

Bachelors of Science-Aerospace Engineering

Program Description

The aerospace engineering curriculum provides students with an education in technological areas critical to the design and development of aerospace vehicles and systems. The aeronautics concentration, under the B.S.E. in aerospace engineering, emphasizes aeronautical engineering. Topics in required courses cover aerodynamics, aerospace materials, aircraft structures, propulsion, flight mechanics, and stability and control. Required astronautics topics include orbital mechanics, attitude control and rocket propulsion.

Career Opportunities

Majority of students entering the field of aerospace engineering desire to work on the design and analysis of aerospace vehicles. Most graduates are employed in the aerospace industry or in government positions related to aerospace. Specific careers in aerospace engineering include vehicle design and performance, vehicle and component analysis using computer-aided tools, wind-tunnel and flight testing, space mission design and analysis, propulsion engineering, aeronautical and space systems integration, material and structural design and configuration development.

The objectives of the aerospace engineering program are for graduates to be employed in aerospace engineering or a related field or accepted to graduate school and:

1. Graduates will have the technical skills for career success, including the ability to think in a critical and evaluative manner and to consider a broad perspective in order to solve technical and non-technical problems.
2. Graduates will have the professional skills for career success, including an awareness of ethical responsibility, the ability to communicate well and to work successfully within diverse groups

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[Mechanical and Aerospace Engineering Program](#) |

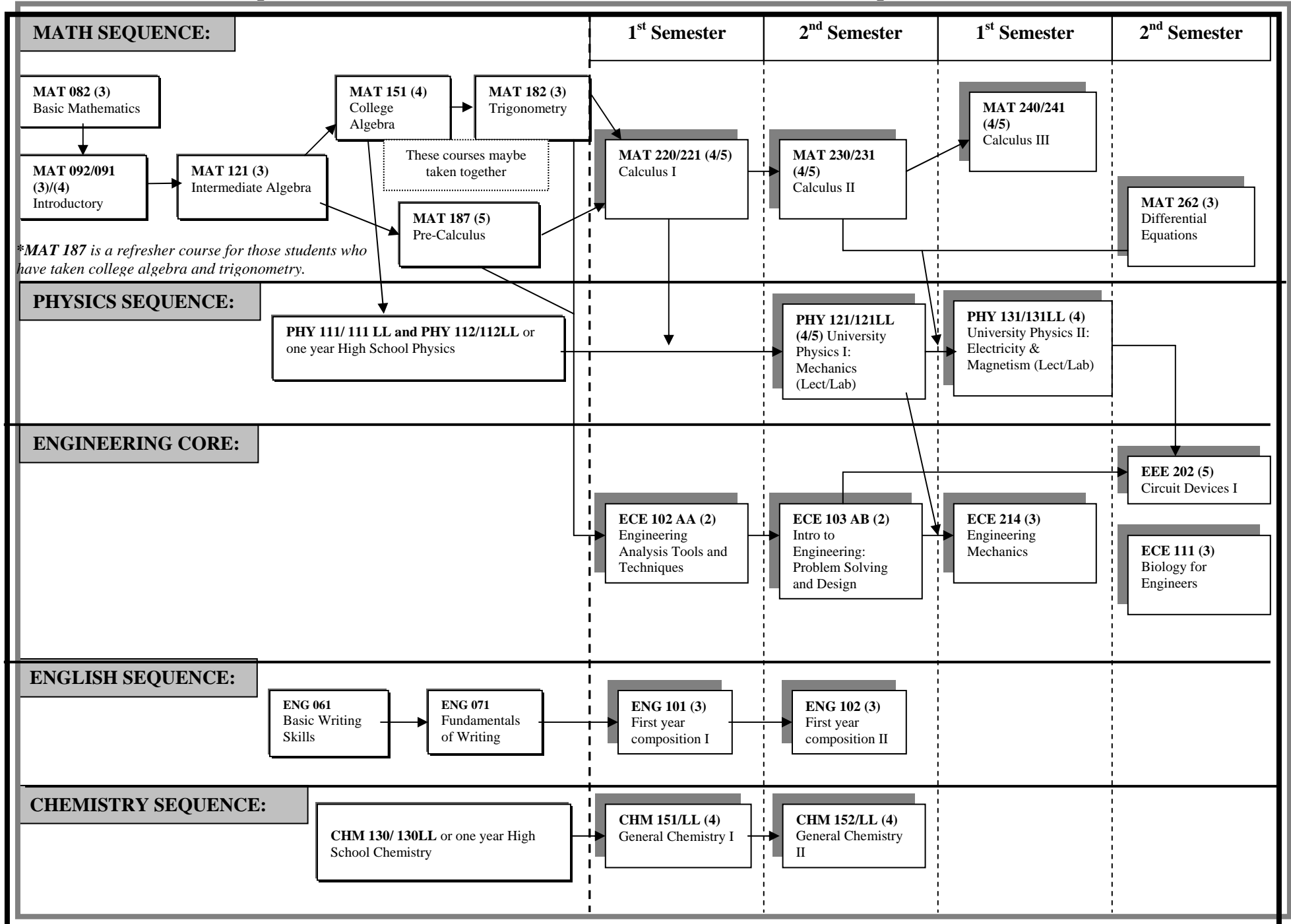
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ENGINEERING ASSESSMENTS AND COURSE SEQUENCE

