

# AEROSPACE ENGINEERING MAJOR – Focus on Astronautical Engineering

## Program Tracking Sheet

Effective for students entering AY 2019-2020

Name:	Class Year:
Advisor:	2 <sup>nd</sup> Major:

NOTES: Minimum total academic credit = 15 units

Residency Req.: Min. of 8 units must be completed at WPI

### HUMANITIES AND ARTS (6/3 unit)

All 5 HUA courses must be completed before beginning the Inquiry Seminar or Practicum.

<b>Depth Component</b>				
Students must complete at least three thematically-related courses prior to the culminating Inquiry Seminar or Practicum in the same thematic area. At least one of the three courses should be at the 2000-level or above.				
	Course	Term	Grade	Units
1				1/3
2				1/3
3				1/3
4	HU 3900 or HU 3910			1/3
<b>Breadth Component</b>				
Students must take at least one course outside the grouping in which they complete their depth component. To identify breadth, courses are grouped in the following manner.				
i. art/art history, drama/theatre, and music (AR, EN/TH, MU);				
ii. foreign languages (AB, CN, EN, GN, SP);				
iii. literature and writing rhetoric (EN, WR, RH);				
iv. history and international studies (HI, HU, INTL);				
v. philosophy and religion (PY, RE).				
Exception: May take all six courses in a foreign language				
5				1/3
<b>Humanities Elective</b>				
6				1/3

### PHYSICAL EDUCATION (4 PE classes = 1/3 unit)

	Course	Term	Grade	Units
7				1/12
				1/12
				1/12
				1/12

### SOCIAL SCIENCE (2/3 unit) ECON, ENV, GOV, PSY, SD, SOC, SS, STS, DEV and ID2050

8				1/3
9				1/3

### THE INTERACTIVE QUALIFYING PROJECT (1 unit)

10				1/3
11				1/3
12				1/3

### FREE ELECTIVES (1 unit)

13				1/3
14				1/3
15				1/3

(Note 1)

### MATHEMATICS AND BASIC SCIENCES (4 units)

Must include 1/3 units in thermodynamics

### MATHEMATICS (6/3 unit) Courses with prefix: MA

16	MA 1021 (Calc 1)			1/3
17	MA 1022 (Calc 2)			1/3
18	MA 1023 (Calc 3)			1/3
19	MA 1024 (Calc 4)			1/3
20	MA 2051 (Diff Eqs)			1/3
21	MA 2071 Matrices and Linear Algebra			1/3

### PHYSICS (3/3 unit) Courses with prefix: PH

22	PH 1110/1111 (Mechanics)			1/3
23	PH 1120/1121 (E&M)			1/3
24	PH 2201 (Intermediate Mech 1)			1/3

### CHEMISTRY (1/3 unit) Course with prefix: CH

25	CH 1010 (Chem 1) or 1020 (Chem 2)			1/3
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### SPACE ENVIRONMENTS (1/3 unit)

26	PH 2550 Atmospheric and Space Env			1/3
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### THERMODYNAMICS (1/3 unit) (Note 2)

27	PH 2101, CH 3510, or ES3001			1/3
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### ENGINEERING SCIENCE AND DESIGN (6 units)

(Note 3 and Note 4)

### ASTRONAUTICAL ENGINEERING (4 units)

#### Orbital Mechanics and Space Environments (1/3 unit)

28	AE 2713 Astronautics			1/3
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#### Attitude Determination and Control (2/3 unit)

29	AE/ME 3703 Intro. to Control Dyn. Sys.			1/3
30	AE 4713 Spacecraft Dyn. & Control			1/3

#### Telecommunications (1/3 unit)

31	AE 4733 Guidance, Navig., and Comm.			1/3
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#### Space Structures (4/3 unit)

32	ES 2001 Intro to Materials			1/3
33	AE 2712 Intro to Aerospace Structures			1/3
34	AE 3712 Aerospace Structures			
35	AE 4712 Structural Dynamics			

#### Rocket Propulsion (3/3 unit)

36	AE/ME 3602 Incompressible Fluids			1/3
37	AE/ME 3410 Compressible Fluids Dyn.			1/3
38	AE 4719 Rocket Propulsion			

#### Major Design Experience (1/3 unit)

39	AE 4771 Spacecraft and Mission Design			1/3
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### AERONAUTICAL ENGINEERING (2/3 unit)

#### Aerodynamics (1/3 unit)

40	AE 3711 Aerodynamics			1/3
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#### Flight Mechanics, and Stability and Control (1/3 unit)

41	AE 4723 Aircraft Dynamics and Control.			1/3
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### AERONAUTICAL AND ASTRONAUTICAL ENGINEERING (4/3 unit)

#### Experimentation (1/3 unit)

42	ME 3901 Engineering Experimentation			1/3
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#### Aerospace Design – Major Qualifying Project (1 unit)

43				1/3
44				1/3
45				1/3

#### Notes:

1. First year Great Problems Seminar (GPS) courses can only be used to fulfill the HUA, SSPS, or the Free Elective requirement.
2. If ES 3001 is used to satisfy the Thermodynamics requirement then it counts as a Free Elective and a Math and Basic Science course must be taken to complete the 12/3 Unit requirement.
3. The courses in the above chart can be replaced by other equivalent courses, with the approval of the AE Program Committee.
4. 1/3 unit of an activity must be in Capstone Design (can be satisfied with MQP, AE 4770, or AE 4771).