**ENGINEERING PLUS UNDERGRADUATE DEGREE PROGRAM**

**Aerospace Emphasis**

The e+ degree requirements include completion of 128 semester hours of required and elective courses with a minimum grade point average of 2.25. All courses counting towards the required hours in engineering must have grades of C or higher.

The e+ Aerospace emphasis consists of 57 engineering credit hours, including a two-semester capstone design experience.

<table>
<thead>
<tr>
<th>Course Title/Subject</th>
<th>*Sem. Offered</th>
<th>Course Number</th>
<th>Level</th>
<th>Units</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Engineering</td>
<td>Fall</td>
<td>COEN 1500†</td>
<td>First Year</td>
<td>1</td>
<td>Restricted to &lt;56 hrs.</td>
<td></td>
</tr>
<tr>
<td>Computer Science 1: Starting Computing Engineering Applications</td>
<td>Fall/Spr</td>
<td>CSCI 1320†</td>
<td>First Year</td>
<td>4</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>First-Year Engineering Projects</td>
<td>Fall/Spr</td>
<td>GEEN 1400†</td>
<td>First Year</td>
<td>3</td>
<td>Restricted to &lt;75 hrs.</td>
<td></td>
</tr>
<tr>
<td>Materials Science for Aerospace Engineers</td>
<td>Spr</td>
<td>ASEN 1022</td>
<td>First Year</td>
<td>3</td>
<td>APPM 1350</td>
<td>CSCI 1320†</td>
</tr>
<tr>
<td>Intro to Statics, Structures, and Materials</td>
<td>Fall</td>
<td>ASEN 2001</td>
<td>Sophomore</td>
<td>4</td>
<td>APPM 1360, PHYS 1110, and CSCI 1320†</td>
<td>ASEN 2002, 2012, and APPM 2350</td>
</tr>
<tr>
<td>Intro to Thermodynamics &amp; Aerodynamics</td>
<td>Fall</td>
<td>ASEN 2002</td>
<td>Sophomore</td>
<td>4</td>
<td>APPM 1360, PHYS 1110, and CSCI 1320†</td>
<td>ASEN 2001, 2012, and APPM 2350</td>
</tr>
<tr>
<td>Experimental and Computational Methods</td>
<td>Fall</td>
<td>ASEN 2012</td>
<td>Sophomore</td>
<td>2</td>
<td>CSCI 1320†</td>
<td>ASEN 2001, 2002, and APPM 2350</td>
</tr>
<tr>
<td>Engineering for the Community</td>
<td>Fall</td>
<td>GEEN 2400</td>
<td>Sophomore</td>
<td>3</td>
<td>GEEN 1400†</td>
<td></td>
</tr>
<tr>
<td>Aerospace Electronics and Communications</td>
<td>Spr</td>
<td>ASEN 3300</td>
<td>Junior</td>
<td>4</td>
<td>ASEN 2003, PHYS 1120, and APPM 2360</td>
<td></td>
</tr>
<tr>
<td>Invention and Innovation</td>
<td>Fall/Spr</td>
<td>GEEN 3400</td>
<td>Junior</td>
<td>3</td>
<td>Restricted to 57+ hrs.</td>
<td></td>
</tr>
<tr>
<td>Thermodynamics and Heat Transfer</td>
<td>Fall</td>
<td>ASEN 3113</td>
<td>Junior</td>
<td>4</td>
<td>ASEN 2002 and APPM 2350</td>
<td></td>
</tr>
</tbody>
</table>

Select one from:

- Aerodynamics                                            | Fall         | ASEN 3111     | Junior    | 4     | ASEN 2002, 2004, and APPM 2350                   |                               |
- Orbital Mechanics/Attitude Determination and Control     | Spr          | ASEN 3200     |          | 4     | ASEN 2003, 2004, and APPM 2360                   |                               |
- Senior Projects 1: Design Synthesis                      | Fall         | ASEN 4018     | Senior    | 4     | ASEN 3113 and 3300; and one from: ASEN 3111, 3112, 3128, or 3200; Restricted to Sr; 87+ hrs. |                               |
- Senior Projects 2: Design Practicum                       | Spr          | ASEN 4028     | Senior    | 4     | ASEN 4018                                        |                               |

**TOTAL ENGINEERING COURSE CREDIT HOURS** 57

* Semester course is typically offered. Please note this can change from semester to semester.

† Standard course substitutions:

- COEN 1500: ASEN 1000 (1)
- CSCI 1320: CSCI 1300 (4), CSCI 1310 (4), CHEN 1310 (3), or ECEN 1310 (4)
- GEEN 1400: ASEN 1400 (3), COEN 1400 (3), COEN 1410 (3), or ECEN 1400 (3)

Additional required courses are as follows:

**Science requirements (12-14 credit hours):**

- PHYS 1110 (4) General Physics 1
- PHYS 1120 (4) General Physics 2
- PHYS 1140 (1) Experimental Physics 1

Choose an additional from the following:

- PHYS 2130; or PHYS 2170; or MCEN 1024; or CHEN 1211 & CHEM 1221; or CHEM 1113 & 1114; or CHEM 1251; or CHEM 1271; or EBIO 1210 & 1230; or EBIO 1220 & 1240; or MCDB 1150 & 1151; or MCDB 2150 & 2151.

Note: CU Teach Engineering science course requirements vary slightly, depending on the students’ election of a science area of specialty.
Math requirements (16 credit hours):
APPM 1350 (4) Calculus 1
APPM 1360 (4) Calculus 2
APPM 2350 (4) Calculus 3
APPM 2360 (4) Differential Equations

Note: some math courses may be waived with AP/IB credit

Writing requirements (3 credit hours) choose one:
HUEN 1010 (3) Humanities for Engineers: The Human Quest (first-year freshmen only)
HUEN 3100 (3) Advanced Humanities for Engineers: The Human Quest Continues
WRTG 3030 (3) Writing on Science and Society
WRTG 3035 (3) Technical Communication and Design
PHYS 3050 (3) Writing in Physics: Problem-Solving and Rhetoric

Humanities and Social Sciences (15 credit hours) of approved courses, of which 6 must be at the upper-division level (3000 or higher):
See details at engineering.colorado.edu/hss

Customizable Concentration (12 or more credit hours):
Contracted approval required in advance by an e+ advisor

Free electives (up to 13 credit hours)

Note: up to 6.0 total credit hours can be AP/IB transfer credit.