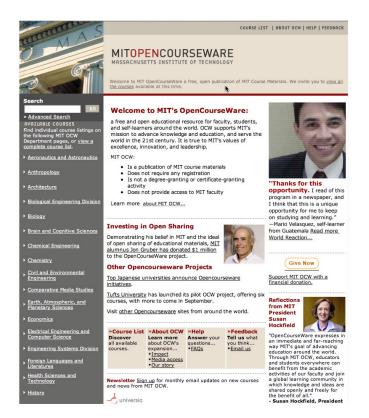
# MIT OpenCourseWare

MIT OpenCourseWare (OCW) makes the MIT faculty's course materials used in the teaching of almost all of MIT's undergraduate and graduate subjects available on the web, free of charge, to any user anywhere in the world. OCW is a large-scale, web-based publication of educational materials. Educators in the U.S. and the developing world utilize the materials for curriculum development, while students and self-learners around the globe draw upon the materials for self-study and supplementary use. With 1,100 courses available as of June 30, 2005, OCW is delivering on the promise of open sharing of knowledge.



As the 2004–2005 academic year came to a close, the real impact of OCW on global education was expanding in many directions at once. In just under three years, what started as 32 hand-made course pages on a small server in Building 9 in September 2002, has blossomed into (as of June 30, 2005):

- Dozens of mirror sites and translation sites, including translations and original courses in six languages, making published course materials more accessible internationally.
- Usage that continues to grow dramatically, with visits to OCW and translation sites since October 2003 passing the 10.5 million mark. Traffic just to course materials published on the OCW website in May 2005 was 74% greater than in May 2004.
- An "opencourseware movement," with 12 live OCW sites at MIT and other institutions, and 40 more active OCW development projects under way at institutions around the world. In addition, 20 other institutions are considering OCW projects.
- About 1,270 published courses, including 1,100 MIT courses as well as courses in complementary disciplines from leading institutions known for their work in other fields.

OCW released its spring 2005 publication on schedule in April, to bring the total number of courses available from MIT faculty to 1,100 courses, marking significant progress

toward the goal of publishing virtually all MIT courses—approximately 1,800—by the year 2007.

# **Current Goals and Objectives**

As the OpenCourseWare project approached its third anniversary in fall 2005, we continue to be focused on publishing courses from the MIT faculty; continually providing benefits back to the MIT community, its faculty, students, and alumni; and fostering the reach and impact of the "opencourseware" concept. Thus, our organizational goals for the last year, and going forward into 2005–2006, fall into three broad categories—publication, outreach, and sustainability:

- Publication Goals
  - o Expand publication with new MIT course materials per established schedule
  - o Continually improve depth and quality of OCW course materials
  - o Maintain currency of published content
  - o Continually improve user features and site structure to optimize the user experience
- Outreach Goals
  - o Expand access through translations and alternate distribution channels
  - o Foster use of OCW materials among educators and learners around the world, with added focus on developing regions
  - o Facilitate implementation of opencourseware at other institutions
  - o Support MIT and its community
- Sustainability Goals
  - o Continually develop the OCW team as a responsive, professional organization
  - o Maintain and improve efficient and effective processes
  - o Manage finances and secure long-term funding
  - o Evaluate and report on attainment of short-term goals and progress toward long-term goals
  - o Communicate the OCW story to build awareness and keep stakeholders informed

# Achievements During Academic Year 2004-2005

#### **Publication Goals**

# **Expand OCW Publication**

On April 17, 2005, OCW published 200 new courses on schedule, bringing the total publication to 1,101 courses. These courses represent all five MIT schools and 33 academic departments in approximately the same proportion as the total course offerings of these schools and departments. In addition, we published 25 major course updates. This begins our program of regular, cyclical updates to keep OCW fresh and up to date. Work is under way to publish an additional 150 new courses and 100 updates in fall 2005.

# Improve Depth and Quality of OCW Publication

One of the fundamental goals of OCW is to continually improve the depth and quality of the OCW publication. Over the last year, OCW faculty liaisons and department liaisons have put extra emphasis on obtaining complete material from faculty. We have instituted a new system that inventories in detail course materials and assesses their richness based on quantity of material by content type and their completeness (the percentage of all materials, by content type, for each course that are actually published on OCW). The content inventory reveals that, in our last two publication cycles (fall 2004 and spring 2005), more published courses included more of the material categories and the percentage of course materials available on OCW increased.

