reporting the program had high or very high impact, while 96% agreed that their collaboration skills and knowledge were improved.

Championing Global Education

MIT received a $1 million gift from the Victor and William Fung Foundation, which will provide five years of increased access to studying abroad for MIT undergraduates, with a particular focus on China and Asia. Our first three Li & Fung scholars studied the Chinese language in China during Independent Activities Period (IAP) 2011. An additional 32 students were selected as scholars for summer 2011.

GECD observed the 10th anniversary of the Cambridge-MIT Exchange with a community-wide celebration with program founders; program alumni representing each year; University of Cambridge colleagues; and MIT faculty, students, and staff.

Holistic and Comprehensive Career Services

GECD improved the Freshman/Alumni Summer Internship Program (F/ASIP) course based on a comprehensive review (led by assistant director Rachel Greenberg and career development specialists Heather Law and Amanda Peters) by moving the course to begin in the spring term, offering an afternoon section, increasing the use of technology, and developing learning outcomes. Course retention increased from 41% to 73%, and outcomes assessment showed significant gains in all but one competency area.

GECD (led by assistant director Laura Wilkinson, coordinator Melissa Ackerman, and administrative assistant Jordan Siegel) launched a fee-based job posting service for employers, generating approximately $20,000 per quarter, and made much needed improvements to the recruiting space. The program expanded employer consultation through a liaison program with staff knowledgeable in specific academic and industry areas, and a new internship role was created to expand internship opportunities.

Improving Prehealth Advising

After a careful review by key stakeholders, MIT approved implementation of a prehealth faculty committee to provide oversight of MIT prehealth education and advocacy of MIT applicants to health profession schools; Professor John Essigmann was selected as chair. The committee will write the prehealth advisory board letter for applicants. The shift from the current prehealth advisor system will allow MIT to address issues of inconsistency in advising and letter writing, to calibrate the MIT applicants for the schools' evaluations, and to increase program sustainability.

Digital MIT

GECD continued to increase efficiency and access to service through technology. Amanda Peters organized the first Harvard-MIT Virtual Grad School Fair, and counselor Erin Scott initiated the first Harvard-MIT-Wellesley Virtual Health Fair, connecting admissions representatives with potential applicants in an online environment. The graduate school fair attracted 28 programs and over 480 participants, and the health fair saw 316 students interacting with representatives from 26 health professions programs and schools. GECD increased the use of webinars to deliver workshops, garnering over 5,000 website hits; implemented a new online appointment system, with nearly 1,500 scheduled appointments and an online payment system; and replaced its career guidance system with Myplan.com, with 780 unique MIT users between the two systems. Heather Law spearheaded the addition of 25 CareerSpot videos to the website, securing corporate sponsorship from Merck. The entire video library received over 5,000 hits. GECD had 7,014 hits to its Going Global online resource, which was implemented in November 2010 to assist students seeking international opportunities.

Key Accomplishments and Activities

Global Education

A total of 698 undergraduates participated in global education opportunities through MIT programs in AY2011, an increase of 5.6% over the prior year. A number of new offices reported for the first time this year. The subtotals by type of experience include 353 internships, 161 public service and service learning opportunities, 91 research experiences, and 93 study abroad participants, with reporting from GECD, MIT International Science and Technology Initiatives, International Development Initiative, Public Service Center, Legatum Center, Undergraduate Opportunities Program, Undergraduate Research Opportunities Program, Terrascope, and Singapore-MIT Alliance for Research and Technology. The 2010 graduating student survey indicated that 33.1% of undergraduates reported completion of an international education experience, a 3.4% increase over the 2009 report.

In AY2011, 93 MIT students participated in study-abroad programs, for an increase of 9.6% over AY2010. The largest growth was in IAP programs, particularly IAP Madrid, which received funding from the Campaign for Students. New IAP programs were added, which contributed to the increase as well. Participation in study abroad decreased in nearly all other types of programs, and the greatest decrease occurred in the Cambridge-MIT Exchange.

The University of Cambridge (CU) was deeply affected by budget cuts for education in the United Kingdom, and as a result CU could no longer centrally fund the Cambridge-MIT Exchange. CU's school of engineering raised funds to continue the program under its auspices, and the program size was capped to a maximum of 15 students from each institution. GECD is pleased that the program will continue and hopes to expand opportunities through other CU departments in the future.

GECD's focused recruitment and advising efforts resulted in 523 students attending group sessions and events, and 3,383 individual contacts through appointments, drop-in visits, Skype, telephone, and e-mails.

Distinguished Fellowships

Despite the temporary absence of program coordinator Kimberly Benard and some changes in scholarship criteria, the distinguished fellowship efforts at MIT continued to see success in AY2011, with students and alumni receiving 14 highly competitive fellowship and scholarship awards:

Rhodes Scholar: Jennifer Lai

Marshall Scholar: Nathaniel Thomas

Gates Cambridge Scholars: Christopher Boyce and Raghu Mahajan

Truman Scholar: Anjali Thakkar

Fulbright Scholars: Anna Waldman-Brown, Candace Wilson, and Tobias Harris

Merage Foundation for the American Dream Fellow: Daniel Montana

Soros Fellowships: Hattie Chung, Juan Jofre, Melis Anahtar, Aadel Chaudhuri, and David Reshef.

GECD had 14 applicants to the Marshall Scholarship, with seven finalists and one winner. For the Rhodes Scholarship, 13 students applied and there were six finalists and one winner. The Truman Scholarship had four nominees (maximum), with two finalists and one winner.

Career Services

In AY2011, there were 3,279 student and alumni contacts for individual career counseling services via appointments, drop-in visits, Skype, and e-mails, an increase of 8.6% from the previous year. Of these visits, 1,743 unique students and alumni used the service, a 4.7% decline, with an average of 1.8 "touches" per student.

There were 149 career workshops, panel discussions, and seminars coordinated or presented to 9,543 students and alumni, representing a slight decrease over AY2010. Of these numbers, more than 1,965 graduate and postdoctoral scholars attended approximately 33 career workshops tailored to the graduate student community.

Eighty students enrolled in the F/ASIP program, of which 59 completed the first half of the course, representing a significant retention increase from last year. Students reported significant gains in competencies related to the course, in particular career planning and internship search knowledge and skills.

Prehealth and Prelaw Advising

There were 134 MIT student and alumni applicants (46 undergraduates, 15 graduate students, and 73 alumni) in the 2010 medical school application cycle, down from 144 in 2009. Eighty-two percent of all applicants used one or more prehealth advising services, just above last year's rate.

Acceptance Rates and Other Admissions Data for Medical School Applicants, 2010 Application Cycle.

Acceptance rate for undergraduate applicants who used prehealth advising services	86.7%
Acceptance rate for all applicants (undergraduate, graduate, alumni) who used prehealth advising services	77%
Acceptance rate for all applicants who did not use prehealth advising services	65%
National acceptance rate	46%
Average grade point average (GPA) for accepted undergraduates	3.39/4.0
Average Medical College Admissions Test score	35/45

There was a 7.2% decrease in the acceptance rate for undergraduate service users over the prior year; however, last year's acceptance rate of 94% was an outlier and this year's rate is more typical. Forty-nine percent of all MIT applicants were accepted to a school ranked among the top 20 primary care or research medical schools.

There were 1,942 prehealth advising contacts, including appointments, drop-in visits, Skype, and emails, an 11% increase in contacts from last year. This increase is especially noteworthy given the decrease in the number of applicants during this cycle. Of these visits, 414 unique students and alumni used the service, with an average of 4.7 "touches" per student or alumnus.

There were 612 students and alumni who attended 31 workshops and events, a slight decrease over the prior year. For the fifth year, Children's Hospital Boston joined Massachusetts General Hospital and Tufts Medical Center in the Physician Shadow Program, which offers quality shadowing experiences to MIT students and alumni; in AY2011 there were 92 student participants.

There were 56 disclosed MIT students and alumni who applied to law school for the 2010 application cycle. Seventy-five percent of MIT applicants were admitted, representing a slight decrease of 4%. The average GPA for all accepted MIT applicants to law school was 3.24/4.0. and the average Law School Admissions Test score was 163. There were 49 student and alumni prelaw advising contacts. As indicated in changes/initiatives, these services were scaled back in response to budget cutbacks and next year will be consolidated with graduate school advising.

Employer and Recruiting Programs

The undergraduate employment rate for the Class of 2010 at graduation was 78%, marking an 11% decrease from 2009. Master's degree recipients had an employment rate of 71.7%, a 12.3% decrease. The survey was changed to more accurately reflect employment status and more students were seeking employment than in 2009, which could partially explain the decreases. The average salary for those with undergraduate degrees was $62,270, a 3.6% increase from the prior year.

This year's preliminary placement data for the Class of 2011 is favorable, with 79.6% of undergraduates and 75.6% of graduate students seeking employment having accepted a job offer. The survey period concludes in August 2011.

F/ASIP generated 43 internship postings from 29 employers, a significant increase from 2009–2010. There were five new employers, some with international locations, including Facebook, Lockheed Martin, Nokia, Nexdoor (Taipei), and Bestway Inflatables (Shanghai).

The 2010 MIT Summer Experience Survey, with a response rate of 25%, found that 39.6% of rising sophomores, 67.1% of rising juniors, and 77.4% of rising seniors completed an internship during summer 2010. Just over 87% of respondents agreed or strongly agreed that their summer experience helped them clarify future career goals.

