

Curriculum for B.S. Degree in Aerospace Engineering Sciences

Applies to students who enter program in Fall 2023

C- is the minimum grade for all course prerequisites

First Year – Fall Semester			Prerequisites (PR) & Corequisites (CR)	
APPM 1350 or MATH 1300	Calculus I for Engineers	4	(PR or CR) APPM 1235 or APPM 1350	<div style="border: 1px solid black; padding: 5px;"> Free Electives are any courses outside specified degree requirements. Total: 11 hours </div>
ASEN 1320 ¹	Aerospace Computing & Eng. Applications	4		
	Humanities & Social Science	6		
	Free Elective	1		
CREDIT HOURS			15	<div style="border: 1px solid black; padding: 5px;"> Humanities & Social Science (H&SS) include: 9 credit hours of lower division or upper division, 6 hours of upper division, & 3 hours of upper division writing. Total: 18 hours </div>
First Year – Spring Semester			Prerequisites (PR) & Corequisites (CR)	
APPM 1360 or MATH 2300	Calculus II for Engineers	4	(PR) APPM 1350	<div style="border: 1px solid black; padding: 5px;"> ASEN 1320, PHYS 1110, and Engineering Projects can be taken in either Fall or Spring semester. </div>
ASEN 1022	Materials Science	3	(PR or CR) APPM 1350 or APPM 1345; ASEN 1320	
PHYS 1110	General Physics I	4	(PR or CR) APPM 1350	
	Engineering Projects ²	3		
	Humanities & Social Science	3		
CREDIT HOURS			17	

Sophomore Year – Fall Semester			Prerequisites (PR) & Corequisites (CR)	
APPM 2360 or MATH 3430 & MATH 2130	Intro Diff Equations w/ Linear Algebra	4	(PR) APPM 1360	<div style="border: 1px solid black; padding: 5px;"> The ASEN core (2000 level courses and beyond) requires students to have earned a "C-" or better in the following prerequisite courses: APPM 1350, APPM 1360 (or MATH equivalents), PHYS 1110, AND one of the following programming courses: ASEN 1320 or CSCI 1300 (or transferable equivalents). </div>
ASEN 2701	Intro to Statics, Structures, Materials	3	(PR) APPM 1360, PHYS 1110; (PR or CR) APPM 2360	
ASEN 2702	Intro Thermodynamics, Aerodynamics	3	(PR) APPM 1360, PHYS 1110; (PR or CR) APPM 2360	
ASEN 2802	Aerospace Sciences Lab I	1	(PR) ASEN 1320; (PR or CR) ASEN 2701, 2702, 2012	
ASEN 2012	Experimental Methods & Comp. Methods	2	(PR) APPM 1360, PHYS 1110, ASEN 1320; (PR or CR) APPM 2360	
	Free Elective	3		
CREDIT HOURS			16	
Sophomore Year – Spring Semester			Prerequisites (PR) & Corequisites (CR)	
APPM 2350 or MATH 2400	Calculus III for Engineers	4	(PR) APPM 1360	<div style="border: 1px solid black; padding: 5px;"> PHYS 1120 can also be taken Fall Semester of Junior year. </div>
ASEN 2703	Intro to Dynamics & Systems	3	(PR) APPM 2360, ASEN 2701; (PR or CR) APPM 2350	
ASEN 2803	Dynamics & Controls Lab	1	(PR) ASEN 1320; (PR or CR) ASEN 2703, 2012	
ASEN 2704	Aero Vehicle Design & Performance	3	(PR) APPM 2360, ASEN 2702; (PR or CR) APPM 2350	
ASEN 2804	Aero Vehicle Design Lab	2	(PR) ASEN 1320; (PR or CR) ASEN 2704, 2012	
PHYS 1120	General Physics II	4	(PR) PHYS 1110; (PR or CR) APPM 1360	
CREDIT HOURS			17	

1. Programming is a prerequisite for all ASEN courses 2000 level and beyond. All AES students must be proficient in MATLAB. Alternate program options: CSCI 1300 or ECEN 1310. MATLAB Student Version: <https://oit.colorado.edu/software-hardware/software-downloads-and-licensing/matlab>.

2. Engineering Projects Courses: ASEN 1400 or ASTR 2500, ASEN 1403, GEEN 1400, ECEN 1400

Junior Year – Fall Semester			Prerequisites (PR) & Corequisites (CR)	
Fluids, Structures, & Materials Block (FSM)				
ASEN 3711	Aerodynamics	3	(PR) APPM 2350; ASEN 2704	
ASEN 3712	Structures	3	(PR) APPM 2350; ASEN 2703	
ASEN 3713	Thermo & Heat Transfer	3	(PR) APPM 2350, 2360; ASEN 2702	
ASEN 3802	Aerospace Sciences Lab II	1	(PR) ASEN 2802, 2012; (PR or CR) ASEN 3711, 3712, 3713	
	Upper Division Humanities & Social Science	3		
	Free Elective	3		
CREDIT HOURS		16		

Junior Year – Spring Semester			Prerequisites (PR) & Corequisites (CR)	
Dynamics, Controls, & Avionics Block (DCA)				
ASEN 3728	Aircraft Dynamics	3	(PR) APPM 2350; ASEN 2703, 2704	
ASEN 3700	Orbital Mech/Attitude Dynamics	3	(PR) APPM 2350; ASEN 2703, 2704	
ASEN 3801	Aero Vehicles Dynamics & Controls Lab	1	(PR) ASEN 2803, 2804; (PR or CR) ASEN 3700, 3728	
ASEN 3300	Electronics & Communications	4	(PR) APPM 2350, 2360; ASEN 2703, PHYS 1120	
	Technical Elective ³	3		
	Free Elective	1		
CREDIT HOURS		15		

The FSM and DCA blocks are offered both semesters. Therefore, students can alternatively take DSA in the Fall and FSM in the Spring.

Senior Year – Fall Semester			Prerequisites (PR) & Corequisites (CR)	
ASEN 4018	Senior Projects I	4	(PR) All 3000-level ASEN courses and ASEN 1022	
	Technical Electives	6		
	College Writing Course ⁴	3		
	Free Electives	3		
CREDIT HOURS		16		

Senior Projects I & II must be completed in the same academic year, starting in the Fall.

Senior Year – Spring Semester			Prerequisites (PR) & Corequisites (CR)	
ASEN 4028	Senior Projects II	4	(PR) ASEN 4018	
ASEN 4013	Propulsion (Also offered in Fall)	3	(PR) ASEN 3711, 3713	
	Technical Electives	6		
	Upper Division Humanities & Social Science	3		
CREDIT HOURS		16		

3. Technical Electives are select 3000, 4000 and 5000-level math, science, and engineering courses (with the exception of CSCI, ECEN, and PHYS where select 2000 level courses are also accepted). Use the Degree Audit to get a full list of approved tech electives.

4. Approved Writing Courses: ENES 1010 (1st year students only), ENES 3100, ENLP 3100, PHYS 3050, WRTG 3030, WRTG 3035