

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

Fall 2013 – TRACK 1

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

		Credit Hours	Prerequisite ("C" or better)/ Co-req. (CR)	
FRESHMAN YEAR	Fall Semester		15	
	APPM 1350	Calculus 1 for Engineers	4	2 years high school algebra, 1 year geometry, 1/2 year trigonometry & a 75% or above on the ALEKS test
	GEEN 1500	Intro to Engineering	1	Freshman in Engineering (required for ASEN Freshmen, offered fall only)
	ECEN 1310	C & MATLAB Programming for ECE	4	no required prerequisite courses
	GEEN 1400	Engineering Projects/ASEN 1400 Gateway to Space	3	Freshman standing in Engineering
		Lower-division Humanities/Social Science Elective	3	Variable
	Spring Semester		17	
	APPM 1360	Calculus 2 for Engineers	4	"C" or better in APPM 1350
	PHYS 1110	General Physics 1	4	CR APPM 1350
	ASEN 1022	Material Science for Aerospace Engineers	3	"C" or better in APPM 1350, Programming (ECEN 1310, CSCI 1300 or GEEN 1300), and 1 year of high school chemistry
	Lower-division Humanities/Social Science Elective	6	Variable	
SOPHOMORE YEAR	Fall Semester		16	
	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, ECEN 1310 or CSCI 1300 or GEEN 1300, CR APPM 2350
	ASEN 2002	Aerospace 2: Intro Thermodynamics, Aerodynamics	4	"C" or better in: APPM 1350, 1360, PHYS 1110, ECEN 1310 or CSCI 1300 or GEEN 1300, CR APPM 2350
	ASEN 2012	Experimental & Computational Methods in AES	2	"C" or better in CSCI 1300, GEEN 1300 or ECEN 1310, CR with ASEN 2001 & 2002
		Free Electives	2	Variable
	Spring Semester		17	
	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
	Upper-division Humanities/Social Science Elective	3	Variable	
JUNIOR YEAR	Fall Semester		16	
	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
	Spring Semester		16	
	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
		Professional Area Electives	3	Variable
	Free Elective	1	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) & ASEN 1022
Professional Area Electives	6	Variable
Upper-division Writing (WRTG 3030, 3035, HUEN 3100, HUEN 1010)	3	pre-reqs variable

Spring Semester**16**

ASEN 4028 Senior Projects 2: Design Practicum	4	"C" or better in ASEN 4018
Professional Area Electives	6	Variable
Upper-division Humanities/Social Science Elective	3	Variable
Free Electives	3	Variable

(*) Programming is a prerequisite for all ASEN courses =>2000-level. Recommend CSCI 1300-4 Computer Science 1, Programming, ECEN 1310-4 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/, MATLAB Tutorials & Help Guide: 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 as well as ASEN 1022.

- **Professional Area Electives (PAEs):** 3000, 4000, or 5000-level Math, Science or Engineering Courses. **Total number of PAE credits = 15.** Please the Degree Audit to get a full list of approved PAEs.
 - **Free Electives:** **Total credits of Free Electives = 6 credit hrs.** Free Electives can be anything (except for remedial coursework like MATH 1150, GEEN 1235, 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
 - o **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, **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/bsms-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, **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 – math assessment & subscription (pre-calculus skills),**
- **ACADEMIC RESOURCES & TIPS:** <http://engineering.colorado.edu/academics/support.htm>, **Free Tutoring – SGT:** <http://www.colorado.edu/studentgroups/sigmagammau/tutor.html>
 - o **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>,
 - o **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>
 - o **Resumes:** <http://careerservices.colorado.edu/students/resumes.aspx> **Interviews:** <http://careerservices.colorado.edu/students/interviewing.aspx> & <http://www.jobinterviewquestions.org/questions/behavioral-interview.asp>
 - o **Job & Internship Search links:** **Career Builder.Com** <http://www.careerbuilder.com/>; **LinkedIn:** http://www.linkedin.com/home?trk=hb_home, **Aerotek:** <http://www.aerotek.com/>
 - o **Colorado Space Companies:** <http://www.spacecolorado.org/companies-projects/directory.aspx>, **US Aerospace Companies - MANTA:** <http://www.manta.com/mf?search=aerospace&x=37&y=7>
 - o **AIA Daily Lead:** <https://www.smartbrief.com/aia/index.jsp>, **Aeroindustryjobs:** http://www.aeroindustryjobs.com/home/home.cfm?site_id=13641, **Manufacturer’s EDGE:** <http://www.camt.com/useful-links/useful-links>
 - o **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/UROP/>, **REU:** <http://www.nsf.gov/crssprgm/reu/index.jsp>
 - o **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>