There were 290 employers conducting 5,174 interviews on campus in AY2011, representing a 3.5% increase over AY2010, the second consecutive year of increases. There were 3,478 jobs posted through CareerBridge, the online career management system. Through iNet, an online internship consortium, 284 registered MIT users had access to 4,643 internship postings.

GECD counselor Ellen Stahl coordinated GECD's two major career events in AY2011. The Govapalooza Government Networking Reception had 93 attendees, and the Spring Career Fair had 35 diverse companies, including Tiffany & Co., Sensient, and InDesign. There were 517 students in attendance, a 61.5% increase over the previous year.

GECD continued its employer outreach efforts to enhance existing relationships and to diversify its employer mix. It registered 1,785 new employers, who subsequently posted internships or jobs, participated in career fairs, or interviewed on campus. A sample of new companies includes Celanese, TD Waterhouse, Bridgestone, National Football League, Nike, FedEx, and Zazzle.com.

Personnel and Professional Activities

Over the past year, four staff members left GECD: Melissa Ackerman, Shanell Littlejohn, Laura Wilkinson, and Brian Wahl. The following staff members were hired: Josh Nupp as assistant dean for global education; Heather Law, Colin Smith, and Ellen Stahl as career development specialists; and Debra Shafran as an administrative assistant.

Professional Leadership and Development

Malgorzata Hedderick co-taught a freshman seminar on women's leadership, Good to Great, and continued to serve as freshman advisor. She also trained for and became a certified intercultural development inventory administrator.

Heather Law and Nancy Richmond received 2011 DUE Infinite Mile Awards.

Deborah Liverman was competitively selected to attend the National Association of Colleges and Employers (NACE) Management Leadership Institute.

Tamara Menghi was selected and funded by MIT to participate in Conexion, a Latino leadership program in Cambridge, MA. She was also a freshman advisor and an Office of Minority Education mentor.

Melanie Parker served on the NACE National Metro Program Committee and was chair of the Boston Metro Program Subcommittee.

Sarra Shubart participated in Developing Excellence: MIT's Administrative Assistant Pilot Program.

Ellen Stahl served as an advisory board member for the Career Counselors Consortium for New England.

Marilyn Wilson participated in the first-ever GECD global staff exchange at the University of Cambridge and Imperial College London, working in university career centers at both institutions and observing a transferrable skills conference at Imperial College London. She was also a freshman advisor.

MIT committees: Kimberly Benard serves on the joint Division of Student Life/DUE committee. Deborah Liverman served on the MIT Martin Luther King Jr. Celebration Committee. Erin Scott served on the DUE Rewards and Recognition Focus Group. Melanie Parker served as chair for the DUE Global Theme Team, and Malgorzata Hedderick served on the Global Theme Team as well.

Presentations

Heather Law presented How to Market Your International Experience at the Career Resource Managers Association Conference, Boston, June 2011.

Melanie Parker presented Strategic Planning for Your Career Center at the NACE 2011 Conference and Expo, Grapevine, TX, June 2011.

Melanie Parker presented Global Crossroads: Compelling Collaborations between Career Services and International Education Initiatives at the NACE 2011 Conference and Expo, Grapevine, TX, June 2011.

Nancy Richmond presented Twitter 101 at the Academic Technology Institute, Lesley University, Cambridge, MA, January 2011.

Publications

Nancy Richmond completed the following publications:

- "Are Social Networking Sites Really Robust Learning Environments in Disguise?" Netbiblo, A Coruña, España, with Leslie Hitch (in press).
- "Using Social Networking Sites during the Career Management Process," *Higher Education Administration with Social Media: Including Applications in Student Affairs, Enrollment Management, Alumni Relations, and Career Centers*, eds. Laura A. Wankel and Charles Wankel (Bingley, UK: Emerald Group Publishing Ltd., 2011).
- "Connecting Instruction to Connected Technologies—Why Bother? An Instructional Designer's Perspective," with Beth Rochefort, *Revista de Universidad y Sociedad del Conocimiento*, 8, 1 (2011).

Future Plans/Issues

GECD will continue to work under its five-year strategic plan, prioritizing global education and comprehensive career services through a high-performing team, effective collaborations and partnerships, and technology and assessment tools.

GECD will launch its newly developed website, which will be interactive and should facilitate greater self-help capability. A dedicated GECD web committee (Heather Law, Tamara Menghi, Nancy Richmond, Sarra Shubart, and Alyssa Tasha) worked beyond their regular work assignments to complete this project.

GECD is leading a multi-office pilot program to enhance student self-awareness and confidence through the use of StrengthsFinder, an assessment and developmental program that helps individuals identify and build upon their greatest talents and create strengths to enhance all aspects of their lives.

D-Lab Study Abroad, a new collaboration between GECD–Global Education and D-Lab (Development through Dialogue, Design, and Dissemination), will be piloted during the spring 2012 term in three countries—India, Nicaragua, and Zambia. Students will implement D-Lab projects in these locations while enrolled in MIT courses.

Beginning in September 2011, prelaw advising will be consolidated with the graduate school advising services that are currently offered to MIT students and alumni, due to budget cutbacks, low demand, and the similarity of the application process. Amanda Peters and Tamara Menghi have collaborated to ensure a well-planned and smooth transition.

In early 2012, the prehealth faculty committee will pilot its process for developing institutional letters of evaluation for 30 prospective MIT medical and other health profession school applicants for the 2013 cycle. The current advisor system will run alongside the pilot for AY2012 but will cease to exist in AY2013. As part of the pilot, GECD will be developing an online applicant management system to support the committee, requesting additional resources, and developing a new mentoring program for students to fill the gap created by this change.

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

In AY2011, in collaboration with the Undergraduate Advising and Academic Programming (UAAP) office, OME participated in two new Institute-wide initiatives:

the Intensive/Intrusive Advising Pilot and the Undergraduate Research Opportunities Program (UROP)/Undergraduate Research Fair. More details on both programs are outlined below.

The Intensive/Intrusive Advising Pilot was implemented to ensure that all first-year students receive and take advantage of resources needed to support their academic success. 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 (GPAs) and graduation rates (for all students, and particularly for underrepresented minority URM students). Its findings also revealed that fifth-week flag actions were negatively correlated with CAP actions. These were 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 dean for undergraduate education 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. Follow-up was conducted to ensure that students followed through on their commitments. Furthermore, to ensure that as many students as possible benefited from resources like Seminar XL, OME increased the number of Seminar XL/Limited Edition workshops in order to meet the demand.

Preliminary results from the pilot were very 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). The dean for undergraduate education has elected to run the pilot for an additional year.

OME and UAAP successfully coordinated MIT's first UROP/Undergraduate Research Fair on January 20, 2011, in Kresge Auditorium. This program was a direct outcome of the meeting of the Working Together: Conversations about Improving the College Experience and Academic Success of Underrepresented Minority Students, which took place at MIT on April 1–2, 2010. A best practice or suggestion from that meeting was that campuses should place even more emphasis on engaging URM students in undergraduate research opportunities. MIT, through its highly successful UROP program, is already a strong player in this area; however, the percentage of URM undergraduates who engage in undergraduate research is only 79% compared with 89% of non-URM undergraduates. One way to help narrow this gap is to make more students aware of the value, and the availability, of undergraduate research opportunities. The fair exposed hundreds of students, many of whom were URMs, to the vast array of research science opportunities available at MIT, and faculty and staff from 20 departments showcased their research efforts. The event will be held again, possibly biannually.

Innovations, a new OME initiative which started in fall 2010, gives students exciting, one-time opportunities to volunteer at organizations located in the Cambridge and Boston areas. The kick-off event was held on November 20, 2010, with a total of 22 participants (MIT students and alumni). Participants spent the day weatherizing, fixing computers at, and cleaning the Margaret Fuller House, a grassroots organization that works with families and youth in Cambridge. The OME Student Advisory Council (OMESAC), which comprises two representatives from 15 multicultural student organizations, played an important role in identifying potential organizations. Collaborations with offices such as the Public Service Center and Global Education and Career Development are on the horizon.

OME's Laureates and Leaders program is highly successful and very competitive. During the 2009 fall semester, students who were not eligible for or who could not commit to the program began to express great interest in learning more about graduate school opportunities. To meet this very specific student need, in fall 2010 OME created a new pilot program called Pathway to Graduate School. Interested students were invited to participate in graduate student panel discussions and a graduate school application workshop. In fall 2011, Pathway to Graduate School will become a signature OME program.

Master Your Future (MYF), piloted in fall 2010, is a professional development series offered in collaboration with the Industrial Advisory Council for Minority Education (IACME) and the GECD office. The program's primary goal is to offer more career development resources and services to undergraduates, with a particular emphasis on underrepresented sophomores, juniors, and seniors. Through MYF, OME offered three resume critique workshops and a forum titled What NOT to Do at Your Job/Internship. The feedback received from these events was positive, primarily because the sessions were timely, effective, and relevant, as many were aligned with major events such as the MIT Career Fair, OME's Momentum application cycle, and the summer internship application cycle.

