

**APPROVED CURRICULUM FOR B.S. DEGREE IN AEROSPACE ENGINEERING SCIENCES (128 total credit hrs)**  
**Fall 2012**

**ASEN courses are offered and must be taken in this specific sequence**

		<b>Credit Hours</b>	<b>Prerequisite ("C" or better)/ Co-req. (CR)</b>
<b>FRESHMAN YEAR</b>	<b>Fall Semester</b>	<b>14</b>	
	APPM 1350 Calculus 1 for Engineers	4	2 years high school algebra, 1 year geometry, and 1/2 year trigonometry; or approval by APPM faculty advisor
	GEEN 1500 Intro to Engineering	2	Freshman in Engineering (required for ASEN Freshmen, offered fall only)
	CHEM 1221 Engr. General Chemistry Lab	2	1 year of high school chemistry or C or better in CHEM 1021 & 1 year of high school algebra, CR CHEM 1211
	CHEN 1211 Engr. General Chemistry	3	1 year of high school chemistry or C or better in CHEM 1021 & 1 year of high school algebra, CR CHEM 1221
	GEEN 1400 Engineering Projects/ASEN 1400 Gateway to Space	3	Freshman standing in Engineering
	<b>Spring Semester</b>	<b>17-18</b>	
	APPM 1360 Calculus 2 for Engineers	4	"C" or better in APPM 1350
	PHYS 1110 General Physics 1	4	CR APPM 1350
	GEEN/CSCI 1300/ECEN 1030 Computing Requirement* Lower-division Humanities/Social Science Elective	3-4 6	GEEN 1300 - CR APPM 1350 Variable
<b>SOPHOMORE YEAR</b>	<b>Fall Semester</b>	<b>14</b>	
	APPM 2350 Calculus 3 for Engineers	4	"C" or better in APPM 1360
	ASEN 2001 Aerospace 1: Intro Statics, Structures, Materials	4	"C" or better in: APPM 1350, 1360, PHYS 1110, CSCI 1300 or GEEN 1300 or ECEN 1030, CR APPM 2350
	ASEN 2002 Aerospace 2: Intro Thermodynamics, Aerodynamics	4	"C" or better in: APPM 1350, 1360, PHYS 1110, CSCI 1300 or GEEN 1300 or ECEN 1030, CR APPM 2350
	ASEN 2012 Experimental & Computational Methods in AES	2	"C" or better in CSCI 1300, GEEN 1300 or ECEN 1030, CR with ASEN 2001 & 2002
	<b>Spring Semester</b>	<b>17</b>	
	APPM 2360 Intro Diff Equations w/Linear Alg	4	"C" or better in APPM 1360
	ASEN 2003 Aerospace 3: Intro Dynamics & Systems	5	"C" or better in APPM 2350, ASEN 2001, 2012; CR APPM 2360
	ASEN 2004 Aerospace 4: Vehicle Design & Performance	5	"C" or better in APPM 2350, ASEN 2001, 2002, 2012; CR APPM 2360
	Lower-division Humanities/Social Science Elective	3	Variable
<b>JUNIOR YEAR</b>	<b>Fall Semester</b>	<b>16</b>	
	ASEN 3111 Aerodynamics	4	"C" or better in APPM 2350, ASEN 2002, 2004
	ASEN 3112 Structures	4	"C" or better in APPM 2360, ASEN 2001, 2003, 2004
	ASEN 3113 Thermo & Heat Transfer	4	"C" or better in APPM 2350, ASEN 2002
	PHYS 1120 General Physics 2	4	"C" or better in PHYS 1110, CR APPM 1360
	<b>Spring Semester</b>	<b>18</b>	
	ASEN 3128 Aircraft Dynamics	4	"C" or better in APPM 2360, ASEN 2002, 2003, 2004
	ASEN 3200 Orbit Mech/Att Det & Control	4	"C" or better in APPM 2360, ASEN 2003, 2004
	ASEN 3300 Electronics & Communications	4	"C" or better in APPM 2360, ASEN 2003, PHYS 1120
	Upper-Div Writing (WRTG 3030, 3035, HUEN 1010, 3100) Upper-Div. Humanities/Social Science Elective	3 3	Junior Standing in Engineering for the UD courses pre-reqs variable

