The Task Force on the Undergraduate Educational Commons

MacVicar Day 2005:
What should we achieve in a four-year MIT education?

Purpose of the Task Force

The Task Force is 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

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Science Requirement</strong></td>
<td>6</td>
</tr>
<tr>
<td>Chemistry 3.091, 5.111, or 5.112</td>
<td></td>
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<tr>
<td>Physics 8.01, 8.012, 8.01T, or 8.011 &amp; 8.02, 8.022, or 8.02T</td>
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<tr>
<td>Calculus 18.01, 18.01A, 18.013A, or 18.014 &amp; 18.02, 18.02A, 18.023, 18.023A, or 18.024</td>
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<tr>
<td>Biology 7.012, 7.013 or 7.014</td>
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<tr>
<td><strong>Laboratory (LAB) Requirement</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>Restricted Electives in Science and Technology (REST) Requirement</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Humanities, Arts, and Social Sciences Requirement</strong></td>
<td>8</td>
</tr>
<tr>
<td>Includes 2 Communication Requirement subjects (CI-H)</td>
<td></td>
</tr>
<tr>
<td><strong>Total GIR Subjects Required for S.B. Degree</strong></td>
<td>17</td>
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</table>

- 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.
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.

Working Principles

An MIT education should foster:

- A persistent passion for learning
- Intellectual diversity
- An innovative approach to core knowledge
- Collaborative learning
- Education for responsible leadership
Discussions to Date

- Science Core
- REST Requirement
- HASS Requirement
- GIRs & the Major Programs
- Pedagogy
- Advising
- Freshman Learning Communities
- Communication Requirement
- Lab Requirement
- Project-based Experiences
- Social Responsibility, Ethics & Academic Honesty
- Double Degrees & Double Majors
- Creativity, Innovation & Leadership
- The Freshman Experience
- Interdisciplinary Learning
- Diversity
- AP Credit
- Study Abroad
- Cross-School Collaborations

Today's Focus

- Science Core
- REST Requirement
- HASS Requirement
- GIRs & the Major Programs
- Pedagogy
- Advising
- Freshman Learning Communities
- Communication Requirement
- Lab Requirement
- Project-based Experiences
- Social Responsibility, Ethics & Academic Honesty
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Components of an Ideal Program

- Fundamental studies in 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
  - Understanding of global systems

- Rigorous fundamentals of science and math:
  - Physics
  - Chemistry
  - Math
  - Biology
  - Computation
  - Engineering ideas and methods
  - Probability and statistics
  - Complex systems
  - Brain & cognitive science
  - Earth science
  - Environmental studies
  - Differential equations
  - Linear algebra

- Science, Technology & Society
  - Ethics
  - Diversity
  - Management
  - Design

- Departmental Program

Sci-Eng Core: Emerging Recommendations

- Expand the educational scope of the core
  - Requirements?
  - Opportunities?
- Maintain the current rigor of the core, regardless of any other changes
- Replace the Laboratory Requirement with a project-based experience
  - First two years?
  - Prior to graduation?
Sci-Eng Core: Example Model 1

- 4 prescribed subjects
  - From the list of:
    - 2 Physics
    - 2 Math
    - 1 Chemistry
    - 1 Biology
- 2 subjects from a short list
  - For example, in addition to two from the left-hand list,
    - Differential Equations
    - Probability & Statistics
    - Earth Systems
    - Computation
    - Interactive Engineering

Sci-Eng Core: Example Model 2

- 8 prescribed subjects
  - Today’s six-subject core
    - Two Physics
    - Two Math
    - One Chemistry
    - One Biology
  - Also, replace the REST Requirement with 2 additional prescribed subjects
HASS Requirement: Ideas for Change

- Make the requirement *simpler*
- Provide a faceted common experience
  - 5 major themes to choose from
  - Retain small classes
  - One semester or two semesters?
  - Imbed communication intensive characteristics?
  - Ensure appropriate breadth to eliminate distribution?
- Allow broad choice beyond the common experience
  - Require a concentration?

HASS Requirement: Example Model 1

- Freshman Fall
  - Select 1 theme from 5 choices
    - Revolution
    - Love
    - Creativity
    - Democracy
    - Shakespeare

- All Other Semesters
  - Choose 7 additional HASS subjects w/ 3 in a concentration

etc.
HASS Requirement: Example Model 2

Freshman Fall
Select 1 theme from 5 choices

Sophomore Fall
Select 1 discipline-oriented subject within same theme

All Other Semesters
Choose 6 additional HASS subjects

The Task Force on the Undergraduate Educational Commons

Send your comments to:
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