Content type	No. of courses using it in instruction	No. OCW sites that include it	Rate of inclusion	Level of completeness
Reading lists	822	807	98%	_
Lectures	705	513	73%	79%
Recitations	107	39	36%	71%
Assignments	812	755	93%	93%
Assignment solutions	812	209	26%	79%
Labs	73	58	79%	93%
Exams	439	251	57%	88%
Exam solutions	439	106	24%	90%
Projects	261	216	83%	99%
Project examples	261	94	36%	99%
Tools	69	68	99%	_
Study materials	149	148	99%	—
Related resources	193	193	100%	_

#### OpenCourseWare course materials statistics, as of June 30, 2005

In addition to delivering high-quality course materials according to our published schedule, our work has also focused on developing a stable, efficient, full-production cycle. Since the pilot, core production has proceeded efficiently and effectively, characterized by streamlining and process improvements, and by a distinct focus on content quality.

During the pilot phase, OCW was inventing processes and implementing systems throughout the core production process. Though we continually examine and improve elements of the process, we now have a much more stable and routine methodology— the process is largely "down to a science." OCW staffers representing each of the functions involved in the publication process formed a Publication Standards Board to establish uniform practices for every detail of the design and production processes and to generate, vet, and implement ideas for streamlining.

Key developments over the last year include:

- *Formal enhancement planning and tracking process.* We have instituted a formal methodology for capturing, prioritizing, and tracking all requests and suggestions for enhancements both to the OCW website and to the underlying production and support systems that enable our publication processes.
- *Streamlined IP process*. Our volume of clearance activity has doubled on a percourse basis compared with the pilot phase because we are tackling more complex courses with more IP objects, yet we have reduced IP processing time while maintaining flat resources.
- *Instituted content capture alternatives*. We are reaching the end of the inventory of MIT courses with pre-existing electronic materials and course websites. We now encounter an increasingly substantial portion of courses with paperbased (sometimes handwritten) notes and materials. The percentage of courses published that had no prior web presence has increased from 7% in the fall 2003 cycle to 25%. Increasingly, those that do have a website have only minimal digital materials—a syllabus or a few assignments. We have been able to absorb much of the additional workload associated with less-developed source materials primarily because our production process is more efficient than it was during the earlier years of OCW. In addition, we have established processes both to transcribe materials and to capture lecture notes in real time in the classroom.
- *Streamlined video capture*. As described below, we have significantly expanded video content. We have developed a set of procedures and protocols for video production as well as a guide for faculty participants.
- *Completed department liaison (DL) staffing.* The DL program is now well established and highly valued by faculty and their host departments. DLs work closely with faculty in helping them ready their materials for publication, reducing faculty time commitment and providing other increased services and value for faculty.

# Maintain Currency of OCW Publication

In spring 2005, OCW began archiving some of its older courses and replacing them with updated versions of those courses. Some of the courses are substantially different in teaching methodology, while some now offer additional teaching and learning resources. Going forward, we will be publishing 100 course updates in fall 2005, and 150 course updates in calendar year 2006.

#### **Improve User Features and Site Structure**

As an added-scope component in Phase 2, we adopted a more deliberate, structured approach to publication of digital video materials associated with courses on OCW. We have now integrated video production more closely into our regular publication production process. The goals of the video effort are to demonstrate pedagogy for educators, and to provide resources for self-learners. With this in mind, we seek video content that:

• *Preserves teaching exemplars.* Preserve a unique educational experience such as a "classic" course, guest lecture, or the work of an eminent retiring professor. In pursuit of this goal, we might videotape one or more lecture sessions of a course

because they are part of the core curriculum within a department or program, or are General Institute Requirements; they are taught by "star" faculty (famous, winners of teaching awards, etc.) or eminent retiring faculty; or they are "classic" courses that might not be taught in the future.

- *Captures special pedagogy*. Capture a pedagogically relevant experience not otherwise available in a form that could be published, such as clinical courses, arts courses, and case discussion courses. For educators, this would provide a window into how MIT faculty teach. This might include a brief introduction by a faculty member explaining the course and its pedagogy, or a sample lecture. For self-learners, such video might capture language exercises, case studies, or field experiences.
- *Enhances available course materials*. Enhance the educational value of a course by adding clips of hands-on experiments, demonstrations, or simulations (e.g., Matlab).