Momentum, formerly the Second Summer Program, was held during Independent Activities Period (IAP). This three-week course (in January 2012, four weeks) is offered through the Department of Aeronautics and Astronautics. Twelve students were in the most recent cohort, and the theme for the group was "cost-efficient heating for the developing world." In addition to their class time, students were placed in project teams and presented their outcomes during technical talks at the end of the program. Corporate sponsors judged the presentations. IACME fully funds the Momentum program; however, organizations such as Cisco, EMC, Merck, Inroads, Lincoln Laboratory, Lockheed Martin, and the National Aeronautics and Space Administration's Jet Propulsion Laboratory interviewed participating students for possible internship opportunities. Eleven of the 12 students received interviews (six received offers and three accepted offers). Next year, increased participation to at least 15–20 students is expected.

The Center for Sensorimotor and Neural Engineering (CSNE) proposal was funded by the National Science Foundation (NSF) 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. Associate professor and OME associate dean/director Joel Voldman (Electrical Engineering and Computer Science) participated in a site visit at the University of Washington last fall. This visit eventually led to the funding of the Engineering Research Center proposal. OME (in collaboration with the Engineering Outreach Programs Office) will receive approximately $40K annually from the center to offer enrichment courses, research opportunities, and seminars that will expose students to careers in neural engineering.

Fund Development

In addition to the $40K annual contribution that we will receive from our participation in the new CSNE, all indicators suggest that our Louis Stokes Alliance for Minority Participation (LSAMP) proposal, which was submitted to the NSF in October 2011, will be funded as well. MIT, via OME, will be the lead institution in an alliance that includes Tufts University, Wellesley College, Brown University, Yale University, and Connecticut College. The goal of LSAMP is to increase the number of URM students in science, technology, engineering, and mathematics (STEM) fields. If funded, up to $700K per year for five years will become available to support STEM diversity efforts at participating institutions. Finally, IACME currently comprises 22 corporate, government, and non-profit partners (including Latino Alumni of MIT, and Black Alumni of MIT). In 2009, six partners were contributing to program efforts. This group now provides over $80,000 annually to help underwrite costs associated with OME programs and initiatives.

Functional Enhancements

The Interphase program is a rigorous residential academic program for admitted freshmen that takes place the summer before matriculation. The seven-week program builds community and confidence while fostering high achievement and content mastery for underrepresented minorities and other students who have overcome significant odds to be admitted to MIT. Interphase students take classes in calculus, physics, chemistry, writing, and physical education. In summer 2010, 70 students successfully completed the program.

In collaboration with TLL, OME initiated a comprehensive evaluation of the Interphase program. The findings were quite revealing and instructive and have led to some significant program enhancements including piloting a new physics curriculum in summer 2011 (approved by the Department of Physics). 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, beginning in summer 2012, the Interphase program will become the Interphase Empowering Discovery/Gateway to Excellence (EDGE) program. To maximize the potential of the program, Interphase EDGE will not only help students transition from high school to college but will also teach them pivotal concepts that will prepare them for academic success *throughout* their tenure at MIT and beyond (not just freshman year). In addition, an academic year component will be added to Interphase EDGE in fall 2012. OME anticipates increased

interest in the program, as incoming students will definitely see the "new" Interphase as a way to get an "EDGE" on their MIT experience.

Laureates and Leaders remains a stellar OME program. In AY2011, it implemented the monthly Faculty Research Talks, a mock graduate school application workshop where juniors worked alongside faculty and administrators and a PhD in industry panel, as well as participated in a team building activity for the newly accepted cohort of sophomores. The third annual Laureates and Leaders Induction Ceremony was held on February 18, 2011; twenty students were inducted into the program. In attendance were president Susan Hockfield, former chancellor Philip Clay, and other high-level administrators and faculty. Dedric Carter '98 and astronaut Robert Satcher '86, PhD '93 were keynote speakers for the event. In June 2011, 11 of the 13 senior laureates graduated from MIT. Out of the 13 students, two are going on to PhD programs, one will be entering a master of science program, and eight have accepted positions in industry. Two laureates have decided to stay at MIT for an additional term/year. There are currently 40 students enrolled in the program. In December 2010, OME completed a formal assessment of the program. Preliminary findings revealed that participants were (and are) receiving the necessary assistance they need to apply to graduate school. Overall, students expressed satisfaction with their experiences.

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. In its fourth year, MAP proudly reports a total of 106 active participants (46 mentors and 60 protégés). After the first year of a two-year evaluation of the program, "match quality" was identified as a key area of concern. MAP restructured its matching policy to include an online application process, a detailed matching protocol, and inaugural matching events. The Nexus Kick-off and the Meet Your Match events provided participants the opportunity to build community and play an integral role in the matching process. A new match support system was also implemented. MAP staff completed monthly one-on-one follow-ups with all the matches and were able to address potential relationship breakdowns in a timely and effective manner. As a result, MAP increased the number of freshmen retained in AY2010 to 91% (39 of 43), up from the 33% retention rate in AY2009. MAP set goals to increase faculty mentors by 100% and staff mentors by 5%. MAP exceeded these goals and yielded 15 new faculty mentors (up from five) and 11 new staff mentors (up from 32). Funding from the Webster Foundation is no longer available to support the program. To maintain program quality and maximize future growth, additional financial support is needed.

The OME Faculty Advisory Committee (OMEFAC) had a successful year. It hosted two well-attended faculty-student mixers (in the fall and spring semesters), supported the UROP/Undergraduate Research Fair, and was instrumental in recruiting new faculty to serve as mentors in the MAP and Laureates and Leaders programs. Ed Bertschinger (chair) and Margarita Ribas Groeger (cochair) lead by example and have a team of 10 faculty members who are equally committed to these efforts: Christine Ortiz (Materials Science and Engineering), Caesar McDowell (Urban Studies and Planning), Bob Redwine (Physics) Wesley Harris (Aeronautics and Astronautics), Samuel Allen (MSE), Suzanne

Flynn (Linguistics), Janelle Thompson (Civil and Environmental Engineering), JoAnne Yates (MIT Sloan School of Management), Ruben Rosales (Mathematics), and Timothy Swager (Chemistry). OMEFAC members also played a critical role in promoting Interphase during Campus Preview Weekend, establishing curriculum for Momentum, recruiting speakers for the Faculty Research Talks, and much more. Increasing opportunities for faculty/student engagement, assisting DUE and OME in its efforts to create a more supportive environment for URM undergraduates, and serving as faculty liaisons to OME Signature Programs remain priorities for this group.

Future Plans and Initiatives

Programs such as MYF, Innovations, and Pathway to Graduate School are fairly new initiatives, and OME will continue to expand and refine them. Transitioning Interphase to Interphase EDGE will be a significant task; most of the work will take place during AY2012, but it will take several years to refine and evaluate the new model. OME will continue its collaborations with UAAP and TLL on joint initiatives like the Intensive/Intrusive Advising Pilot, the UROP/Undergraduate Research Fair, and Seminar XL.

Staffing Changes

A new OME organizational structure was implemented to support the program-focused and student services–driven mission of the office. However, three key staffing changes occurred in AY2011 that, in retrospect, proved fortuitous. Gabrielle McCauley, former program coordinator, took a position at the Whitehead Institute for Biomedical Research. Sekazi Mtingwa, formerly OME faculty director, accepted a part-time position with Brookhaven National Laboratory in December 2010. Finally, the part-time program coordinator position previously shared with Concourse was eliminated. The timing of these transitions taxed the office in many ways but in the end OME was able to strengthen its staffing infrastructure. Salary savings enabled OME to secure two full-time program coordinators, Antonio Perry and Deolinda Rodrigues. In addition, by combining the resources from the faculty director position and the shared Concourse position, OME was able to create a re-imagined and highly sustainable assistant dean for academic and professional development programs position; the search process for this position is now underway.

DiOnetta Jones
Associate Dean for Undergraduate Education
Director, Office of Minority Education

Office of the Registrar

The Office of the Registrar promotes the educational goals of MIT by:

- Conveying accurate, timely information to the MIT community and beyond and providing services related to enrollment, registration, and graduation

- Implementing and enforcing academic and administrative policies related to the above
- Creating, updating, preserving, and issuing academic records for past and current students and alumni
- Developing and communicating official subject, schedule, and curricular program information
- Managing and maintaining classroom space

To fulfill its mission, 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.

Accomplishments

The Institute relies on the Registrar's Office in various and complex ways. In AY2011, the office continued to provide the highest level of service and accuracy. The student information system project challenged the staff to define functional requirements, make design decisions, test, and then implement major Institute-wide improvements to core business.

Technology Highlights

In partnership with Information Services and Technology, the Registrar's Office:

- Defined the functional specifications, tested, and piloted the Online Grade Submission Application
- Defined the functional specifications, tested, and piloted the Online Registration Application
- Provided key business leadership in the development of the functional specifications for the electronic transcript delivery project
- Identified the technology to implement a replacement for an aging scheduling system and provided business expertise toward defining functional specifications for that project
- Completed the project to convert microfilmed historical transcripts to PDF images

Policy Work

In AY2011, the Registrar's Office 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 identifying areas of concern and then implementing the new "non-standard"

executive master of business administration degree program, and—with the Office of the Provost, the Office of the Vice President for Research, and the International Students Office—examining policies and fee structure for non-Institute visiting students.

Registrar's Office staff worked with the Committee on Curricula (COC) to approve major curriculum changes as follows:

Course 4: Approved changes to both undergraduate programs, including new names. The name of the Course 4 bachelor of science (SB) program was changed from Art and Design to Architecture; the Course 4-B SB program ("as recommended by the Department of Architecture") was renamed Bachelor of Science in Architecture Studies. In addition, the name of the Visual Arts discipline stream, humanities, arts, and social sciences (HASS) concentration, and minor was changed to Art, Culture, and Technology.

Courses 6 and 7: Approved a new joint major: Computer Science and Molecular Biology.

Course 7: The 7-A SB program ("as recommended by the Department of Biology") was renamed Bachelor of Science in Biology.

Courses 10: Approved a new flexible SB program in Engineering (10-ENG), which will operate within the administrative structure developed by the School of Engineering during the previous academic year, with the approval of the 16-ENG program.

Course 11: Approved a new HASS minor in International Development.

Course 21: Approved the termination of the Major Departure in Psychology. Students interested in that field will continue to have the option of pursuing a minor in the field or choosing a psychology-focused major in Brain and Cognitive Sciences.

Course 21H: Approved a renumbering plan for its entire curriculum.

Course 21W: Approved a renumbering plan and new subject descriptions for its first-year writing program.

The COC, together with the Committee on the Undergraduate Program (CUP), resumed its efforts to clarify how much overlap should be permitted between majors and minors. The issue remained timely in light of the emergence of new flexible and interdisciplinary SB programs. The two committees actively engaged with key stakeholders throughout the Institute to discuss a draft that was designed to clarify existing policy, a process that will continue into AY2012 in consultation with the chair of the faculty.

In consultation with the CUP, the Committee on Graduate Programs (CGP), and the Faculty Policy Committee, the COC approved amendments to the term regulations to clarify policy and procedures with regard to end-of-term assignments and examinations. The COC also endorsed a CGP recommendation to standardize the regulations for graduate and undergraduate subjects. However, that recommendation would have

required a change to Rules and Regulations of the Faculty, and proposed amendments along those lines were not adopted by the faculty when presented for a vote in April 2011.

In consultation with the CGP, the COC approved a new definition of and numbering conventions for special subjects and adopted new catalog designations for subjects offered by the following programs:

WGS	Women's and Gender Studies
ES	Experimental Study Group (ESG)
EC	Edgerton Center
CC	Concourse

Together with the CUP, the COC engaged in discussions with key stakeholders concerning the new subject numbers for science subjects taught through ESG and Concourse. Those discussions will continue into AY2012.

The COC approved new procedures for managing both general undergraduate seminars and freshman advising seminars, and it defined the criteria for considering unique subject designations for subjects, including those offered by non-academic units.

Operational Highlights

The following are operation highlights:

- Updated the Registrar's Office website to include a mobile application to display details of the final exam schedule
- Worked with the COC to approve changes to 1,079 subjects, including 178 new undergraduate subjects
- Worked with the CGP to approve changes to 1,095 subjects, including 156 new graduate subjects
- Processed 1,754 editorial changes to graduate and undergraduate subjects; graduate subjects accounted for 56% of the total
- Processed 232 student petitions to the COC. The COC also worked closely with the Subcommittee on the HASS Requirement (SHR) to seamlessly transfer the processing of petitions for substitutions in the HASS General Institute Requirement from the COC to SHR
- Scheduled and allocated rooms for academic classes, processing 1,905 class reservations for the fall; 175 class reservations for the Independent Activities Period; 2,694 class reservations in the spring; and 43 class reservations for the summer
- Made room assignments for 12,123 ad hoc classroom reservations and processed 10,141 reservations for academic classes, exams, reviews, tutorials, and office hours; responding to 22,264 scheduling requests and 2,546 maintenance requests, the staff generated 34,515 emails; 245 ad hoc requests could not be fulfilled because of lack of room availability at the requested times

Classroom Management Highlights

The following are operation highlights:

- Renovated two classrooms and one 80-seat lecture hall in Building 4—all three rooms received new flooring, walls, ceilings, and lighting; two classrooms received new furnishings; video projectors, motorized screens, and window shades were also installed
- Installed new acoustical ceilings in Rooms 1-132, 1-134, and 1-136
- New upholstery for lecture hall seating was installed in Room 1-390
- New sliding chalkboards were installed in Room 24-121
- Video projection screens were installed in Rooms 1-132, 1-136, 1-150, and 1-246
- New carpeting was installed in Rooms 4-152, 5-232, 34-301, 34-302, 34-303, 34-304, 56-114, 56-154, 56-162, 56-167, 56-169, 56-180, and 56-191
- Student seating in both technology-enabled active learning (TEAL) classrooms 26-152 and 32-082 was replaced
- New video projector and projection screen were installed in Room 26-100
- Lecture halls 4-231 and 4-237 received new video projectors and audio-visual (AV) systems
- Installed new video projectors and updated the code to the Crestron Control systems in Rooms 32-124 and 32-144
- Led the effort as client for the design phase of the future renovations of classrooms 3-343, E25-111, and E25-117; these classrooms are scheduled to be renovated during summer and fall 2011
- Developed information signs for posting in classrooms; signs include a picture of the classroom, seating layout, and contact information for classroom support services
- New AV system, including video projector and connection points for laptops, was installed in Rooms 3-442 and 24-121
- Replaced AV in Room 4-249 with new video projector and control system
- Thirteen new video projectors were installed in TEAL classroom 32-082
- Electronic classrooms 1-115 and 14-0637 received new video projectors and updated code to MediaLink control system
- Installed new video projectors and control systems in Rooms 2-131 and 2-132
- Installed new tables and chairs in Rooms 13-4101 and 13-5101
- Classrooms 1-132, 1-134, 1-246, 48-308, and 48-316 received new video projectors and updated code to MediaLink control systems

Data Request Highlights

In AY2011, the Registrar's Office provided much needed student data to academic departments for use in grant writing, curriculum evaluation, visiting committee reports, and student progress analyses. The office also provided data for national surveys, including the Integrated Postsecondary Education Data System Report, Engineering Workforce Commission Report, Common Data Set, Association of American Universities Data Exchange, National Science Foundation Recent College Graduate Survey, and the Consortium on Higher Education Class Size Survey. The office developed a report to help its colleagues in Student Support Services better track re-admitted students and increased its communication with departments regarding undergraduate degree candidates who lacked necessary requirements. It has begun to gather feedback from faculty regarding their data needs and is in the process of developing a plan to address those needs better in the future.

Registration

In AY2011, student enrollment was 10,566, compared with 10,384 in AY2010. There were 4,299 undergraduates (compared to 4,232 the previous year) and 6,267 graduate students (compared to 6,152 the previous year). The international student population, comprising citizens of 115 countries, was 2,766, representing 9.5% of undergraduates and 37.6% of the graduate population. (Students with permanent resident status are counted with United States citizens.)

In AY2011, there were 3,905 women students (1,948 undergraduates and 1,957 graduates) at the Institute, compared with 3,832 (1,916 undergraduates and 1,916 graduates) in AY2010. In September 2010, 480 first-year women enrolled at MIT, representing 45% of the freshman class of 1,067 students.

In AY2011, there were, as self-reported by students, 3,286 minority students (2,078 undergraduates and 1,208 graduates) at the Institute, compared with 3,130 (2,043 undergraduates and 1,087 graduates) in AY2010. Minority students included 524 African Americans (non-Hispanic), 111 Native Americans, 14 Native Hawaiians or Other Pacific Islanders, 799 Hispanic Americans, and 1,838 Asian Americans. The first-year class enrolled in September 2010 included 528 minority students, representing 49.5% of the class.

Degrees Awarded

Degrees awarded by the Institute in AY2011 included 1,161 bachelor's degrees, 1,530 master's degrees, 17 engineer's degrees, and 609 doctoral degrees—a total of 3,317 (compared with 3,296 in AY2010).

Staff

Associate registrar Connie Scribner retired effective February 28, 2011, after 33 years of service to MIT, 24 of which were in the Registrar's Office. With her departure, a reorganization occurred within the academic records section: Peter Hayes was promoted from assistant to associate registrar and assumed the majority of Scribner's responsibilities while retaining most of the duties of his former position. Assistant

registrar Daniel Engelhardt took on the supervision of the transcripts and certification section, and associate registrar Brian Canavan is taking the lead on the support of the WebSIS student information system and information technology functions.

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 United States (US) Air Force (USAF).

Accomplishments

The quality of the cadet corps and cadre remained first-class in AY2011, and cadets continued to be recognized by the Air Force for their performance. In 2010, the Detachment Cadre in whole was recognized as the best small AFROTC in the Northeast region and also nationally. This correlates to being the top unit of approximately 50 considered. AFROTC annually identifies those cadets in the top 10% nationally as Distinguished Graduates. One of seven cadets who graduated in AY2011 earned Distinguished Graduate honors and was from MIT, a significant honor and achievement for the Institute.

Increasing the size of the cadet corps continues to be a priority. Seven cadets were commissioned in AY2011, and it is projected that approximately 15 cadets will join the program in the fall, making one of the larger incoming classes in the last 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 2011

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	7	6	5	5	23
Harvard	0	1	1	0	2
Tufts	4	0	3	1	8
Wellesley	0	2	0	0	2
Salem State	1	0	0	1	2
Gordon	1	0	0	0	1
Endicott	0	0	0	0	0
Total	13	9	9	7	38

Highlights of the cadet training program include an oil crisis simulation held at Harvard University; a geopolitical war game held at Tufts University, involving Detachment 365 cadets, Tufts political science students, and senior military officers from Tufts, MIT, and Harvard advanced degree programs; and various survival training programs. Finally, the Air Force, Army, and Naval ROTC programs combined to conduct a successful Cadet Award Ceremony, Pass-in-Review, Commissioning Ceremony, and a formal Joint-Service Military Ball.

