Engineering-Civil/Mechanical Associate of Science Degree

Engineering involves the application of scientific and mathematical principles used in design and in the solution of practical technical problems. The program provides the foundation in mathematics, physics, and engineering necessary to transfer to a university and complete a B.S. in Engineering. However, meet with a counselor for assistance in meeting the specific transfer university’s requirements.

SUGGESTED PROGRAM COURSE SCHEDULE

<table>
<thead>
<tr>
<th>SEMESTER 1</th>
<th>15 UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>Units</td>
</tr>
<tr>
<td>CHEM 300 or Beg Chem (IF you did not have 1 yr of High School Chem w/ lab)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 335 Trig w/ College Algebra or MATH 370 or Pre Calculus</td>
<td>5</td>
</tr>
<tr>
<td>Elective- suggested CISP 300 Algorithm Design/Problem Solving</td>
<td>3</td>
</tr>
<tr>
<td>CRC Area II(a) Writing competency</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEMESTER 2</th>
<th>13(16) UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>Units</td>
</tr>
<tr>
<td>CHEM 400 Gen Chem I</td>
<td>5</td>
</tr>
<tr>
<td>MATH 400 Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>ENGR 312 Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>(CRC Area II(a) If not taken in Semester 1)</td>
<td>(3)</td>
</tr>
</tbody>
</table>

$^*$You must have passed the prerequisite course(s) with a “C” or better; Corequisite must be taken during the same semester; Advisory means it is recommended but not required to enroll in the course.

Career Options/Outlook: Civil engineers perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems. Mechanical engineers work in planning and designing tools, engines, machines, and other mechanically functioning equipment. They oversee installation, operation, maintenance, and repair of equipment. Career opportunities require more than two years of college study.

A sample of reported job titles:
Bridge/Structure Inspection Team Leader, City Engineer, Civil Engineer, Civil Engineering Manager, County Engineer, Design Engineer, Project Engineer, Railroad Design Consultant, Structural Engineer, Traffic Engineer, Application Engineer, Design Engineer, Design Maintenance Engineer, Equipment Engineer, Mechanical Design Engineer, Mechanical Engineer, Process Engineer, Product Engineer, Project Engineer, Test Engineer

Projected job opening in California (2016-2026): 1,890-3,430

Projected growth: Average to faster than average (10%-14%)

Salary in California:
Median wage (2017) with advanced degree: $98,260/yr-$105,540/yr
Source: https://www.onetonline.org/link/summary/17-2051.00 & https://www.onetonline.org/link/summary/17-2141.00

Catalog Year: 2019-2020   Counselor Contact: Ray Mapeso and Anna Davtian   Faculty Contact: Michael Lawlor
### SEMESTER 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Pre-reqs^</th>
<th>Semesters offered^</th>
<th>GE Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 401 Calculus II</td>
<td>5</td>
<td>MATH 400</td>
<td>F, S</td>
<td>CRC Area II(b)</td>
</tr>
<tr>
<td>PHYS 411 Mechanics of Solids &amp; Fluids</td>
<td>4</td>
<td>MATH 400</td>
<td>F, S, Su</td>
<td>CRC Area IV</td>
</tr>
<tr>
<td>CRC Area I Humanities</td>
<td>3</td>
<td></td>
<td>F, S, Su</td>
<td>CRC Area I</td>
</tr>
<tr>
<td>CRC Area III(b) Life Development Skills</td>
<td>3</td>
<td></td>
<td>F, S, Su</td>
<td>CRC Area III(b)</td>
</tr>
<tr>
<td>CRC Area V(b) Soc &amp; Beh Sciences</td>
<td>3</td>
<td></td>
<td>F, S, Su</td>
<td>CRC Area V(b)</td>
</tr>
</tbody>
</table>

### SEMESTER 4

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Pre-reqs^</th>
<th>Semesters offered^</th>
<th>GE Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 402 Calculus III</td>
<td>5</td>
<td>MATH 401</td>
<td>F, S</td>
<td>CRC Area II(b)</td>
</tr>
<tr>
<td>PHYS 421 Elec &amp; Magnetism</td>
<td>4</td>
<td>MATH 401 and PHYS 411</td>
<td>F, S</td>
<td></td>
</tr>
<tr>
<td>ENGR 420 Statics</td>
<td>3</td>
<td>MATH 401 and PHYS 411</td>
<td>F, S</td>
<td></td>
</tr>
<tr>
<td>CISP 360 Intro to Structured Programming</td>
<td>4</td>
<td>CISP 300 or MATH 400</td>
<td>F(H), S(H)</td>
<td></td>
</tr>
</tbody>
</table>

### SEMESTER 5

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Pre-reqs^</th>
<th>Semesters offered^</th>
<th>GE Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 420 Differential Equations</td>
<td>4</td>
<td>MATH 401; Advisory: Math 402</td>
<td>F, S</td>
<td></td>
</tr>
<tr>
<td>ENGR 400 Intro to Elec Circuits &amp; Devices</td>
<td>3</td>
<td>PHYS 421</td>
<td>F, S</td>
<td></td>
</tr>
<tr>
<td>ENGR 412 Properties of Materials</td>
<td>4</td>
<td>CHEM 400 and PHYS 411</td>
<td>F, S</td>
<td></td>
</tr>
<tr>
<td>CRC Area V(a) American Institutions</td>
<td>3</td>
<td></td>
<td>F, S, Su</td>
<td>CRC Area V(a)</td>
</tr>
<tr>
<td>CRC Area III(a) Physical Edu Activity</td>
<td>1</td>
<td></td>
<td>F, S, Su</td>
<td>CRC Area III(a)</td>
</tr>
<tr>
<td>CRC Area VI Ethnic Multicultural Studies</td>
<td>3</td>
<td></td>
<td>F, S, Su</td>
<td>CRC Area VI</td>
</tr>
</tbody>
</table>

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**Honors option:**
The CRC Honors Program is designed specifically for academically accomplished students and for students with the potential for high achievement. Students who complete 15 units or more in honors-designated courses will earn special recognition as an Honors Scholar, a distinction that may entitle the student to guaranteed transfer and scholarship opportunities at select transfer colleges and universities.

**Transfer notes:**
Please meet with a counselor for specific transfer course evaluation or transferring to a specific 4-year institution.

**General Education (GE):**
Non-specifed GE courses identified by CRC Area, CSU Area or IGETC Area without pre- or co-requisite can be taken at any semester.

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\(\text{\^You must have passed the prerequisite course(s) with a "C" or better; Corequisite must be taken during the same semester; Advisory means it is recommended but not required to enroll in the course.}\)

\(\text{\^O} = \text{online available} \quad \text{(H) = hybrid available}\)