# **Outreach Goals**

# **Expand Access**

In addition to publishing MIT courses, a second fundamental mission of OCW is to extend the reach and impact of OCW and the "opencourseware" concept. We strive to engage with credible, recognized organizations and institutions to help further access and use of OCW materials. Distribution affiliates, as we call them, work within their regions or constituencies to provide:

- Translations of materials into local languages
- Regional mirror sites for OCW materials

To date, our most successful relationships have been with Universia (Spanish and Portuguese language translations—180 courses translated at this writing) and China Open Resources for Education, a large effort to translate MIT courses into Chinese (43 course translations at this writing) and publish original course materials from their constituent universities. We are still seeking appropriate partnerships for translation of our materials into French and Arabic.

We are currently in a pilot collaboration with African Virtual University (AVU) to expand access to OCW materials by leveraging their extensive pan-African network of universities and learning centers. The pilot project involves mirror site installation and workshop facilitation at Nairobi University in Kenya and Addis Ababa University in Ethiopia. If the pilot project is successful, we plan to expand our collaboration to include more of AVU's 34 learning centers throughout Sub-Saharan Africa. Since the launch of our formal mirror site program, we have received requests for mirror sites at universities in the Philippines, Ghana, Nigeria, Egypt, the United Arab Emirates, and the Caribbean region. Earlier this year, we also provided a hard disk copy of our entire site to Baghdad University's dean of the College of Science for Women, and we are currently following up to find out more about the use of these materials on their campus. As of June 30, 2005, we supported 12 official mirror sites, and we expect unofficial mirror sites to continue to appear, with current sites found in Brazil and China, among others.

#### **Foster Use**

Our most important efforts in pursuit of this goal have been our multipronged efforts to build awareness of OCW and educate people about its many uses and benefits. To this end, we have delivered some 25 presentations at conferences and at individual institutions that are considering their own OCW initiatives.

On another front, our monthly email newsletter boasts 34,000 self-selected subscribers, and circulation continues to increase by hundreds of subscribers each month. In addition to our general outreach efforts, we have made special efforts to reach out to target regions where we believe there is particular potential for OCW impact. These regions are Sub-Saharan Africa, the Middle East, China, Japan, and Latin America. We have developed productive relationships with institutions such as UNESCO, the World Bank, and United Nations University, and leveraged their expertise and connections to increase awareness of OCW and foster the use of OCW materials around the world, particularly in our target regions. For example, we are working closely with UNESCO on their Open Educational Resources project, which has already generated four new courses for the French University in Egypt by drawing from OCW as a primary source of educational materials. We have formalized our outreach program with MIT groups, such as the MIT-China Program and Africa Internet Technology Initiative, who help us to spread the use of OCW materials in developing regions through their summer initiatives. The outreach program includes training MIT students on using the OCW site, installing local copies of the site, running workshops for users, and interviewing users for evaluation purposes. We plan to expand this program to other groups, including the MIT-India and MIT-Middle East programs. We have also actively pursued speaking opportunities and plan to participate at relevant international forums, including the World Summit on the Information Society, UNESCO International Institute for Educational Planning Forum on Open Educational Resources/Open Content, and the World Conference on Computers in Education, among others.

#### Facilitate implementation of Other "opencourseware" Sites

A major element of our outreach strategy is fostering the growth of the OpenCourseWare movement. We are working with a number of leading institutions to begin their own pilot opencourseware sites and band together with us in an alliance to create collective body of high quality materials comprising a broad spectrum of disciplines and teaching methods as well as consistent structures and formats. By working together, we expect to find synergies in our efforts to:

- Extend the reach and impact of the opencourseware concept
- Evaluate impact of opencoursewares around the world
- Refine publication processes and systems, improve effectiveness, and reduce costs
- Cooperate in developing long-term sustainability

At this writing, there are at least 12 live OCW sites in addition to OCW, some 40 more institutions have active projects under way to start their own OCW sites, and we have been in discussion with another 20 institutions about the benefits of being an opencourseware provider.