## Credit Hours

## Prerequisite (C or better); Co-req. (CR)

## SENIOR YEAR

## Fall Semester

16

ASEN 4013 Foundations of Propulsion	3	"C" or better in APPM 2360, ASEN 3113
ASEN 4018 Senior Projects 1: Design Synthesis (Note 1)	4	"C" or better in all 3000-level ASEN courses (3111, 3112, 3113, 3128, 3200, 3300)
Professional Area Electives	6	Variable
Upper-division Humanities/Social Science Elective	3	pre-reqs variable

## Spring Semester

16

ASEN 4012 Aerospace Materials	3	"C" or better in ASEN 2001 or instructor consent
ASEN 4028 Senior Projects 2: Design Practicum	4	"C" or better in ASEN 4018
Professional Area Electives	6	Variable
Free Electives	3	Variable

- (\*) Programming is a prerequisite for all ASEN courses =>2000-level. Recommend CSCI 1300-4 Computer Science 1, Programming, ECEN 1030-4 C Programming for EE/ECE, or GEEN 1300-3 Intro to Engineering Computing. **All AES students must be proficient in MATLAB prior to the fall ASEN sophomore courses.** MATLAB Student Version: [http://www.mathworks.com/academia/student\\_version/](http://www.mathworks.com/academia/student_version/), MATLAB Tutorials & Help Guide: [http://www.mathworks.com/academia/student\\_center/tutorials/?s\\_tid=gn\\_ac\\_sv\\_tu](http://www.mathworks.com/academia/student_center/tutorials/?s_tid=gn_ac_sv_tu)

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

- Professional Area Electives (PAEs): 3000, 4000, or 5000-level Math, Science or Engineering Courses. Total number of PAE credits = 12. Please the Degree Audit to get a full list of approved PAEs.
- Free Electives: Total hrs = 3 credit hrs. Free Electives can be anything (except for remedial coursework like MATH 1150, CHEM 1021, etc.)
- Humanities & Social Sciences (HSS): 9 credit hours of LDHSS, 6 credit hours of UDHSS & 3 credit hours of UDWRTG. Total HSS=18 credit hours – all courses must be on the approved list
  - Approved list of HSS courses for engineering students: <http://www.colorado.edu/engineering/academics/policies/hss>
  - Directions on how to search for approved HSS classes on the Class Search feature that are being offered for the current or next semester: <http://www.colorado.edu/aerospace/current-students/undergraduates/faq>

