The Task Force on the Undergraduate Educational Commons

MIT Faculty Meeting
November 16, 2005

Purpose of the Task Force

The Task Force has been conducting a fundamental, comprehensive review of the common educational experience of our undergraduates.

Charge to the Task Force

- Review MIT's educational mission and reaffirm or modify, as appropriate
- Derive a set of specific educational goals for all undergraduates from the mission
- Develop and articulate the content of the common undergraduate curriculum, and how it fits with the departmental curricula - a systems approach
- Develop and recommend the formal structure of the curriculum

Overview of the GIRs

		Subjects
Science Requirement		**6**
Chemistry	3.091, 5.111, or 5.112	
Physics	8.01, 8.012, 8.01T, or 8.01L & 8.02, 8.022, or 8.02T	
Calculus	18.01, 18.01A, 18.013A, or 18.014 & 18.02, 18.02A, 18.022, 18.023, 18.023A, or 18.024	
Biology	7.012, 7.013 or 7.014	
Laboratory (LAB) Requirement	12 units	**1**
Restricted Electives in Science and Technology (REST) Requirement		**2**
Humanities, Arts, and Social Sciences Requirement		**8**
Includes 2 Communication Requirement subjects (CI-H)		
Total GIR Subjects Required for S.B. Degree		**17**

Communication Requirement

2 Communication-Intensive HASS subjects (CI-H)
2 Communication-Intensive Major subjects (CI-M)

Physical Education Requirement

Departmental Program and Unrestrictive Electives

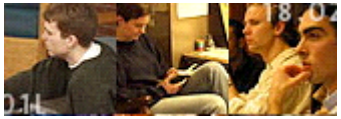
The departmental program may specify some of the GIR subjects, and includes an additional 180-198 units beyond the GIRs

Task Force Goals for an MIT Education

An MIT education is one grounded in science and technology that:

- ignites a passion for learning,
- provides the intellectual and personal foundations for future development, and
- illuminates the breadth, depth and diversity of human knowledge and experience,

in order to enable each student to develop a personal coherent intellectual identity.



Discussions to Date

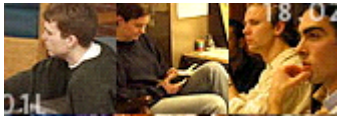
- Science Core
- REST Requirement
- HASS Requirement
- GIRs & the Major Programs
- Project-based Experiences
- Role of Engineering in the First Year Program
- Pedagogy
- Advising/Mentoring
- Freshman Learning Communities
- Communication Requirement
- Lab Requirement
- Social Responsibility, Ethics & Academic Honesty
- Double Degrees & Double Majors
- Creativity, Innovation & Leadership

Discussions to Date (2)

- The Freshman Experience
- Interdisciplinary Learning
- Diversity
- AP Credit
- Study Abroad
- Cross-School Collaborations
- Classrooms and Classroom Scheduling
- The Academic Calendar
- The Drop Date
- Faculty and their Commons Responsibility
- The Phys Ed Requirement

Today's Focus

- Science Core
- REST and Lab Requirements
- HASS Requirement
- GIRs & the Major Programs
- Project-based Experiences
- Engineering in the First Year
- Pedagogy
- Advising
- Freshman Learning Communities
- Communication Requirement
- Social Responsibility, Ethics & Academic Honesty
- Double Degrees & Double Majors
- Creativity, Innovation & Leadership



Task Force consensus

- The present structure of the GIRs is basically sound, but the content can be broadened.
- It is not possible to provide all the desirable educational experiences in four years.
- The GIRs should introduce the fundamental modes of analysis that we want our students to acquire.
- The goals of the various components of an MIT education should be made more explicit to students and faculty.

What should an MIT graduate know in an ideal world?

