

APPROVED CURRICULUM FOR B.S. DEGREE IN AEROSPACE ENGINEERING SCIENCES (128 total credit hrs)
AY 2021-2022

FRESHMAN YEAR		Credit Hours	Pre-requisites (PR) and Co-requisites (CR)- Grade of C or better required
	Fall Semester	15	
	APPM 1350* Calculus 1 for Engineers	4	(PR) 2 years high school algebra, 1 year geometry, ½ year trigonometry
	GEEN 1400 Engr Projects/ASEN 1403 Rocket Engr	3	(PR) Freshman standing in College of Engineering
	ASEN 1320** Aerospace Computing & Engr Apps	4	(CR/PR) Calculus 1
	Lower-division Humanities/Social Science Elective	3	(PR) Varies
	Free Elective	1	
	Spring Semester	17	
	APPM 1360* Calculus 2 for Engineers	4	(PR) APPM 1350
	ASEN 1022 Materials Science for Aerospace Engineers	3	(CR/PR) APPM 1350 OR APPM 1345; (CR/PR) ASEN 1320**
	PHYS 1110 General Physics 1	4	(CR/PR) APPM 1350
	Lower-division Humanities/Social Science Electives	6	(PR) Varies

In order to start the **ASEN core** (2000 level courses and beyond), students need a "C" or better in the following pre-requisite 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).

SOPHOMORE YEAR	Fall Semester	16	
	APPM 2350* Calculus 3 for Engineers	4	(PR) APPM 1360
	ASEN 2001 Intro to Statics, Structures, Materials	4	(PR) APPM 1350, 1360, PHYS 1110, ASEN 1320**;
	ASEN 2002 Intro Thermodynamics, Aerodynamics	4	(CR/PR) APPM 2350; (CR) ASEN 2012
	ASEN 2012 Experimental & Computational Methods in AES	2	(PR) APPM 1350, 1360, PHYS 1110, ASEN 1320**;
	Free Electives (ex: COEN 2350 and APPM 2450)	2	(CR/PR) APPM 2350
	Spring Semester	18	
	APPM 2360* Intro Diff Equations w/Linear Alg	4	(PR) APPM 1360
	ASEN 2003 Intro Dynamics & Systems	5	(PR) APPM 2350; ASEN 2001, 2012; (CR/PR) APPM 2360
	ASEN 2004 Vehicle Design & Performance	5	(PR) APPM 2350, ASEN 2002, 2012; (CR/PR) APPM 2360
	PHYS 1120^ General Physics 2	4	(PR) PHYS 1110; (CR/PR) APPM 1360
	^(or take PHYS 1120 fall semester of Junior year or any time after completing PHYS 1110)		

JUNIOR YEAR	Fall Semester	15	
	Upper-division Humanities/Social Science Elective	3	(PR) Varies
	ASEN 3XXX	4	
	ASEN 3XXX	4	
	ASEN 3XXX	4	
	Spring Semester	16	
	ASEN 3XXX	4	
	ASEN 3XXX	4	
	ASEN 3XXX	4	
	Professional Area Elective	3	(PR) Varies
	Free Elective	1	(PR) Varies

Choose 3 ASEN 3000-level courses each semester from selection on right.

*NOTE: PHYS 1120 is a prerequisite for ASEN 3300

For ASEN 3000-level courses, choose from:

- **ASEN 3111** Aerodynamics
 - (PR) APPM 2350, 2360; ASEN 2002, 2004
- **ASEN 3112** Structures
 - (PR) APPM 2350, 2360; ASEN 2001, 2003
- **ASEN 3113** Thermo & Heat Transfer
 - (PR) APPM 2350, 2360; ASEN 2002
- **ASEN 3128** Aircraft Dynamics
 - (PR) APPM 2350, 2360; ASEN 2002, 2003, 2004
- **ASEN 3200** Orbit Mech/Attitude Dynamics & Control
 - (PR) APPM 2350, 2360; ASEN 2003, 2004
- **ASEN 3300** Electronics & Communications
 - (PR) APPM 2350, 2360; ASEN 2003, PHYS 1120

SENIOR YEAR		Credit Hours	Pre-requisites (PR) and Co-requisites (CR)- Grade of C or better required
	Fall Semester	16	
	ASEN 4013 Fdn of Propulsion (<i>also offered spring</i>)	3	(PR) APPM 2360, ASEN 3113
	ASEN 4018 Senior Projects 1: Design Synthesis (<i>Note 1</i>)	4	(PR) All 3000-level ASEN courses and ASEN 1022
	Professional Area Electives	6	(PR) Varies
	Upper-division Writing***	3	(PR) Varies
	Spring Semester	16	
	ASEN 4028 Senior Projects 2: Design Practicum	4	(PR) ASEN 4018
	Professional Area Electives	6	(PR) Varies
	Upper-division Humanities/Social Science Elective	3	(PR) Varies
	Free Electives	3	(PR) Varies

Notes:

* **APPM OR MATH courses accepted**

APPM1350=MATH 1300

APPM 1360=MATH 2300

APPM 2350=MATH 2400

APPM 2360=MATH 3430 AND MATH 2130

** **Programming is a prerequisite for all ASEN courses =>2000-level. Recommend ASEN 1320 Aerospace Computing. **All AES students must be proficient in MATLAB.****

MATLAB Student Version: <https://oit.colorado.edu/software-hardware/software-downloads-and-licensing/matlab>. Programming options are: ASEN 1320, CSCI 1300, OR ECEN 1310.

*** **Options for Upper-division Writing Requirement:** ENES 1010 (only available to Freshmen students), ENES 3100, PHYS 3050, WRTG 3030, WRTG 3035

(Note 1): Senior Projects 1 & 2 must be completed in the same Academic Year. Senior Standing in Aerospace Engineering = satisfactory completion of all junior-level Aerospace course requirements.

Professional Area Electives (PAEs): Professional Area 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). Total number of PAE credits = 15. **Use the Degree Audit** to get a full list of approved PAEs.

Free Electives: Total = 7 credit hrs. Free Electives are courses outside of major/minor coursework.

Humanities & Social Sciences (H&SS) Requirements include: 9 credit hours of lower-division H & SS, 6 credit hours of upper-division H&SS & 3 credit hours of upper division writing (students can only take HUEN 1010 in their freshmen year for it to be used toward the upper division writing requirement). Total H&SS=18 credit hours. Please visit: <https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements> for more information.