# **Support MIT**

As of spring 2005, approximately 70 percent of MIT's faculty had contributed their course materials to the publication. Initial skepticism about OCW has largely given way to faculty pride. MIT faculty enthusiasm derives not only from the impact OCW is having on educators and learners around the world, but also from the value our faculty receive from their participation—the services of our department liaisons and faculty liaisons to help organize and update their materials, research consistent IP citations, and a develop a new look for their courses. OCW also provides faculty with a new vehicle for contributing to their discipline, it affords them greater visibility in the field among their colleagues, and more and more, it is providing a vehicle for dissemination of their research results when they apply for grants. Beyond the services we provide faculty, OCW provides institutional and departmental benefits to the MIT community:

- Benefits to the Institute
  - o Advances MIT's institutional mission to advance knowledge and serve the world
  - o Demonstrates MIT's commitment to open knowledge sharing
  - o Stimulates innovation among the faculty and students
  - o Generates alumni and community pride
  - Projects a positive image of MIT to the world (the thousands of emails the OCW project has received bear this out)
- Benefits to MIT's academic departments
  - o Showcases departments, offerings
  - o Enhances faculty and student recruitment
  - o Gives curriculum committees and planners greater insight into course content
  - o Accelerates adoption of digital materials in teaching
  - o Fosters collaboration among faculty
- Benefits for MIT students
  - o Provides supplementary study materials
  - o Helps students plan their courses of study and choose courses at registration

# **Sustainability Goals**

# **Develop the OCW Team**

Our biggest accomplishments in organization over the course of the last year came in our ability to provide opportunities for growth for people within the OCW team, as can be seen in the Promotions section below.

In addition, we continued to enjoy tremendous success with the OCW department liaisons program. DLs assist faculty with the development and compilation of teaching materials for use in both classroom teaching and publication on the OCW website. DLs are permanent staff within their respective departments and provide an invaluable service to MIT faculty and to OCW. The DLs have been instrumental in the success of OCW by fostering relationships with faculty, identifying and addressing potential copyright issues, producing technical illustrations to enrich the course materials, and leveraging their technical expertise in the subject matter to ensure high-quality course sites. We have focused on hiring recent MIT alumni–who have a familiarity with the faculty and their courses—to serve as DLs in the departments from which they received their degrees. The DL program is a cornerstone of OCW's long-term sustainability and success. We now have the equivalent of 10.5 DLs firmly in place across all five MIT schools.

We also continued to foster a values-based culture, built on the belief that our staff should be responsive, proactive and results-oriented, collaborative, flexible, and committed to the OCW project and MIT. To foster these values, we held several sessions with Francine Crystal of MIT's Organization and Employee Development team at OCW's quarterly retreats in AY05.

# **Evaluate and Report**

Evaluation is an integral part of the OCW operation, and indeed, evaluation and tracking mechanisms are built into the OCW website so that there is continuous monitoring and reporting of traffic and usage. In addition, we conduct an annual comprehensive evaluation to measure access, use, and impact of OCW. We have now performed two of these comprehensive evaluations. We completed data collection for the 2004 evaluation in December 2004.

The comprehensive evaluation process includes a portfolio of data collection and analysis strategies, including web analytics, online intercept surveys, supplemental surveys, and interviews. The design of the 2004 process paralleled the 2003 evaluation, with many questions repeated in order to show comparisons with the baseline. We also added a small number of new qualitative questions to explore other areas of interest. We increased the volume of survey responses to permit more multivariate analysis, and we collected a richer array of qualitative data to paint a more detailed picture of how users interact with the OCW materials. Key features of the 2004 process included:

- Collection of 5,000 intercept survey responses, with research logic that permitted additional sampling of certain target regions where response was low in 2003
- Twenty-five in-depth interviews designed to provide additional texture to the quantitative data
- Analysis and incorporation of qualitative data from feedback e-mail

In May 2005, we began writing approximately 35 short cases studies, from users in our three user categories—educators, students, and self-learners—to provide greater insight into how each type utilized OCW materials (this project was expected to be completed in September 2005).

For example, about 15% of OCW users are educators. Over half these educators use OCW for direct instructional purposes: to develop curricula, develop courses, or prepare for a specific class. About 44% of students enrolled in formal courses use OCW to complement their current courses, and another 32% use it to enhance their personal knowledge. For the most part, self-learners use OCW to enhance their personal knowledge or keep current in their fields. Impact ratings continue to run high. Among educators, 85% feel that OCW has helped them improve their courses. About 88% of students and 90% of self-learners say OCW helps them learn.