In addition to the weekly leadership training, two cadets were 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

Staff changes are set to take place during summer 2011, following a year of relative stability. Captain Daniel Sawicki will replace Captain Joseph Adelmann (separating from USAF) as the detachment's operations flight commander. Captain Danny Hugh replaces Captain Sawicki and takes over as the detachment's recruiting flight commander. The program also welcomes Second Lieutenant Daniel Darlington, who replaces Lieutenant Eric Smith. Lieutenant Darlington was recently commissioned from Tufts University and will be working out of Detachment 365 as a recruiter for the New England area for the next year.

Lieutenant Colonel Theodore G. Weibel
United States Air Force

Army Reserve Officer Training Corps

The mission of the Army Reserve Officer Training Corps (AROTC) 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 in order 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

Fifteen officers were commissioned in AY2011 (meeting the program's Army-assigned viability/commission goal) and an additional three cadets will be commissioned at a later date in 2011. Four of the 15 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 17, 2011, 79 students were enrolled in the AROTC program, an increase of 10 cadets compared to last year at that time. Over $1,670,000 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 for Army ROTC, as of May 2011

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	4	3	2	4	13
Harvard	3	0	2	3	8
Wellesley	1	1	0	0	2
Tufts	2	1	5	3	11
Other affiliates	9	15	13	8	45
Total	**19**	**20**	**22**	**18**	**79**

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 of non-ROTC students. AROTC continues to be a preeminent source of high-quality leadership instruction; the MIT cadre participated in its 14th consecutive year instructing a for-credit special seminar in leadership with the MIT Sloan School of Management during Independent Activities Period.

In AY2011, 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, MA in April; a formal dinner in November; a water survival test in October; a military ball in February; and commissioning ceremonies at MIT, Harvard, Tufts University, Salem State University, and Gordon College.

An overall dip in enrollment of about 10–20% is expected for next year, as a continued reduction in AROTC scholarship availability occurs due to overall reduction in federal funding.

Staffing Changes

The Army did not assign any new instructors during the past year; however, the program will undergo a period of cadre turbulence for AY2012. The program is already short one assistant professor of military science and will be for the foreseeable future; it will lose its supply technician in summer 2011, its senior military science instructor in October (contract employee), and its four remaining active duty cadre members between May and July 2012 (including the professor of military science, the last assistant professor of military science, the senior military instructor, and the enlisted instructor). There are no designated replacements but it is expected that at least two of the four positions will be filled prior to the beginning of AY2013. The cadre will continue to be augmented with part-time reserve officers and Massachusetts National Guardsmen to enhance the leadership experience and training for cadets. Based on the potential lack

of continuity for spring/summer 2012, the program, as an organization, may be severely hindered in its ability to achieve mission success past 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. Although the number of students enrolled in AROTC from the consortium increased from last year, low MIT and Harvard 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 MIT 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.

Lieutenant Colonel Timothy Hall
United States Army

Naval Reserve Officer Training Corps

The mission of the Naval Reserve Officer Training Corps (NROTC) program at is to develop midshipmen mentally, morally, and physically. The program imbues them with the highest ideals of duty and loyalty, and with the core values of honor, courage, and commitment, to commission college graduates as naval officers. The program desires officers who 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.

At MIT, the officers and staff assigned to the area of naval science 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, along with the professional development opportunities afforded by the NROTC program.

During AY2011, five midshipmen from MIT and Harvard University were commissioned as ensigns. Program enrollment prior to Commencement in June 2011 is shown in the table below.

Year-end Enrollment in Naval ROTC, as of June 2011

	Freshmen	Sophomores	Juniors	Seniors	Total
MIT	7	6	4	4	21
Harvard	5	2	1	1	9
Tufts	1	0	1	0	2
Total	13	8	6	5	32

Accomplishments

NROTC students continued to maintain high standards of excellence during AY2011.

During the summer, all scholarship midshipmen participate in active duty training with deployed naval units. In summer2010, midshipmen served aboard submarines, maritime patrol aircraft, aircraft carriers, and amphibious assault ships, and exercised with US Marines. This training provided invaluable experience for future naval officers.

NROTC students enroll in eight different naval science courses during their time at MIT. Students receive instruction in naval engineering, history, doctrine, operations, and leadership. These classes were monitored by the visiting professor of naval science to ensure a high quality of instruction.

NROTC hosted numerous high profile visits and distinguished guests during AY2011. These included:

- Admiral Kirkland Donald, Director of Naval Reactors
- Vice Admiral Mark Ferguson, Chief of Naval Personnel
- The Honorable Juan Garcia, Assistant Secretary of the Navy
- Commander Oliver Lewis, Commanding Officer USS *San Juan*
- Commander Timothy Salter ’92, Commanding Officer USS *Virginia*
- Major General Gregg Martin, Commandant of the US Army War College

Furthermore, midshipmen participated in events with high-level military leaders, including Admiral Michael “Mike” Mullen, Chairman of the Joint Chiefs of Staff, and the Honorable Raymond “Ray” Maybus, Secretary of the Navy.

NROTC staff is responsible for mentoring and instructing students but midshipmen run the NROTC battalion. This allows them unique leadership experience that will be vital in their naval careers. Additionally, they are involved in the planning and implementation of numerous activities and events, including the annual Beaver Cup Regatta, multiple field-training exercises and military excellence competitions, and two military balls.

Midshipmen continue to be active with other extracurricular activities. Many balance NROTC commitments with varsity athletics, fraternity and sorority leadership positions, and other school events. Others take an active role in volunteering, counseling, and mentoring.

The academic year concluded on June 3, 2011, with the commissioning of four NROTC students as ensigns in the US Navy. These students joined Air Force and Army ROTC graduating seniors at the historic ship USS *Constitution* in Charlestown, MA. Major General Martin, an MIT alumnus, was the guest of honor and issued the oath of office to all new ensigns and second lieutenants.

Two NROTC graduates will carry on the program's reputation for engineering excellence as naval reactors engineers, in Washington, DC. Two more will start their naval careers as a naval flight officer and a submarine officer. Prior to reporting for duty, two graduates will complete master's degrees at MIT in spring 2011 in computer science and electrical engineering.

Staffing Changes

NROTC will be welcoming two new instructors in fall 2011. Major Craig Giorgis has relieved Major Conrad Milne as the Marine officer instructor. Lieutenant Matt Minck will be joining the Boston Naval Consortium in September 2011. The NROTC program looks forward to continuing its high standards of excellence with these highly qualified individuals.

Captain Curtis R. Stevens
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 for AY2011

Tuition, Fees, and Other Major Institute Charges

Tuition, fees, and other major Institute charges totaled $521,155,803 in AY2011, a 5.5% increase over the previous year, and broke down as follows:

Tuition	$451,809,683
Student activity fee	2,725,730
Housing	48,367,244
Dining	3,371,719
Health plan/insurance	14,164,893
Medical/dental charges	248,445
Finance charges and late payment fees	468,089

Graduate tuition was $287.3M, or 63.6% of total tuition, and undergraduate tuition $164.5M, or 36.4% of total tuition.

Student Accounts

As of June 30, 2011, the student accounts receivable balance, netting out credit balances and exclusive of advance summer term billing, was $2,811,516. Uncollectible receivables of $124,729 were written off against the student account reserve.

Students are eligible for refunds when the credits on their student account exceed their charges. In FY2011, approximately 6,294 refund checks, totaling $23.9 million, were issued to students.

Student Loans

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 AY2011, $1.9 million was loaned and $1.6 million collected. The year-end receivables balance for this program continued to climb, rising 5.4%, to $6.4M million.

The overall education loan notes receivables as of June 30, 2011, including Federal Perkins Loans, MIT's Educational Loans, MIT Technology Loans, and MIT Parent Loans, increased 0.5%, to $52.9 million. Uncollectible loan receivables of $397,843 were written off, including $222,168 in uncollectible Federal Perkins Loans assigned to the US Department of Education.

Undergraduate Student Financial Aid for AY2011

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 AY2011, the annual price of an MIT education totaled $53,210 per student—$38,940 for tuition and fees; $11,234 for room and board; an estimated $2,764 for books, supplies, and personal expenses; and a per student average of $400 for travel. With 4,285 undergraduates enrolled, the collective price for undergraduates was $228 million. Of this amount, families paid $109.3 million, or 48%, and financial aid covered the remaining 52%. 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.

Of undergraduates, 92%, or 3,933 of the 4,285 registered, received $118.7 million 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 42.5%. Need-based aid recipients make up 65% of MIT undergraduates.

Sources of Undergraduate Student Financial Aid

MIT provided 77% of all aid to its undergraduates in AY2011. Of this MIT aid, 93% took the form of scholarships, less than 1% was loans, and 7% was employment.

Other sources of financial aid include the federal government, private sources, and state governments. The US Department of Education is the second largest source of financial aid to MIT undergraduates, providing 14% of all aid from grant, scholarship, student loan, and student employment programs, including Federal Pell Grants, Federal Supplemental Educational Opportunity Grants, Academic Competitiveness Grants, National Science and Mathematics Access to Retain Talent Grants, Robert C. Byrd Scholarships, Reserve Officer Training Corps Scholarships, Federal Direct 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 9% of all aid. This aid includes 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.

The following table details the sources and forms of financial aid that MIT undergraduates received in AY2011 and the number of student recipients for each category.

Undergraduate Financial Aid, AY2011

	Scholarships/Grants		Loans		Employment		Total*	
Source	**Amount ($)**	**Students**	**Amount ($)**	**Students**	**Amount ($)**	**Students**	**Amount ($)**	**Students**
MIT	84,890,346	2,659	188,320	60	6,314,513	2,304	91,393,179	3,573
Federal	8,170,193	1,243	6,833,858	1,215	1,482,866	483	16,486,917	2,333
State	214,513	112	—	—	—	—	214,513	112
Private	8,899,545	1,328	1,666,494	83	—	—	10,566,039	1,389
Subtotal*	**102,174,597**	**3,273**	**8,688,672**	**1,289**	**7,797,379**	**2,646**	**118,660,648**	**3,933**

*The student subtotal and totals are unduplicated numbers of students.

Undergraduate Scholarships and Grants

Scholarships and grants from all sources totaled $102.2 million, with 76% of undergraduates (3,273 students) receiving scholarships. MIT awarded $84.9 million in need-based scholarships to 2,659 undergraduates, or 62%. The average MIT scholarship remained relatively the same, at $31,926. Approximately 71% of MIT scholarships were funded from restricted sources, and 29% came from the general Institute budget or unrestricted sources.

Undergraduate Student Loans

During AY2011, 30% of undergraduates (1,289 students) borrowed $8.7 million. For those students borrowing, the average loan was $6,741. Approximately 46% of graduating undergraduates in the Class of 2011 (441 students) borrowed at some point during their education. Their debt ranges from $400 to $125,520, with the 90th percentile at $36,982. The average total debt is $18,127, and the median debt is $12,938.

Undergraduate Student Employment

Sixty-two percent of undergraduates (2,646 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 $7.8 million, or an average of $2,947 per student.

Undergraduate Parent Loans

Approximately 4% of undergraduate families, or 188 parents, borrowed $4.0 million through a parent loan program administered by MIT. Federal Direct PLUS loans accounted for 92% of the dollars borrowed. For those parents borrowing, the average loan was $21,528.

Graduate and Professional Student Financial Aid for AY2011

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 AY2011, loans totaled $41.5 million, an increase of approximately $300,000 from the prior year, with 897 graduate students, or 14.6%, borrowing an average of $46,300. Graduate student employment earnings under the Federal Work-Study Program, including on- and off-campus programs, totaled $2.1 million, with 180 graduate students, or approximately 2.9%, earning $11,464 on average. The following table provides the details.

Graduate Need-Based Financial Aid, AY2011

	Loans		Employment		Total*	
Source	**Amount ($)**	**Students**	**Amount ($)**	**Students**	**Amount ($)**	**Students**
Federal	20,201,166	680	2,063,491	180	22,264,657	762
State	114,188	3	—	—	114,188	3
Private	21,215,435	369	—	—	21,215,435	369
Subtotal*	**41,530,789**	**897**	**2,063,491**	**180**	**43,594,280**	**978**

* This student subtotals and totals are unduplicated numbers of students.

Other Accomplishments

In AY2011, there was a SFS reorganization, in part necessitated by a significant decrease in the SFS operating budget and subsequent downsizing of staff through attrition and position elimination. The reorganization resulted in the creation of two new units within SFS—an integrated customer service unit, and a financial aid delivery unit for the origination and disbursement of external financial aid funds from federal, state, and private sources.

SFS launched direct deposit of student account refunds to provide students with faster access to their refunds. Students will log into MITPAY, the electronic student account billing and payment system, and provide their bank account information. They will no longer need to come to SFS to request a refund, return to pick up a paper check, and then deposit the check in their bank account.

SFS, in partnership with Information Services and Technology, the MIT Libraries, the Registrar's Office, DUE, the Office of the Dean for Graduate Education, and The Coop, launched the Textbook Information Provision (TIP). By completing the one easy-to-use MIT Semester Books Submission Form, faculty disclose details on required and recommended readings as part of the pre-registration process, as well as initiate Coop book ordering and the MIT Libraries reserve process. The textbook information and price is then transferred to the Online Subject Listing and Stellar. As result of TIP, students will be provided the ISBN (international standard book number) and list price in advance of classes, allowing them to compare prices and find potential savings for their course materials.

Staffing

In AY2011, there were a number of staff changes due to the SFS reorganization, with current SFS staff successfully competing for new positions. Leslie Bridson was named director of financial aid after the departure of Julia Benz. Gary Ryan moved to associate director of financial aid delivery, Jason Marsala to assistant director for financial aid awarding, and Ashley Russell to counselor for customer service. Jocelyn Heywood was promoted to assistant director of education loan collection, and Claudia Battle to counselor for financial aid delivery. As the year ended, Gregory Che and Elizabeth Gorra left SFS. Anna Wetterhorn joined the staff as a student services representative, and Susan Sullivan as senior associate director for financial aid application and awarding. There are several open positions that will be filled before the start of the fall semester. Of the 29 positions currently filled, 31% are filled by minorities and 24% by underrepresented minorities.

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.

TLL's achievements are in four areas: contributions to the teaching and learning enterprise and educational innovation at MIT; the design and implementation of assessment and evaluation studies; collaboration with other DUE offices and DUE's strategic partners; and participation in national and international activities in science, technology, engineering, and mathematics (STEM) teaching and learning. The following are TLL achievements for AY2011:

- Partnered with the Office of Minority Education (OME) to strengthen Interphase and Seminar XL, two of OME's signature programs that contribute to the academic success of minority students at MIT.
- Received a substantial grant from the MIT-Singapore Program to develop curricular materials for the new Singapore University of Design and Technology (SUTD); these materials will have wide application for engineering education both at MIT and other institutions.
- Collaborated with faculty and staff from the MIT Energy Initiative to produce a 20th-anniversary celebration of the MacVicar Faculty Fellows Program, focusing on how MIT educates students to solve big problems. TLL assistant director Leann Dobranski took the lead on this initiative, with Daniel Nocivelli, TLL administrative assistant, contributing.
- Continues to be involved in significant efforts nationally and internationally to improve STEM higher education.

Details about these efforts, as well as other TLL initiatives, follow.

Contributions to Teaching and Learning

TLL's endeavors in teaching and learning encompass a wide variety of activities. They include programs that improve teaching in the classroom, the laboratory, and in co-curricular activities; consultations on how to foster learning; and contributions to educational innovations spearheaded by faculty and others. Three specific areas are described below.

Partnership with the Office of Minority Education

The partnership with OME has been fruitful, involving both the Interphase and Seminar XL programs. For Interphase, TLL made significant contributions to the white paper "Re-imagining Interphase," writing the sections on "re-imagining" the physics and humanities components of the program. TLL postdoctoral associate Peter Hyland, working with senior associate director Janet Rankin, redesigned the Interphase physics curriculum, created materials for the new curriculum, and chose and trained the teaching

assistants (TAs) for summer 2011. It is noteworthy that physics faculty teaching both 8.01 and 8.02 praised the new curriculum and the hope is that they will be influenced by it. TLL has also increased its participation in the training of all Interphase TAs.

For Seminar XL, TLL expanded the training of facilitators and put in place a feedback system to monitor progress during the semester. In addition, it collaborated with OME staff, as well as faculty, TAs, and facilitators associated with 8.02, to develop Seminar XLT, patterned after Northwestern University's successful Gateway Workshop program. As well, TLL designed and implemented assessment studies to provide feedback on the changes to both programs.

Graduate Teaching Certificate Program

The demand for space in the Graduate Student Teaching Certificate Program continues to grow. TLL increased the number of sessions from three to five for fall 2011, when Lourdes Aleman (Office of Educational Innovation and technology [OEIT]) and Elizabeth Vogel Taylor (Department of Chemistry; Howard Hughes Medical Institute initiative) will teach with TLL. TLL piloted a two-week intensive version of the program in summer 2011, which was well received and from which it "graduated" close to 60 doctoral students.

Collaborations and Workshops on Teaching and Learning

TLL continues to work with schools and departments to provide training in teaching and expertise in STEM education, with excellent results. Data provided by the Department of Chemistry show a rise in the percent of TAs receiving ratings in the 6.5–7.0 range, from 9.4% in AY2006 to 26.0 % in AY2011. In the last year, TLL led teaching orientations for new faculty and TAs in all schools. Additionally, Dr. Rankin worked with faculty and TAs in Courses 1, 2, 9, 11, and 20, including classroom observations and feedback.

Assessment and Evaluation Studies

The table below provides descriptions of the research projects undertaken by TLL staff in AY2011.