AEROSPACE ENGINEERING

Prerequisite Courses

Required Courses



Aerospace Engineering Recommended Study Plan

Year 1		Year 2	
First Semester	Second Semester	Third Semester	Fourth Semester
ECE102 AA (2) Engineering Analysis 1	ECE 103 AB (2) Problem Solving & Design	HU/SB (3)	ECE111 (3) Biology Requirement <i>BME 111 (3)</i>
ECE102 (2) AND ECE103 (2)= MAE 100 (2)			EEE 202 (5) Circuits 1 <u>pre-co: PHY131, MAT261</u> <i>EEE 202 (4)</i>
MAT 220 (4) Calc 1 <u>Mat 187 or MAT182</u> <i>MAT 265 (3)</i>	MAT 230 (4) Calc 2 <u>MAT 220</u> <i>MAT 266 (3)</i>	MAT 240 (4) Calc 3 <u>MAT 220</u> <i>MAT267 (4)</i>	MAT 262 (3) Modern Differential Equation <u>MAT230</u> <i>MAT275 (3)</i>
ENG 101 (3) First Year Composition 1 <i>ENG 101 (3)</i>	ENG102 (3) First Year Composition 2 <i>ENG102 (3)</i>	ECE 214 (4) Mechanics <u>PHY121, pre-co MAT240</u> <i>ECE214 (4)</i>	General Elective (3)
CHM 151/LL (4) General Chemistry 1 <u>HS algebra and HS chemistry</u>	CHM 152/LL (4) General Chemistry 2 <u>CHM 151/LL</u>	PHY 131 (4) University Physics 2 <u>PHY 121, MAT 230</u> <i>PHY131 (4)</i>	
CHM151 (4)+CHM152(4)=CHM 114 or CHM 116 (4)		HU/SB (3)	HU/SB (3)
HU/SB (3)	PHY 121 (4) University Physics 1 <u>MAT 220</u> <i>PHY 121 (4)</i>	HU/SB (3)	
16	17	15	17

Underlined = Pre-req *Italic*= ASU Equivalence

According to ASU Aerospace & Mechanical Engineering advisement sheet:
Humanities & Social Sciences (HU/SB) (15 hrs minimum) (Required: 1 course upper division; 2 courses from the same dept; 2 depts. or more Represented; plus a minimum of two courses that satisfy three awareness areas: Cultural (C), Global (G), and Historical (H). Double counting is permissible between HU or SB and the awareness areas and also within the awareness areas.)

NOTE: For the General Elective please check with your ASU advisor on what is approved by the department. Possible courses are EEE120 and CHM230 (Elementary Organic Chemistry)

