



The Report of the Task Force on the Undergraduate Educational Commons

MIT Faculty Meeting
18 October 2006



Task Force II: 2004-2006

- A decade-long project that began with the first Task Force on Student Life and Learning (1996);
 - President Vest asked: “What does MIT have to do to be the pre-eminent university in 2020?”
 - Task Force concluded: what makes MIT great is what faculty and students do together in “02139.”

Task Force I: 1996-1998

- This group articulated many of the principles that guided our review of the GIRs:
 - Affirmed role of GIRs in providing a common background in the fundamentals of science and the humanities;
 - A shared cultural experience that helps define the MIT community;
 - Exposure to a variety of problem-solving methods;
 - A balance that embodies MIT's commitment to combining a professional education with a liberal education.

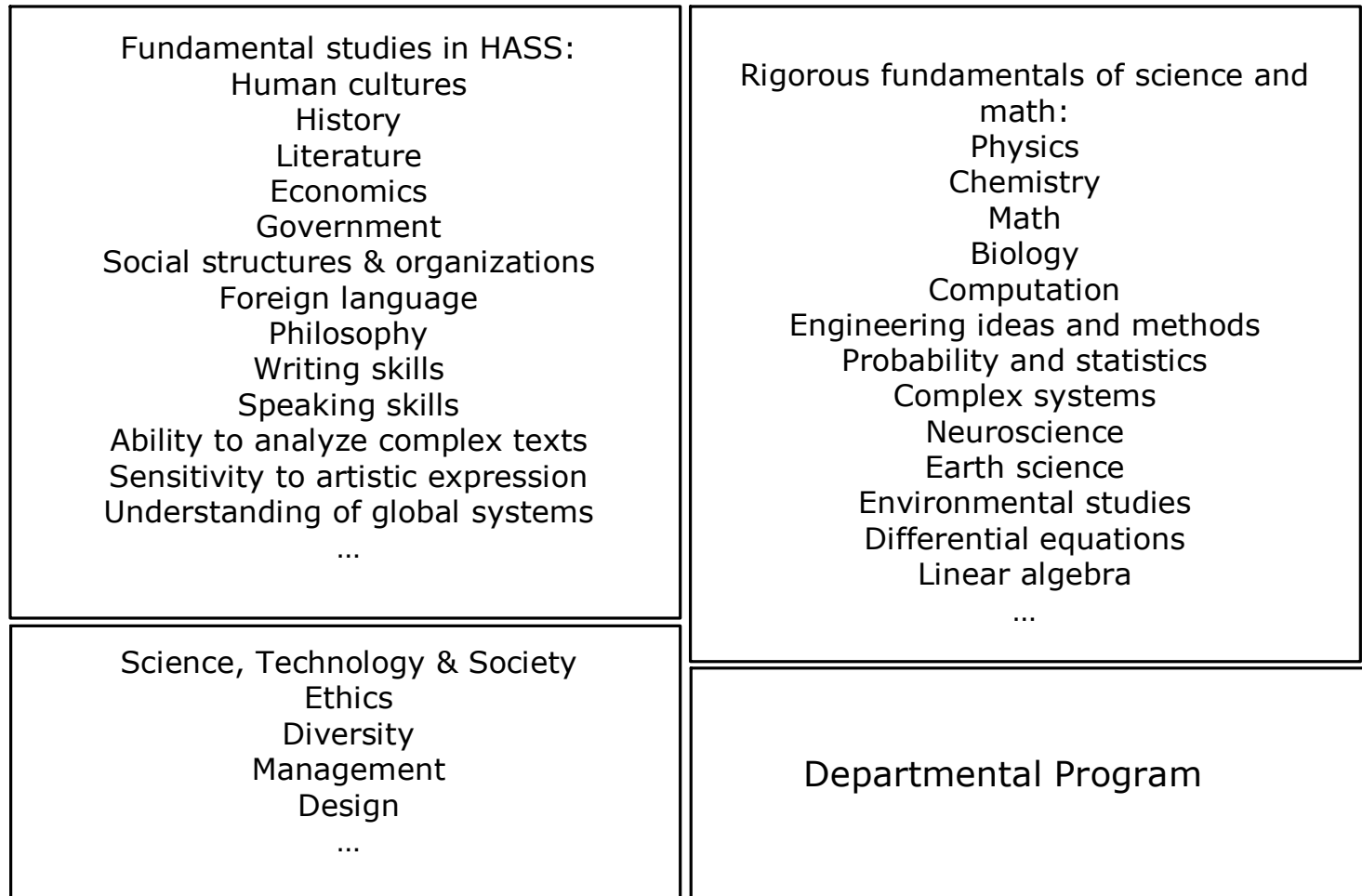
Task Force I: 1996-1998

- TFI stated that the actual content and structure of the GIRs “are not timeless”;
- GIRs should be reviewed and updated over time.
- Strong recommendations about mentoring and the role of the community in learning outside the classroom;
- Increasing support to teaching and to the introduction of more active learning.
- Our report stands squarely on the shoulders of the first Task Force report.

On the Need for Change

- The changes we recommend emerge directly from an ongoing educational conversation that spans many years;
 - 1949 Lewis and 1964 Zacharias Reports
- The GIRs are not broken, but there are more 'fundamentals' than was the case when the GIRs were last fully reviewed (1964);
- Changing demographics of our students (including what they know when they come to MIT);
- This needs to be reflected in our education of future MIT students.

Components of an Ideal Program: What should an educated individual know?



Needed:

- Greater curricular flexibility to represent the disciplinary breadth of MIT and to improve the entree of our students into exciting new areas of science and technology;
- To increase freshman motivation and enthusiasm as well as to introduce more active learning in the first year.

General Recommendations

- 1. The Science Core, Restrictive Electives in Science and Technology (REST), and Laboratory requirements should be replaced with a single eight-subject Science, Mathematics, and Engineering Requirement.*

Science/Math/Engineering Requirement

- Requires mastery in rigorous *foundational material* by combining a small set of subjects required of all students
 - single-variable calculus, multi-variable calculus, and classical mechanics)
- With a limited set of rigorous foundational subjects that would be organized into six categories:
 - chemical sciences; computation and engineering; life sciences; mathematics; physical sciences; and project-based first-year experiences.

The Science-Math-Engineering Requirement: The Project-based Experience

- Provide students the opportunity to contribute to the definition of complex problems and to explore strategies for addressing them;
- Integrate and motivate knowledge from other core subjects.
- 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;
- Emphasize the design process and iteration;
- Enable creativity and communication skills;
- Based on our positive experiences with existing subjects of this type (e.g., 12.000 and 16.00), such experiences will provide all of the above, increase our students' sense of ownership of their education, and help foster a persistent passion for learning.
- The GIRs at present contain **no** laboratory requirements in the first year program.



The HASS Requirement

2. The Humanities, Arts, and Social Sciences (HASS) Requirement should be changed to an eight-subject requirement that is divided into two major parts:

- *The foundational phase;*
- *The concentration phase.*

The HASS Requirement

- The foundational phase:
 - four subjects – expository writing and three “foundational electives” distributed across the categories of the arts, the humanities, and the social sciences. (Expository writing could be converted into a free HASS elective by passing an MIT-administered exam.)
- The concentration phase:
 - four subjects taken from a concentration sponsored by a department or an interdisciplinary field.

The HASS Requirement

- A HASS First-year Experience Program should be created to support a small set of foundational electives that would be designed specifically for the first year;
- All first-year students would be required to take one of these subjects.

The New General Institute Requirements

Humanities, Arts, and Social Sciences Requirement (8 Subjects)

Foundational Subjects

1 subject from each of 3 categories,
1 of which must be from the First-Year Experience Program

HUMANITIES	ARTS	SOCIAL SCIENCES
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Expository Writing (if necessary) or HASS Elective

Concentration Subjects

4 subjects specified for each Concentration;
Concentrations may allow HASS Elective as 4th Subject

Science, Mathematics, and Engineering Requirement (8 Subjects)

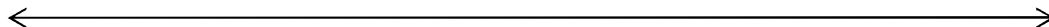
Required Subjects

MECHANICS	SINGLE-VARIABLE CALCULUS	MULTI-VARIABLE CALCULUS
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Foundational Subjects

1 subject from 5 of 6 categories

CHEMICAL SCIENCES	COMPUTATION & ENGINEERING	LIFE SCIENCES	MATHEMATICS	PHYSICAL SCIENCES	PROJECT-BASED EXPERIENCE
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International Experiences

*3. Every MIT student who wishes to undertake a meaningful study, work, or internship experience abroad should be able to do so without financial or academic penalty...
Strengthen and encourage our international programs.*

Enhancing the Educational Commons

4. MIT should enhance the infrastructure that supports excellent undergraduate teaching during this period of curricular renewal .

Enhancing the Educational Commons

- Increasing coordinated planning of the first year curriculum;
- Improving orientation and first year advising;
- Upgrading the quality of classrooms and aligning the mix of classrooms with our teaching needs;
- Gaining control over counterproductive class-scheduling practices;

Enhancing the Educational Commons

- Documenting more completely the contributions our educational efforts make in enhancing the meaningful interactions among students of diverse backgrounds;
- Further extending our efforts to encourage educational excellence;
- Adapting the faculty governance structure to the needs of curricular renewal.

Issues

- Sci-Math-Eng subjects: How much common content required in each grouping of subjects?
- Will departmental programs have to shrink in order to accommodate the new requirements?
- Resources: who will teach these new subjects? How will faculty be motivated to teach across disciplines?
- Some may be concerned that first year students will risk making “wrong choices” if given options.

Work to be Done (1)

- Refine the HASS and Science-Math-Engineering requirement recommendations and establish the final form of what will be recommended ultimately to the Faculty.
- Review the impact of the current recommendations on departmental programs, on the existing Communications Requirement, etc.

Work to be Done (2)

- Questions about departmental programs:
 - How large can programs be, given that many departments will have to add to their program size?
 - Should there be limits to how many subjects departments can specify of the new GIRs, or should that depend on the size of the major program?
 - For very large departmental programs, the Task Force has recommended the establishment of flexible degree tracks as attractive alternatives to the full major.

Work to be Done (3)

- Implement recommendations around double majors instead of double degrees, policies governing late entrance to a major program, etc.
- Oversee the development and assessment of pilot subjects to serve as “proofs of concept” for both the HASS freshman experiences, project-based subjects, and other new subjects for the Science-Math-Engineering foundational subjects;
- d’Arbeloff Call will be issued this month.

Work to be Done (4)

- Establish the governance structures that will oversee the HASS GIRs and SME GIRs, with appropriate resources to avoid unfunded mandates.
- Work closely with the offices of the Dean for Undergraduate Education to move forward to implementation recommendations that will not require further endorsement by the Faculty.

Questions? Comments

- Write to <learning@mit.edu>