## Useful Links:

- Aerospace Dept. Homepage: <http://www.colorado.edu/aerospace/>, CU HONOR CODE: <http://honorcode.colorado.edu/>, AES Honor Code Agreement: <http://www.colorado.edu/aerospace/current-students>
- List of Aerospace Faculty (TO SELECT A FACULTY MENTOR): <http://www.colorado.edu/aerospace/people/faculty>, AES Faculty Mentor Form: <http://www.colorado.edu/aerospace/current-students>
- Academic Calendar & Deadlines: [http://registrar.colorado.edu/calendar/calendars\\_schedules.html](http://registrar.colorado.edu/calendar/calendars_schedules.html), AES SR PROJECTS: <http://aeroprojects.colorado.edu/>
- College of Engineering Forms: <http://www.colorado.edu/engineering/academics/advising-and-registration> (Independent Study, Petitions, Change of Major, Course Schedule Approval, etc.)
- ASEN OPPORTUNITIES (student groups, jobs, scholarships, research, competitions, co-ops, etc.) : <http://www.colorado.edu/aerospace/current-students/undergraduates/opportunities>,
- MINORS: <http://advising.colorado.edu/students/current-students/minors-available-to-arts-sciences-students> & <http://www.colorado.edu/engineering/academics/degrees-minors-certificates/minors>
- CERTIFICATES: <http://www.colorado.edu/engineering/academics/degrees-minors-certificates/certificates>, CUBIC: <http://www.colorado.edu/leeds/academics/certificate-programs/cu-business-intensive-certificate-cubic>
- AES BS/MS PROGRAM: <http://www.colorado.edu/aerospace/current-students/undergraduates/bms-degree>, AES Graduate Program & Handbook: <http://www.colorado.edu/aerospace/current-students/graduates>
- FAQs- Engineering: <http://engineering.colorado.edu/students/faqs.htm>, ASEN: <http://www.colorado.edu/aerospace/current-students/undergraduates/faq>
- FINANCES: <http://www.colorado.edu/engineering/admissions/finances> Scholarships: <http://www.colorado.edu/engineering/admissions/finances/scholarships> Financial Aid: <http://www.colorado.edu/finaid/>, Tuition & Fees: <http://www.colorado.edu/bursar/>
- Maps: Campus & Engineering Center Schematics: [http://engineering.colorado.edu/prospective/map\\_campus.htm](http://engineering.colorado.edu/prospective/map_campus.htm), ASEN (ECAE) wing: <http://www.colorado.edu/cs/sites/default/files/attached-files/Engineering%20Center%20Floor%20Plans%205.17.13.pdf>, Boulder, CO: <http://www.bouldercoloradousa.com/visitor/maps/>
- Study Abroad Program: <http://studyabroad.colorado.edu/> International Engineering Certificates: <http://engineering.colorado.edu/academics/international.htm>,
- MATH: APPLIED MATH COURSE LIST & Exam Archives: <http://amath.colorado.edu/content/academics>, [www.ALEKS.COM](http://www.aleks.com) – math assessment & subscription (pre-calculus skills),
- ACADEMIC RESOURCES & TIPS: <http://engineering.colorado.edu/academics/support.htm>, Free Tutoring – SGT: <http://www.colorado.edu/studentgroups/sigmagammatau/tutor.html>
  - Study Skills – “Being Smart is Not Enough”: <http://www.colorado.edu/engineering/sites/default/files/dilaura.pdf>, Schaum’s Outlines: <http://www.mhprofessional.com/category/?cat=145>,
  - Counseling & Psychological Services: <https://counseling.colorado.edu/>, Disability Services: <http://www.colorado.edu/disabilityservices/>, Wardenburg: <http://healthcenter.colorado.edu/>,
- CAREER Services <http://careerservices.colorado.edu/public/> or call to make an appointment w/Rachel Killam at 303-492-6541. Career Buﬀs/CSO: <https://fedauth.colorado.edu/idp/Authn/UserPassword>
  - Resumes: <http://careerservices.colorado.edu/students/resumes.aspx> Interviews: <http://careerservices.colorado.edu/students/interviewing.aspx> & <http://www.jobinterviewquestions.org/questions/behavioral-interview.asp>
  - Job & Internship Search links: Career Builder.Com <http://www.careerbuilder.com/>; LinkedIn: [http://www.linkedin.com/home?trk=hb\\_home](http://www.linkedin.com/home?trk=hb_home), Aerotek: <http://www.aerotech.com/>
  - Colorado Space Companies: <http://www.spacecolorado.org/companies-directory.aspx>, US Aerospace Companies - MANTA: <http://www.manta.com/mf?search=aerospace&x=37&y=7>
  - AIA Daily Lead: <https://www.smartbrief.com/aia/index.jsp>, Aeroindustryjobs: [http://www.aeroindustryjobs.com/home/home.cfm?site\\_id=13641](http://www.aeroindustryjobs.com/home/home.cfm?site_id=13641), Manufacturer’s EDGE: <http://www.camt.com/useful-links/useful-links>
  - CO-Ops: <http://engineering.colorado.edu/activelearning/co-op.htm>, NASA: <http://intern.nasa.gov>
- Transfer Credit – Transferology: <https://www.transferology.com/index.htm>, Transfer Students: <http://www.colorado.edu/engineering/admissions/transfer>,
- SIT: <http://advising.colorado.edu/students/current-students/students-in-transition>, IUT: <http://advising.colorado.edu/students/current-students/intra-university-transfer>
- RESEARCH Opportunities: Aerospace Faculty: <http://www.colorado.edu/aerospace/people/faculty>, UROPS: <http://www.colorado.edu/UROPS/>, REU: <http://www.nsf.gov/crssprgm/reu/index.jsp>
  - Discovery Learning (DLAs): <http://engineering.colorado.edu/activelearning/aboutdiscovery.htm>, College of Engineering: <http://www.colorado.edu/engineering/research>, CU-Boulder Research, Institutes & Centers: <http://www.colorado.edu/research>, Research Institutes: <http://www.colorado.edu/research/research-institutes>, Research Centers: <http://www.colorado.edu/research/research-centers>