Course Subject and Title <i>(courses in bold/shading are critical)</i>	Hrs.	Upper Division	Completed ATP: <input type="checkbox"/> Yes <input type="checkbox"/> No		Completed AGECE: <input type="checkbox"/> Yes <input type="checkbox"/> No	Additional Critical Requirement Notes
			Transfer Course/Grade	Minimum Grade if Required		
TERM ONE: 0-15 CREDIT HOURS						
+ASU 101-FSE: The ASU Experience	1	<input type="checkbox"/>				<ul style="list-style-type: none"> • Complete CHM 114 or 116 or 115; MAT 265 each with a minimum grade of “C” + ASU 101-FSE and MAE 100 required for freshmen and should be completed first semester. Non-freshmen see advisor for petitioning replacement electives. • An SAT, ACT, Accuplacer, or TOEFL score determines placement into first-year composition courses • ASU Math Placement Exam score determines placement in Mathematics course *CHM 113 is a prerequisite and does not apply towards degree credit **If ENG 105 a 3 hr applicable elective must also be taken prior to graduation. See Advisor.
CHM 114: General Chemistry for Engineers (SQ) OR CHM 115: General Chemistry with Qualitative Analysis (SQ) OR CHM 116: General Chemistry II * (SQ)	4	<input type="checkbox"/>		Grade of C		
+MAE 100: Introduction to Mechanical and Aerospace Engineering (or Department Approved Elective)	2	<input type="checkbox"/>		Grade of C in MAE 100		
MAT 265: Calculus for Engineers I (MA)	3	<input type="checkbox"/>		Grade of C		
ENG 101 or 102: First-Year Composition OR ENG 105: Advanced First-Year Composition** OR ENG 107 or 108: English for Foreign Students	3	<input type="checkbox"/>		Grade of C		
TERM TWO: 16-30 CREDIT HOURS						
MAT 266: Calculus for Engineers II	3	<input type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • Complete MAT 266; PHY 121, 122 each with a minimum grade of “C” 	
PHY 121/122: University Physics I/ Laboratory I (SQ)	3/1	<input type="checkbox"/>		Grade of C		
BME 111: Engineering Perspectives on Biological Systems	3	<input type="checkbox"/>				
ENG 101 or 102: First-Year Composition OR ENG 105: Advanced First-Year Composition** OR ENG 107 or 108: English for Foreign Students	3	<input type="checkbox"/>		Grade of C		
Social & Behavioral Science (SB) AND Cultural Diversity in the US (C), Global Awareness (G), or Historical Awareness (H)	3	<input type="checkbox"/>				
TERM THREE: 31-45 CREDIT HOURS						
MAE 212: Engineering Mechanics	4	<input type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • Complete ENG 102 or 108 or 105; MAE 212; MAT 275; PHY 131, 132 with a minimum grade of “C” • Complete First Year Composition requirement: ENG 101 & 102 or ENG 107 & 108 or ENG 105 	
MAT 275: Modern Differential Equations	3	<input type="checkbox"/>		Grade of C		
PHY 131/132: University Physics II Electricity and Magnetism/University Physics Laboratory II (SQ)	3/1	<input type="checkbox"/>		Grade of C		
MAT 267: Calculus for Engineers III	3	<input type="checkbox"/>		Grade of C		
TERM FOUR: 46-60 CREDIT HOURS						
MAE 213: Solid Mechanics	3	<input type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • Complete MAE 213, 240 each with a minimum grade of “C”. 	
MAE 240: Thermofluids I	4	<input type="checkbox"/>		Grade of C		
MAE 214: Computer-Aided Engineering I	1	<input type="checkbox"/>		Grade of C		
EEE 202: Circuits I	4	<input type="checkbox"/>		Grade of C		
MAT 343: Applied Linear Algebra	3	<input checked="" type="checkbox"/>		Grade of C		
TERM FIVE: 61-75 CREDIT HOURS						
MAE 318: Sensors and Controls	5	<input checked="" type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • MAE 360 and 362 must be completed for L credit. 	
MAE 322: Structural Mechanics	4	<input checked="" type="checkbox"/>		Grade of C		
MAE 360: Aerodynamics (L)	4	<input checked="" type="checkbox"/>		Grade of C		
MAE 384: Numerical Methods for Engineers (CS)	3	<input checked="" type="checkbox"/>		Grade of C		
TERM SIX: 76-90 CREDIT HOURS						
MAE 313: Aircraft Dynamics and Control	3	<input checked="" type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • MAE 360 and 362 must be completed for L credit. 	
MAE 344: Fundamentals of Aerospace Design	3	<input checked="" type="checkbox"/>		Grade of C		
MAE 362: High-Speed Aerodynamics (L)	4	<input checked="" type="checkbox"/>		Grade of C		
Social & Behavioral Science (SB) AND Cultural Diversity in the US (C), Global Awareness (G), or Historical Awareness (H)	3	<input type="checkbox"/>				
Humanities, Fine Arts & Design (HU) AND Cultural Diversity in the US (C), Global Awareness (G), or Historical Awareness (H)	3	<input type="checkbox"/>				
TERM SEVEN: 91-105 CREDIT HOURS						
MAE 415: Vibration Analysis	3	<input checked="" type="checkbox"/>		Grade of C		
MAE 462: Space Vehicle Dynamics and Control	3	<input checked="" type="checkbox"/>		Grade of C		
MAE 463: Propulsion	3	<input checked="" type="checkbox"/>		Grade of C		
Upper division Humanities, Fine Arts & Design (HU) OR Social & Behavioral Science (SB)	3	<input checked="" type="checkbox"/>				
Technical Elective	3	<input checked="" type="checkbox"/>		Grade of C		
TERM EIGHT: 106-120 CREDIT HOURS						
MAE 400: Engineering Profession (L)	3	<input checked="" type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • See advisor for approved electives. 	
MAE 468: Aerospace Systems Design (L)	3	<input checked="" type="checkbox"/>		Grade of C		
Upper division technical elective	3	<input checked="" type="checkbox"/>		Grade of C		
General Elective	3	<input type="checkbox"/>				
Humanities, Fine Arts & Design (HU) AND Cultural Diversity in the US (C), Global Awareness (G), or Historical Awareness (H)	3	<input type="checkbox"/>				

Graduation Requirements Summary:

Total Hours Regular Curriculum (120)	Total UD Hrs (45 min)	Total Hrs at ASU (30 min)	Cumulative GPA (2.00 minimum)	Major GPA (2.00 minimum GPA)	Hrs Resident Credit for Academic Recognition (56 min)	Total Comm. College Hrs. (64 Max)

General University Requirements: Legend

- General Studies Core Requirements:
 - Literacy and Critical Inquiry (L)
 - Mathematical Studies (MA)
 - Computer/Statistics/Quantitative applications (CS)
 - Humanities, Fine Arts, and Design (HU)
 - Social and Behavioral Sciences (SB)
 - Natural Science-Quantitative (SQ)
 - Natural Science-General (SG)
- General Studies Awareness Requirements
 - Cultural Diversity in the US (C)
 - Global Awareness (G)
 - Historical Awareness (H)
- First-Year Composition

Additional Notes: