

Sample Academic Pathways for Course 16-ENG Students Entering the Major Fall Term, Sophomore Year

First-year students intending to major in Course 16-ENG are urged to carefully plan their Spring course load to ensure they complete the prerequisites for Unified Engineering 16.001-002. The course load of 57 units allowed for first-years may not be suitable for all students.

Course 16-ENG majors are required to complete 192-198 units beyond the GIRS. The 16-ENG program description and subject requirements can be found at:

<http://mit.edu/aeroastro/academics/undergraddocs/16eng-requirements.pdf>. The following roadmap shows the paths typically taken by students who enter Course 16 in the Fall term of the sophomore year and later enroll in the 16.82x or 16.83x lab/capstone sequences. Several other lab and capstone options are available. Please check the MIT Course Catalogue (<http://student.mit.edu/catalog/index.cgi>).

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.

Students must 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. Also check the *Course 16 Calendar for Laboratory and Capstone Subjects*.

Course 16-ENG — S.B. in Engineering

Subject & Units	Institute Requirement	Units Beyond GIRS
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1. First Year

Fall Term

3.091-Intro to Solid-State Chemistry (12)	CHEM	
8.01-Physics I (12)	PHYS	
18.01-Calculus I (12)	CALC	
HASS (12)	HASS	

Term Units = 48

Spring Term

7.012-Introductory Biology (12)	BIO	
8.02-Physics II (12)	PHYS	
18.02-Calculus II (12)	CALC	

18.03-Differential Equations (12) REST
 HASS (9), CI-H HASS
Term Units = 57

2. Sophomore Year

Fall Term

16.001-Unified Engineering: Materials & Structures REST
 (12) 16.002-Unified Engineering: Signals & Systems 12
 (12)
 6.0001 Intro to Computer Programming in Python (6) ½
 REST and
 6.0002 Intro to Computational Thinking & Data Sc. (6) ½ 12
 REST HASS (12), CI-H HASS
Term Units = 48

Spring Term

16.003-Unified Engineering: Fluid Dynamics (12) 12
 16.004-Unified Engineering: Thermodynamics (12) 12
 HASS-A (12) HASS
 Elective (12) 12
Term Units = 48

3. Junior Year

Fall Term

16.06-Principles of Automatic Control (12) or 16.07 Dynamics (12) 12
 Concentration Subject (12) 12
 Concentration Subject (12) 12
 HASS (12) HASS
Term Units = 48

Independent Activities Period

A six-unit elective, e.g. UROP-for-credit 6

Spring Term

16.821 Flight Vehicle Development (18),
 CIM/Lab or
 16.831J Space Sys Development (18), CI-M/Lab LAB 6
 Concentration Subject (12) 12
 Concentration Subject (12) 12
 HASS-H (12) HASS
Term Units = 54

4. Senior Year

Fall Term

16.82 Flight Vehicle Engineering (12), CI-M
 or
 16.83J Space Systems Engineering (12), CI-M 12
 Concentration Subject (12) 12
 HASS-S (12) HASS



Elective (12)		12
Term Units = 48		
<u>Spring Term</u>		
Concentration Subject (12)		12
Elective (12)		12
Elective (6)		6
HASS (12)	HASS	
Term Units = 42		
TOTAL UNITS BEYOND GIRS		198

Notes:

1. The two Institute REST requirements (24 units) can be satisfied from among 6.0001-6.0002; 16.001; and 18.03. The Institute Lab requirement (12 units) for students choosing this roadmap is fulfilled through 16.821 or 16.831, each of which carries 18 units. Units from departmental subjects that fulfill the REST and Lab requirements do not count in units beyond GIRS. However, six of the 18 units in 16.821 or 16.831 do count in units beyond GIRS. Students must fill the 36- unit gap in their departmental program by taking additional electives.
2. A student interested in taking capstone 16.82 or 16.83 must complete a minimum of two concentration subjects before enrolling in either capstone. With instructor permission, they are however allowed to take 16.821 or 16.831 before taking 16.82 or 16.83. b
3. Students take a minimum of six concentration subjects for a total of 72 units. At least 42 units of engineering topics and 12 units of mathematics or science topics must be included in the concentration.