### Colorado State University

**Engineering Science (B.S.)**

**Engineering Physics Concentration**

This Major Completion Map is designed to help students and their advisors build a semester-by-semester course schedule that will enable students to complete their degree within the minimum number of semesters established by the program of study. The columns on the left list the full Program of Study, with a hyperlink to CSU's Online Catalog. The middle section lists Benchmarks, which are typically pre-requisites for subsequent coursework, minimum grades or GPA, courses offered on a limited basis, or degree conditions such as portfolio review or accreditation requirements. Benchmarks must be completed by the end of the term in which they are listed for the student to have a clear path to timely graduation. In most cases, it will be wiser for students to complete benchmarks before the semester in which they are listed in the Benchmarks column. When that is the case, a benchmark will appear earlier in the section on the right listing Strongly Recommended. When building a course schedule for an individual term, students are advised to schedule courses from the Benchmarks and Strongly Recommended columns first. The remaining courses can be more flexibly scheduled over time. Students should average a full credit load each term (typically an average of 15 credits per term) in order to graduate in the minimum number of semesters.

### Distinctive Requirements for Degree Program

**TO DECLARE MAJOR:** Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information. **TO PREPARE FOR FIRST SEMESTER:** The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at Colorado State in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

### First Year Semester 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Critical Benchmark(s)</th>
<th>Strongly Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (AUCC 3A)</td>
<td>4</td>
<td>CHEM 111</td>
<td></td>
</tr>
<tr>
<td>CHEM 112</td>
<td>General Chemistry Laboratory I (AUCC 3A)</td>
<td>1</td>
<td>CHEM 112</td>
<td></td>
</tr>
<tr>
<td>CO 150</td>
<td>Composition (AUCC 1A)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECE 102</td>
<td>Digital Circuit Logic</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (AUCC 1B)</td>
<td>4</td>
<td>MATH 160</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits:</strong></td>
<td><strong>16</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### First Year Semester 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Critical Benchmark(s)</th>
<th>Strongly Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 103</td>
<td>DC Circuit Analysis</td>
<td>3</td>
<td>ECE 103</td>
<td></td>
</tr>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II</td>
<td>4</td>
<td>MATH 161</td>
<td></td>
</tr>
<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (AUCC 3A)</td>
<td>5</td>
<td>PH 141</td>
<td></td>
</tr>
<tr>
<td>AUCC 3E</td>
<td>Global and Cultural Awareness</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits:</strong></td>
<td><strong>15</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Sophomore Semester 3
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Critical Benchmark(s)</th>
<th>Strongly Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 260</td>
<td>Engineering Mechanics-Statics</td>
<td>3</td>
<td>CIVE 260</td>
<td></td>
</tr>
<tr>
<td>ECE 251</td>
<td>Introduction to Microprocessors</td>
<td>4</td>
<td>ECE 251</td>
<td></td>
</tr>
<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III (AUCC 3A)</td>
<td>4</td>
<td>MATH 261</td>
<td></td>
</tr>
<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (AUCC 3A)</td>
<td>5</td>
<td>PH 142</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits:</strong></td>
<td><strong>16</strong></td>
<td><strong>PLI Workshop(s)</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Sophomore Semester 4**

MECH 237 (followed by CIVE 300 in semester #5) is recommended for students interested in Fluid Mechanics. MECH 337 (followed by MECH 342 in semester #5) is recommended for students interested in Thermodynamics.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Critical Benchmark(s)</th>
<th>Strongly Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 261</td>
<td>Engineering Mechanics-Dynamics</td>
<td>3</td>
<td>CIVE 261</td>
<td></td>
</tr>
<tr>
<td>ECE 202</td>
<td>Circuit Theory Applications</td>
<td>4</td>
<td>ECE 202</td>
<td></td>
</tr>
<tr>
<td>MATH 340</td>
<td>Intro Ordinary Differential Equations (AUCC 4A/B)</td>
<td>4</td>
<td>MATH 340</td>
<td></td>
</tr>
<tr>
<td>MECH 237</td>
<td>Introduction to Thermal Sciences</td>
<td>3</td>
<td>MECH 237</td>
<td></td>
</tr>
<tr>
<td>AUCC 3C</td>
<td>Social and Behavioral Sciences</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits:</strong></td>
<td><strong>17</strong></td>
<td><strong>PLI Workshop(s)</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Junior Semester 5**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Critical Benchmark(s)</th>
<th>Strongly Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td>3</td>
<td>CHEM 113</td>
<td></td>
</tr>
<tr>
<td>CHEM 114</td>
<td>General Chemistry II Lab</td>
<td>1</td>
<td>CHEM 114</td>
<td></td>
</tr>
<tr>
<td>ECE 341</td>
<td>Electromagnetic Fields and Devices I</td>
<td>3</td>
<td>ECE 341</td>
<td></td>
</tr>
<tr>
<td>CIVE 300</td>
<td>Fluid Mechanics</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVE 301</td>
<td>Fluid Mechanics Laboratory</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MECH 342</td>
<td>Mechanics &amp; Thermodynamics of Flow Processes</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUCC 2</td>
<td>Advanced Writing</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUCC 3B</td>
<td>Arts and Humanities</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits:</strong></td>
<td><strong>16-17</strong></td>
<td><strong>PLI Workshop(s)</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Junior Semester 6**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Critical Benchmark(s)</th>
<th>Strongly Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 342</td>
<td>Electromagnetic Fields and Devices II</td>
<td>3</td>
<td>ECE 342</td>
<td></td>
</tr>
<tr>
<td>PH 314</td>
<td>Intro to Modern Physics</td>
<td>4</td>
<td>PH 314</td>
<td></td>
</tr>
<tr>
<td>PH 315</td>
<td>Modern Physics Laboratory</td>
<td>2</td>
<td>PH 315</td>
<td></td>
</tr>
<tr>
<td>AUCC 3D</td>
<td>Historical Perspectives</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUCC 3B</td>
<td>Arts and Humanities</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits:</strong></td>
<td><strong>15</strong></td>
<td><strong>PLI Workshop(s)</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Senior Semester 7**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Critical Benchmark(s)</th>
<th>Strongly Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 401</td>
<td>Senior Design Project I (AUCC 4A)</td>
<td>3</td>
<td>ECE 401</td>
<td></td>
</tr>
<tr>
<td>PH 353</td>
<td>Optics and Waves</td>
<td>4</td>
<td>PH 353</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Choose any Upper Division Math course</td>
<td>3</td>
<td>UD Math</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits:</strong></td>
<td><strong>15</strong></td>
<td><strong>PLI Workshop(s)</strong></td>
<td></td>
</tr>
</tbody>
</table>
Senior Semester 8

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 402&lt;sup&gt;(S)&lt;/sup&gt;</td>
<td>Senior Design Project II (AUCC 4C)</td>
<td>3</td>
</tr>
<tr>
<td>STAT 315</td>
<td>Statistics for Scientists and Engineers</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Technical Electives (See department list)</td>
<td>8-9</td>
</tr>
<tr>
<td></td>
<td>Free Electives</td>
<td>5</td>
</tr>
</tbody>
</table>

**Total Credits:** 19-20

**Total Program Credits:** 134

POS: SP15  (UCC 5/9/14)

- (F) - Fall only course offering
- (S) - Spring only course offering
- (SS) - Summer only course offering

Major Completion Maps are designed as a guide to assist students in navigating their official program of study. This Major Completion Map may differ in credit arrangement and course order. It is the responsibility of students, in consultation with their academic advisors, to ensure all program requirements, according to the official program of study, have been satisfied.