Teaching and Learning Laboratory Assessment Studies, AY2011

Subject/Study	Scope of Investigation	Client	Status/Findings	Researcher
Interphase	Advanced the comprehensive assessment of Interphase with mixed-method data, including upper class student interviews and comparative grade analysis for 8.01 and 3.091/5.111.	OME	Students reported satisfaction with Interphase, especially in preparing for first semester. A performance differential between Interphase and non-Interphase students was revealed.	Lisa O'Leary (Associate Director)
5.111 Curriculum Innovations and TA Training	Comparative study of the impact of curricular innovations on students' attitudes, interests, and behavior.	Catherine Drennan (Professor)	Research and findings were reported in papers and presentations, and cited in an article in *National Science Teachers Association Reports.*	Rudolph Mitchell (Associate Director)
6. UAT	Continuation of mixed-method study to measure improvement in communication skills in Course 6 Communication Intensive in the Major.	Tony Eng (Senior Lecturer)	Results reported in papers and presentations.	Rudolph Mitchell
20.020/20.385	Multi-year study on curricular revisions to this project-based course and a companion course for juniors who serve as mentors.	Natalie Kuldell (Instructor)	Positive findings related to the mentoring experience of the juniors.	Rudolph Mitchell
Humanities, Arts, and Social Sciences (HASS) d'Arbeloff Freshman Year Focus (FYF) Subjects	Continued assessment of FYFs, including survey of faculty teaching FYFs, student interviews, and survey of downstream students.	School of Humanities, Arts, and Social Sciences faculty	Data informed interim report of the Subcommittee on the HASS Requirement (SHR).	Lisa O'Leary
Office of Undergraduate Advising and Academic Program (UAAP) Advising Center Pilot	Developed and implemented an evaluation of a new advising pilot, including pre-/post-survey and comparative analysis of fifth-week flag and Committee on Academic Performance actions.	UAAP	Students supported significant satisfaction with advising done within UAAP in fall; no significant differences found in spring.	Lisa O'Leary

Besides these studies, TLL staff provided expertise to a number of members of the MIT community on assessment and evaluation, including Course 8 faculty, Office of Engineering Outreach Programs, OEIT, MIT Training Partners, faculty members seeking d'Arbeloff Funds, Student Development and Support staff in the Division of Student Life, and the Office of the Dean for Graduate Education (ODGE) staff members.

National and International Efforts in STEM Higher Education

TLL staff participated in a number of national and international initiatives to improve STEM teaching and learning, including:

- Member of Western Association of Schools and Colleges accrediting committee for Stanford University (Lori Breslow—TLL director and senior lecturer)
- Reviewer for two National Science Foundation programs: Course, Curriculum, and Laboratory Improvement; and Research and Evaluation on Education in Science and Engineering (Breslow)
- Member editorial board, Higher Education Teaching and Learning Portal (Breslow)
- Member of an international panel to review Lund University's EQ'11 initiative, a university-wide effort to improve teaching and learning (Breslow)
- Reviewer for both *Academic Medicine* and *Journal of Teaching and Learning in Medicine.* (Mitchell).

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

- Designed and implemented workshops for new faculty from the Masdar Institute of Science and Technology, both at MIT and Abu Dhabi (Breslow and Rankin)
- Wrote white paper "An Overview of Best Practices in STEM Teaching" for SUTD senior administration (Breslow and Rankin)
- Provided material on best practices in STEM education for MIT faculty involved in SUTD (Rankin).

TLL also met with visitors from 23 countries who wished to learn more about MIT's efforts in teaching and learning.

Academic Accomplishments

TLL staff members' accomplishments in academic endeavors (publishing books, articles, and conference papers and presenting at major conferences) are listed below.

Papers and Publications

Lori Breslow, "Wrestling with Pedagogical Change: The TEAL Initiative at MIT," *Change*, 42(5) (2010).

Rudolph Mitchell, with Judy Dori and Natalie Kuldell, "The International Genetically Engineered Competition (iGEM)," *Journal of Science Education and Technology,* 20(2) (2011).

Rudolph Mitchell and Tony Eng, "Assessment of Students' Learning Experiences in an Oral Communication Course at MIT for Electrical Engineering and Computer Science (EECS) Majors," *Proceedings of the American Society for Engineering Education/Institute of Electrical and Electronics Engineers (ASEE/IEEE) Frontiers in Engineering Education Conference,* Washington, DC (2010).

Rudolph Mitchell, "An Evaluation of the Impact of the New Pathway Curriculum at Harvard Medical School" (1991), chosen by *Academic Medicine (AM)* for *AM Classics* (2011).

Presentations

Lori Breslow presented "What Should They Learn and How Do We Know They're Learning It" at the Engineering School, University of Queensland, Brisbane, Australia, June 2010.

Tony Eng and Rudolph Mitchell presented "Continued Assessment of Students' Learning Experience in an Oral Communication Course at MIT for EECS Majors" at the Conference on Software Engineering Education and Training, Honolulu, HI, May 2011.

Rudolph Mitchell, Elizabeth Vogel Taylor, and Catherine Drennan presented "Impact of TA Training on Graduate Students' Recitation Teaching in Freshman Chemistry at MIT" at the Annual Meeting of the American Educational Research Association, New Orleans, LA, May 2011.

Rudolph Mitchell, Elizabeth Vogel Taylor, and Catherine Drennan presented "Assessment of the Impact of an Innovative Teaching Assistant Training Program on TA Teaching in Freshman Chemistry Recitations" (poster) at the American Chemical Society Annual Meeting, Anaheim, CA, August 2010. Selected as one of the best conference posters.

Rudolph Mitchell presented "Studies on Educational Innovation in 5.111" at the HHMI faculty meeting, Cambridge, MA, 2011.

Collaborations with DUE Offices and Institute-wide Partners

TLL staff provided expertise on teaching, learning, and assessment to several DUE offices and DUE's strategic partners. This work included: the aforementioned efforts with OME; workshops for graduate students coordinated through both UAAP and ODGE (Rankin); workshops for the Freshman/Alumni Summer Internship Program TAs and mentors, coordinated through the Office of Global Education and Career Development (GECD) (Rankin); DUE's Tutoring Services Committee (Rankin); assessment of the UAAP Advising Pilot (O'Leary); consultation with GECD on the establishment of an inclusive assessment plan for its varied programs (O'Leary); and the Ed Tech Fair organized by OEIT (Dobranski).

Teaching

Breslow: 15.279 Management Communication for Undergraduates, Fall 2010.

Rankin: 5.95J Teaching College-level Science and Engineering, Fall 2010.

Staff Changes

Dr. Rankin was promoted to senior associate director for teaching initiatives.

Two associate directors resigned from TLL in spring 2011: Sanjoy Mahajan accepted a faculty position at Olin College, and Lisa O'Leary accepted a position in the field of psychometrics. Searches are currently underway to fill these two positions.

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

Lori Breslow
Director

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, and specifically to freshmen, to enhance their academic success, social adjustment, and assimilation to the Institute. To achieve that vision, the 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 and academic and personal support through Student Support Services (S^3) and Student Disabilities Services (SDS); and promoting leadership development. Additionally, Undergraduate Research Opportunities Program (UROP) management, operation, and oversight are UAAP responsibilities, as are coordinating Independent Activities Period (IAP) and providing staff support to the Committee on Academic Performance (CAP).

UAAP plays a leading role in the DUE Student Experience Strategic Theme, empowering students to capitalize on challenging domestic and international experiences, develop and maximize confidence, and prepare to be innovative leaders in the global community.

New Initiatives

UAAP undertook an experimental advising pilot in which five staff advised a randomly selected cohort of 160 freshmen; a control cohort was also selected. The initial assessment indicated positive results, and the experiment will continue for AY2012.

In collaboration with the Office of Minority Education (OME) and the Teaching and Learning Laboratory, UAAP initiated an aggressive "intrusive advising" process to follow up with freshmen who received multiple fifth-week flags. Multiple flags are a predictor of end-of-term CAP action. The process included proactive advisor intervention, development of a recovery plan, and recommendation to participate in Seminar XL, via invitation from DUE dean Daniel Hastings. The end-of-term data indicates positive recovery and academic success for those students who engaged in all aspects of this advising effort.

A UROP Expo was held during IAP, showcasing key MIT departments, laboratories, and centers to undergraduates considering first-time participation in UROP. In collaboration with OME, a critical focus was made for engaging underrepresented minorities (URMs). Nineteen academic areas were represented at the event, and more than 300 students attended.

A freshman award ceremony was initiated to recognize the distinguished achievements of freshmen who, immediately upon entry into the Institute, made a deep and sustained commitment to student life and learning at MIT. The areas for which students were recognized included athletics, academics/research, diversity and culture, entrepreneurship, leadership, performing arts/fine arts, and service.

For the open house celebrating MIT's 150th anniversary, UAAP sponsored two programs:

- How Students with Disabilities Successfully Navigate a University Education, with four undergraduate and graduate students sharing their personal challenges and successes.
- Celebrating Discovery at MIT, a poster session showcasing a range of UROP experiences.

With the Rochester Institute of Technology and the Rensselaer Polytechnic Institute, UAAP submitted three grant proposals, with an umbrella collaborative strategy, to the National Science Foundation to support students on the autism spectrum in science, technology, engineering, and mathematics education.

UAAP sponsored study breaks for both undergraduate and graduate students with disabilities; students are requesting additional and regular programming and events to bring this community together.

UAAP organized and offered a professional development series not only for UAAP staff but also for collaborators and colleagues within DUE, the Division of Student Life (DSL), Office of the Dean for Graduate Education, and medical and academic departments. Program expert speakers included attorney Jeanne Kincaid (disabilities in higher education), Bruce Roberts (drug and alcohol use in college-age students), Stephen Shore (autism spectrum disorders), and David Henderson, MD (schizophrenia). Attendance ranged from 42–78 individuals.