- Fundamentals of HASS:
  - Human cultures
  - History
  - Literature
  - Economics
  - Government
  - Social structures & organizations
  - Foreign language
  - Philosophy
- Writing skills
- Speaking skills
- Ability to analyze complex texts
- Sensitivity to artistic expression
- …

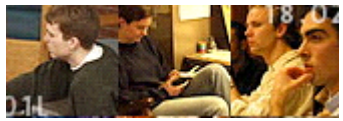
- Fundamentals of science and math:
  - Physics
  - Chemistry
  - Math
  - Biology
- Computation
- Engineering analysis and design
- Probability and statistics
- Behavior of Complex Systems
- Neuroscience
- Geophysics
- Differential equations
- Linear algebra
- Ecology

- STS
- Ethics
- Diversity
- Management
- Design
- Int'l experiences
- Service Learning
- Leadership

- Departmental Program

The Science-Engineering Core: Emerging Recommendations I

- Maintain the rigor and basic unified experience of the current Science Core;
- Expand the educational scope of the core to provide a broader and more effective foundation for later learning and signal the importance of various modes of analysis…
- …but do not increase the number of requirements
- This requires developing a core program that permits some limited choice for individual student needs.

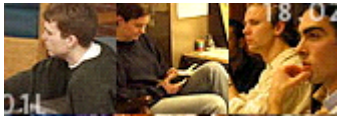


The Science-Engineering Core: Emerging Recommendations II

- Do not allow the core to become too diffuse by including too many subject options

- Increase the excitement/stimulation of the first year through new approaches to learning, especially project-based experiences

- The "Science-Engineering Core"
  - Still under construction (with input from the community)
  - "God is in the details"

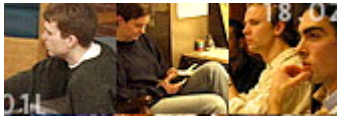


Silbey presents ideas to Physics

The Science-Engineering Core:

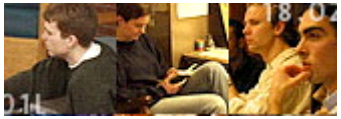
What are the modes of analysis in science and engineering that we want our students to understand?

- Mathematics
- Physical sciences
- Life sciences
- Chemical sciences
- Computation
- Engineering
- …



The Science-Engineering Core:

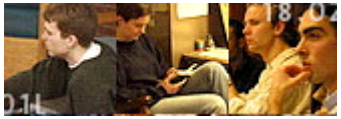
- Six core + 2 REST = 8 subjects
- Design challenge: how to organize these 8 subjects into a menu that broadens the present core, taking departmental programs into account;
- Each category would have a (very) small number subjects;
- Provide the possibility of project-based core subjects as an option.
- Strong oversight committee.



Strong Oversight Committee

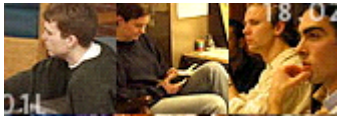
The Science-Engineering Core: Project-based Experiences

- Emphasize synthesis, design and redesign;
- Provide students the opportunity to contribute to the definition of complex problems and to explore strategies for addressing them;
- Require extended study, reflection and refinement, and multiple modes of inquiry;
- Emphasize synthesis of ideas and techniques, especially the study of real-world problems to motivate the acquisition of disciplinary knowledge;
- Integrate and motivate knowledge from other core subjects.



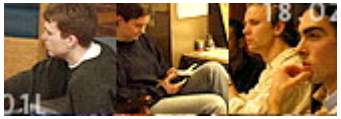
HASS Requirement

- Subject of an intense (and still on-going) review by a Task Force-empanelled subcommittee that includes the HASS Overview Committee (HOC);
- Emerging sense that the HASS requirement should become simpler and less diffuse, and…
- …should provide a coordinated first-year experience in which
  - Major themes define a more common experience;
  - Communication-intensive characteristics are embedded.



HASS Requirement…Beyond the First Year

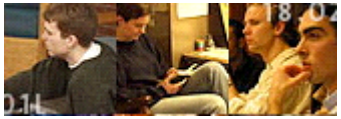
- The Distribution requirement should be simplified;
- Concentrations should be better defined, more transparent, and more demanding.



Next Steps for the Task Force

- d'Arbeloff Grants: Call for proposals has generated enthusiastic response from faculty across MIT
  - *Project-based initiatives*
  - *Pilots for new HASS subjects*
  - *Subjects in Science and Engineering core*

- Recommendations to the Faculty in Spring.



The Task Force on the Undergraduate Educational Commons

Send your comments to:

edcommons-request@mit.edu