Course 16 majors are required to complete 192-198 units beyond the General Institute Requirements (GIRS). The following roadmap shows the paths typically taken by a student who enters Course 16 in the Spring term of their sophomore year.

This roadmap assumes that all non-HASS GIRs are taken in the first year. That does not need to be the case; for example, the Biology GIR can be delayed to the junior or senior year and the Chemistry GIR - co-requisite for Unified Thermodynamics - can be taken in the sophomore year. Also note that Physics II GIR (co-requisite for Unified Signals and Systems) and 18.03 Differential Equations (co-requisite for Unified Materials and Structures and Unified Signals and Systems) can be taken in the sophomore year. However, a student must complete Calculus I-II and Physics I before they can enroll in Unified Materials and Structures and Unified Signals and Systems.

In addition to the four PAS’s listed in these paths, students will find a full listing of PAS’s at [http://catalog.mit.edu/degree-charts/aerospace-engineering-course-16/](http://catalog.mit.edu/degree-charts/aerospace-engineering-course-16/). As noted on the degree chart a minimum of four PAS’s (48 units) is required. Students interested in doing the option in aerospace information technology also take 48 units, 36 of which must come from subjects other than 16.100, 16.20, 16.50, 16.90. Note: the IT option is not a degree in itself.

Students are expected to discuss their individual course plan with their academic advisor and consult the current [MIT Course Catalogue](http://student.mit.edu/catalog/index.cgi) for up-to-date information on degree requirements, course prerequisites, and the terms in which courses are offered. Please also refer to the *Course 16 Calendar for Laboratory and Capstone Subjects*.

### Program: 16 - Aerospace Engineering

<table>
<thead>
<tr>
<th>Subject &amp; Units</th>
<th>Institute Requirement</th>
<th>Units Beyond GIRS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. First Year</strong></td>
<td></td>
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<tr>
<td><strong>Fall Term</strong></td>
<td></td>
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</tr>
<tr>
<td>3.091 Intro to Solid-State Chemistry (12)</td>
<td>CHEM</td>
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<tr>
<td>8.01-Physics I (12)</td>
<td>PHYS</td>
<td></td>
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<tr>
<td>18.01-Calculus I (12)</td>
<td>CALC</td>
<td></td>
</tr>
<tr>
<td>HASS (12)</td>
<td>HASS</td>
<td></td>
</tr>
<tr>
<td><strong>Term Units = 48</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>Independent Activities Period</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A six-unit elective, e.g. a UROP-for-credit</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Spring Term</strong></td>
<td></td>
<td></td>
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<tr>
<td>8.02-Physics II (12)</td>
<td>PHYS</td>
<td></td>
</tr>
<tr>
<td>18.02-Calculus II (12)</td>
<td>CALC</td>
<td></td>
</tr>
</tbody>
</table>
HASS (12)       HASS
HASS (12), CI-H       HASS

Term Units = 48

2. Sophomore Year

Fall Term
6.0001 Intro to Computer Programming in Python (6) ½ REST 6
and
6.0002 Intro to Computational Thinking & Data Sc. (6) ½ REST 6
or
16.0002J Intro to Computational Science & Engin (6) ½ REST
7.012 Introductory Biology (12) BIO
18.03 Differential Equations (12) REST
HASS-A (12) HASS

Term Units = 48

Independent Activities Period
A six-unit elective, a e.g. UROP-for-credit 6

Spring Term
16.09 Statistics & Probability (12)
or
6.041 Intro to Probability I-II (12)
HASS (12) HASS
HASS-H (12), CI-H HASS
Elective (12) 12

Term Units = 48

3. Junior Year

Fall Term
16.001 Unified Engineering Materials & Structures (12) REST
16.002 Unified Engineering Signals & Sys (12) 12
16.400 Human Sys Engineering (12), PAS 12
HASS-S (12) HASS
Elective (6) 6

Term Units = 54

Independent Activities Period
A six-unit elective, e.g. a UROP-for-credit 6

Spring Term
16.003 Unified Engineering Fluid Dynamics (12) 12
16.004 Unified Engineering Thermodynamics & Propulsion (12) 12
16.06 Prin of Automatic Control (12) 12
(Note: in this case, the student would need to petition the department to take 16.06 concurrently with Unified Fluids and Thermo.)
HASS (12)          HASS
Term Units = 48

4. Senior Year

Fall Term
16.07-Dynamics (12)       12
16.100 Aerodynamics (12), PAS       12
16.82 Flight Vehicle Engineering (12) CIM
or
16.83J Space Systems Engineering (12) CIM
HASS-H (12)          HASS
Term Units = 48

Spring Term
16.35 Real-Time Systems and Software (12), PAS       12
16.36 Communication Systems & Networks (12), PAS       12
16.821 Flight Systems Development (18), CIM, LAB
or
16.831J Space Systems Development (18), CIM, LAB
Elective (12)       12
Term Units = 54

TOTAL UNITS BEYOND GIRS (192-198)       (198)

Notes:

1. The two Institute REST requirements (24 units) can be satisfied from among 6.0001-6.0002 or 6.0001-16.0002J; 6.041; 16.001; and 18.03. The Institute Lab requirement (12 units) for students choosing this roadmap is fulfilled through 16.821 or 16.831J. Units from departmental subjects that fulfill the REST and Lab requirements do not count in units beyond GIRS. Students must fill the 36-unit gap in their departmental program by taking additional electives to reach the minimum unit requirement of 192-198.

2. A student interested in taking capstone 16.82 or 16.83 must complete a minimum of two professional area subjects before enrolling in either of these subjects.