Functional Enhancements

A new recording database was built for S^3. This technology not only supports the note-taking function, but also automatically generates correspondence, logs the historical record, and provides a comprehensive recourse record for CAP discussions.

UAAP launched new websites for both S^3 and SDS within the context of the UAAP site. The navigation, photographs, and content represent not only comprehensive information, but also present a campus climate of inclusion.

UAAP has begun to define and design a new IAP system with Information Services and Technology (IS&T). The online event guide and calendar system should be completed in late spring 2012 and implemented for IAP 2013.

Within S^3, UAAP streamlined a series of processes including the Excused Notes and OX protocols, established criteria and a protocol for the student emergency fund, and redefined the readmission process. Data collection and reporting for these processes have been streamlined.

UAAP expanded the open office hours of S^3 from 9 am to 5 pm, including defining a walk-in period of 9:00 a.m. to 10:00 a.m. each morning. Each week during the academic terms, approximately 20 students availed themselves of the walk-in opportunity.

S^3 and the primary UAAP office suite supporting advising and academic programming (7-104) extended hours to 7:00 p.m. on Tuesday evenings. While the number of students accessing staff in the evenings was not overwhelming, UAAP offices will continue to be open on Tuesdays for another year and then the extended hours will be reevaluated.

UAAP fostered leadership development not only through existing UAAP programs (orientation coordinators, orientation leaders, associate advisors, resident associate advisors, UAAP advisory board, Baker Foundation, pre-orientation program coordinators, etc.), but also through its activities with networks of student groups, such as house governments, Black Women's Alliance, Chocolate City, MIT Caribbean Club, African Students Association, and others.

Both S^3 and SDS saw an increase in student contacts in AY2011.

- Deans in S^3 took 4,498 appointments, including 742 walk-in visits over the academic year; this represents a 12% increase in student contacts.
- In the same period, SDS had 819 scheduled contacts with students, an 11.5% increase over the previous year.
    - The service is witnessing an increase in the complexity of student needs for required accommodations and services.
    - Requests for accommodations have increased by almost 30% (233 accommodations) over the academic year.

UAAP continued to lead the joint DUE/DSL committee defining collective values and generating several short-time projects and long-term strategies for cooperation, collaboration, and effective program execution and transparent integration of student life and learning. The committee's two priorities included the new faculty dinner and joint staff development.

UAAP continued to participate in fund development efforts and stewardship with respect to UROP gifts and endowment, and funds from the Amgen Foundation, the Baker Foundation, and the Class of 1959. It is committed to identifying and pursuing new resources to support UAAP initiatives and to strengthening relationships with key development staff. Five new UROP funds were established.

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 17 fall learning strategy programs and 11 spring programs. Online learning strategy modules are available here.

UAAP continued to offer a comprehensive professional development program for freshman advisors, including special workshops for new advisors. Freshmen were advised by 70 faculty, plus 106 lecturers, instructors, and administrators; this number includes those who led the 42 freshman advising seminars offered to the Class of 2014. Advisors were matched with more than 185 associate advisors who served as peer mentors to first-year students.

In AY2011, training and ongoing development of associate advisors was an articulated priority, and 12 different programs were strategically offered to over 190 associate advisors throughout the year. This training included the leadership and communication sessions Getting Your Advisees Over the Mid-term Hump; The Balanced Associate Advisor—Taking a Step Back; Johari Window Exercise; Draw Your Life and Help Freshmen Draw Their Future; Spring Term Challenges and Solutions: What to Do When Things Aren't Going Perfectly; Successful Conflict Resolution; and Stop, Think, and Move Ahead—A Reflective Experience.

The three recipients of the UAAP 2011 Institute Convocation awards were professors Kim Vandiver (Arthur C. Smith Award for contributions to student life and learning), Krishna Rajagopal (Baker Foundation Award for excellence in undergraduate teaching), and David Darmofal (Earll M. Murman Award for excellence in undergraduate advising).

During IAP 2011, 506 noncredit activities and 114 for-credit subjects were reviewed for listing in the online IAP guide and calendar. Activities and/or subjects were sponsored by 31 departments, 15 interdisciplinary laboratories and centers, 36 administrative offices, 37 Association of Student Activities groups, and nine non-student groups. Specific UAAP IAP 2011 subjects included leadership and communication, the Women's Panel on Science and Engineering, and the exploration of studies/major/graduate school. Also offered were informational panels on the Amgen-UROP program, orientation leader responsibilities, and associate advisor opportunities.

Facilitating students' effective, smooth transition to the sophomore year remains a priority. Working closely with the departments and offering appropriate programming has enhanced this effort. Five strategic programs, including three offered during IAP, addressed specific aspects of self-exploration and assessment, academic and research opportunities, development of relationships with faculty, and global opportunities.

UROP/IROP Activities

During summer 2010 and AY2011 fall and spring terms, 49% of UROP students were female and 51% were male. Of undergraduates graduating with their first degree in 2011, 85% participated in at least one UROP during their time at MIT. Eighty percent (156 of 196) of graduating URM students participated in UROP; this represents an increase from last year (79% participated). URM participation will be sustained and further increased by UAAP working with OME and providing additional outreach to both faculty and students.

During AY2011, 3,915 UROP projects were completed. Fifty-five percent of the academic year projects were paid experiences; this remains low compared to the high of 73% seen in AY2002. Results of the comprehensive 2008 UROP survey and assessment indicated that 80% of those students who undertook a UROP project for credit had originally requested funding and were denied. This continues to be the response reported by UROP-ers.

UAAP provided $3,113,966 in direct funding, and faculty allocated $3,669,749 in support of UROP. Faculty funding decreased by 4.8% from the previous year, and the UAAP direct funding offset that decrease. Overall, UROP support increased by 5%. Fifty-two percent of MIT faculty mentor UROP students, and 76% 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 $400K in additional funding to financially guarantee one term of UROP support for scholarship recipients during their undergraduate career. 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's annual UROP direct funding budget comprises endowment income (42%), expendable gifts (21%), general Institute funds (30%), and foundation grants (7%). The UROP book-value endowment is $14.5 million, represented by 53 named endowed funds and 13 named gifts. New funds established in FY2011 include Alexandridis Family International Research Opportunities (IROP) Fund, Townsend (1985) Thomas Fund, Edwin S. Webster Foundation Fund for UROP, Hubbard and Dauphinot Fund, and Fel UROP Fund. Additionally, a proposal for four additional years of funding from the Amgen Foundation for the Amgen UROP Scholars program was funded; this grant provides $1 million in funding.

In alignment with the values of MIT's global initiative, UAAP executed an ambitious marketing plan and program development and approved 40 IROP experiences during the past year. These placements occurred in 21 countries, including Canada, Chile, China, El Salvador, France, Guatemala, Ghana, India, Kenya, Mexico, Monaco, Morocco, Nicaragua, Senegal, Singapore, South Africa, Switzerland, Taiwan, Thailand, Trinidad, and the United Kingdom.

Future Plans and Initiatives

The following are currently defined UAAP initiatives for AY2012:

- Define and model a center for academic excellence that will include advising and academic resources, learning strategy programming, videos of undergraduates offering peer-to-peer advice, and web resources
- Fall 2011 will carry out the second year of the experimental freshman advising pilot; 190 freshmen will be advised by UAAP staff. Academic performance, satisfaction, knowledge of resources, etc., will be assessed against the experience of a 190-student control cohort
- Expand the "Good to Great for Women" freshman advising seminar to all three residence-based advising residences; six faculty and/or senior administrators, in pairs, are teaching the seminars
- Revise a series of S^3 practices, including refunding tuition after withdrawal or light load, retroactive light loads, housing exceptions, cab voucher policy, and financial independence letters
- Establish a first-generation student advisory board, identify necessary resources for first-generation students, and develop programming and resources to support the personal growth and academic success of this population
- Define strategic priorities for supporting students on the autism spectrum; work with faculty, DSL, housemasters, and other campus groups who engage with these students to develop programming and resources to address the challenges they face
- Work with IS&T to define an umbrella database for UAAP to update and replace the dozen internal databases and integrate the functionality of S^3, SDS, and other UAAP databases into a single master system
- Continue to collaborate with Academic Media Production Services in tracking and documenting the undergraduate experience of a dozen members of the Class of 2014, from entry through graduation
- Based on a comprehensive review of Nightline, the student-run listening service, facilitate a transfer of this student service from UAAP to the medical department
- Dean Hastings and DSL dean Chris Colombo charged a review committee on orientation, including faculty, administrators, and students, to review all aspects of orientation; the committee is expected to submit a final report with recommendations to the deans by the end of fall term, and changes would be implemented beginning orientation 2012

- Expand the professional development series to include speakers on attention deficit disorder, eating disorders, students exploring their sexuality, instilling self-confidence in struggling students, and issues related to first-generation students

Staffing Changes

In AY2011, one individual stepped down from a UAAP administrative position—Arnold Henderson asked to return as a full-time advising dean in S^3. Subsequently, David Randall was promoted to associate dean and given responsibility for the S^3 team. Kathleen Monagle was promoted to associate dean for SDS.

Julie B. Norman
Senior Associate Dean for Undergraduate Education
Director, Office of Undergraduate Advising and Academic Programming