In addition to the annual evaluation, we track a variety of access, use, and impact indicators via our monthly External Site Report, which we use as an internal management tool. This monthly report documents site traffic (including traffic to the sites of our translation affiliates), distribution of traffic across several variables, and user feedback. The report includes current data and longitudinal trends. For example, we track monthly volume by country of origin (see table).

The findings of the evaluation are detailed in the MIT OpenCourseWare 2004 Program Evaluation Findings Report.

# Communicate the OCW Story

The goals of OCW's communications and outreach program include generating internal support for OCW, disseminating information about the overall progress and accomplishments of the OCW program, and highlighting available content on the OCW site. This program includes elements of public relations, marketing, and partnership development, as well as dissemination of appropriate practical information and documentation relating to most aspects of the program. This activity Countries producing highest volume of visits to the OpenCourseWare website (excluding U.S.), by rank, June 2005

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Rank	Country	Web hits			
1	China	2,694,500			
2	India	1,353,717			
3	Taiwan	1,296,933			
4	Canada	843,593			
5	South Korea	768,014			
6	Japan	684,989			
7	United Kingdom	650,024			
8	Germany	505,823			
9	Poland	505,781			
10	Brazil	401,326			
11	Italy	396,748			
12	Australia	371,752			
13	France	344,951			
14	Iran	304,442			
15	Turkey	280,024			
16	Spain	273,251			
17	Indonesia	270,003			
18	Thailand	258,178			
19	Vietnam	252,783			
20	Mexico	228,793			

is conducted in support of the overall program's goals, and generally works in close conjunction with evaluation activities and program leadership.

In the past year, OCW was mentioned more than 40 times in various media (in addition, OCW is frequently mentioned as a resource in any article or story—online or in traditional, offline media—about e-learning or distance education). The highlights include:

- Economic Times of India, August 1, 2004
- Times of India, August 23, 2004
- *Forbes*, October 10, 2004
- Sydney Morning Herald (Australia), May 17, 2005
- Boston Globe, July 1, 2005

By far, the single most important media exposure that the OCW project has achieved yet came in September and October 2004, when the OCW project was featured in the television magazine program Global Challenges on CNN Television International. This six-minute segment aired six times on CNN International and twice on CNN USA. The impact of this one program on the usage of the OCW website was tremendous. For instance, in August 2004, the OCW site received 325,628 total visits—in October 2004, the site received 522,973 visits, an increase of 62 % in two months, which we believe is directly attributable to the exposure from the CNN International program.

Long-term media visibility is important to the success of the OCW project, as our evaluation data tell us that most users continue to locate the site via online and offline media.

- Thirty-two percent of visitors report learning of the site via online media, and 23% learned of the site from offline media.
- Nearly 60% of visits to the OCW site came as referrals from other sites, largely the main MIT site, search engines, OCW-affiliated sites, news sites, and technical community forums.
- The percentage of visitors locating the site via search engines increased from 10% in 2003 to 18% in 2004, and the searches used are increasingly topic searches rather than variants of "opencourseware."

We continue to maintain internal communication with the MIT community at every level, utilizing vehicles such as the MIT Faculty Newsletter, The Tech, and Tech Talk to communicate the latest news about the OCW project with the community. We also have focused on involving senior MIT leadership in internal communications to build both awareness and buy-in from faculty.

# **Finances and Funding**

MIT continues its commitment to assume an increasing share of the cost of OCW each year. The formula previously established is that MIT will increase its contribution to the cost of OCW by \$200,000 per year until a reasonable equilibrium is reached. MIT has committed another \$1 million per year over and above the scheduled contribution beginning in 2007 and continuing annually thereafter, from resources available to the Institute. In addition, MIT also bears the costs of space, internal utility infrastructure, and other administrative and operations overhead.

OCW sustainability will depend in part on continued, though decreasing, outside funding over the next 10 to 15 years. We are actively pursuing four tiers of such outside funding in close collaboration with MIT's Department of Resource Development:

- *Foundations and NGOs.* We have made presentations to, and conversations are under way with, several philanthropic institutions. MIT president Susan Hockfield and president emeritus Charles M. Vest are lending their active support to these efforts.
- *Corporations*. We have developed a list of about 20 large, mostly high-tech corporations that represent high-volume users of OCW materials based on our tracking of domain of origin. Together, these corporations have generated nearly

100,000 visits to OCW over the last year and a half. MIT's corporate relations officer is approaching these organizations to develop interest in helping to support OCW in the future. In addition, we have conversations under way with a few other corporations that have demonstrated interest in supporting the aims of OCW.

- *Major gifts*. The Major Gifts unit of the Department of Resource Development now highlights OCW in its approach to selected prospects. In consultation with this department, we have begun to develop concrete endowment opportunities:
  - o Publication and maintenance of 25 new MIT courses each year, in perpetuity \$10 million
  - Delivery of MIT course materials to 25,000 educators and over 150,000 learners (roughly 5% of OCW user traffic around the world) each year, in perpetuity —\$5 million
  - o Department liaison positions, where DLs assist faculty with developing and compiling teaching materials for both classroom teaching and publication on the OCW website \$800,000 and up

So far, we have received a gift of \$1 million to endow OCW from a generous donor, along with several other current-use gifts.

• *General donations*. In June 2004, we implemented a live "give now" feature that links users directly to the newly redesigned Giving to MIT website, hoping to capitalize on the good will of those users who feel inspired to help support OCW in a material way. In June 2005 alone, OCW had received 11 donations from MIT alumni, and friends of the OCW project.

In addition to these initiatives, President Hockfield has invited an OCW External Advisory Board to advise on broad strategic questions including financial strategies to help sustain OCW long term.

We have had some success to date in our efforts to continually improve processes and to streamline operations. Based in part on improved processes, which resulted in a small reduction in staff requirements, renegotiation of some service contracts, as well as other factors, in fall 2004 we recast the budgets for the years 2005, 2006, and 2007 at \$6.3 million annually. We are now projecting a further reduction in costs for 2005 (year-end projection: \$6.0M) and a similar reduction in our 2006 budget. We continue to look for opportunities to trim OCW operating costs.

MIT has publicly committed to supporting OCW into the future as an inherent part of the teaching and public service missions of the Institute. Beginning in 2008, after we have published virtually the entire catalog of courses taught at MIT and have begun steady state operation (Phase 3), we will sustain OCW through a combination of:

- Funding support from MIT at a continually increasing level until equilibrium is reached;
- Other outside funding at decreasing levels over time to support the philanthropic aims of OCW; and
- A continuous process of cost containment and cost reduction.

Based on our current publication processes, systems, and supporting organization, we estimate that the annual cost of ongoing steady state operation will be less than \$5 million per year. Looking ahead, there may be some opportunity for sharing services or negotiating better rates for outside services after an OpenCourseWare consortium is established and its membership begins to collaborate on such issues.

### **Awards**

In the course of the last year, OCW won several awards that recognize the vision of the OCW initiative, OCW's site design and usability, and the OCW communication and outreach program. In June, OCW was named 2005 Education Award Laureate by the Tech Museum of Innovation, in San Jose, CA. The 25 laureates named in the five award categories include innovators from around the world. One laureate from each category will receive a \$50,000 prize at the award gala to be held in November 2005.

In December 2004, OCW received several Council for Advancement and Support of Education (CASE) District 1 Publication Awards, including the Gold Award for the OCW website's informational pages, and Bronze Awards for the four-color OCW brochure and OCW email newsletter.

In October 2004, OCW received a prestigious Digital Education Achievement Award in the Integrated/Multi-Focus Application category from the Center for Digital Education, in Folsom, CA.

In September 2004, the OCW four-color brochure won the MarCom Creative Awards Platinum Award and the OCW email newsletter won the Gold Award.

#### **Personnel Information**

Appointments in the last year include: Daniel Carchidi as faculty liaison; Heather Howe as office administrator; and Maria Karatzas as administrative officer. In addition, several department liaisons were hired, including Alicia Boozer (Electrical Engineering and Computer Science), Susannah Dorfman (Earth, Atmospheric, and Planetary Sciences), Eileen Huang (Chemistry), and Annis Wilson (Architecture).

There were also several promotions: Stephen Carson, from evaluation specialist to OCW senior strategist; Sandra Mallalieu, from faculty liaison to production manager; John Dennett III, from faculty liaison to web production specialist; and Alice Cox, Keith McCluskey, and Curtis Newton, from department liaison to faculty liaison.

#### Anne Margulies Executive Director

More information about OpenCourseWare can be found online at http://ocw.mit.edu/.