# Suggested Course Plan for a UC Riverside Major in Materials Science & Engineering

## Catalog Year: 2015

### Fall Quarter | Units | Winter Quarter | Units | Spring Quarter | Units
--- | --- | --- | --- | --- | ---
CHEM 001A & CHEM 01LA | 5 | CHEM 001B & CHEM 01LB | 5 | CHEM 001C & CHEM 01LC | 5
General Chemistry & Lab | | General Chemistry & Lab | | General Chemistry & Lab | |
ENGL 001A | 4 | ENGL 001B | 4 | MATH 009C | 4
Beginning Composition | | Intermediate Composition | | First Year Calculus | |
MATH 009A | 4 | MATH 009B | 4 | Breadth | 4
First Year Calculus | | First Year Calculus | | Humanities/Social Sciences | |

---

## Second Year

### Fall Quarter | Units | Winter Quarter | Units | Spring Quarter | Units
--- | --- | --- | --- | --- | ---
CHEM 112A | 4 | MATH 010A | 4 | CS 030 | 4
Organic Chemistry | | Multivariable Calculus | | Intro to Computational Science & Engr | |
MATH 046 | 4 | ME 010 | 4 | EE 001A & EE 01LA | 4
Differential Equations | | Statics | | Engineering Circuit Analysis I & Lab | |
PHYS 040A | 5 | PHYS 040B | 5 | MATH 010B | 4
Physics (Mechanics) | | Physics (Heat/Waves/Sound) | | Multivariable Calculus | |
Breadth | 4 | Breadth | 4 | PHYS 040C | 5
Humanities/Social Sciences | | Humanities/Social Sciences | | Physics (Electricity/Magnetism) | |

---

## Third Year

### Fall Quarter | Units | Winter Quarter | Units | Spring Quarter | Units
--- | --- | --- | --- | --- | ---
CEE 135 | 4 | BIEN 140A/CEE 140A | 4 | ENGR 180W* | 4
Chemistry of Materials | | Biomaterials | | Technical Communications | |
EE 138 | 4 | CHE 100 | 4 | MSE 160 | 4
Electrical Properties of Materials | | Engineering Thermodynamics | | Nanostructure Characterization Lab | |
ME 114 | 4 | ME 110 | 4 | Technical Elective** | 4
Intro to Materials Science & Engr | | Mechanics of Materials | | | |
Breadth | 4 | Technical Elective** | 4 | | |
Humanities/Social Sciences | | | | | |

---

## Fourth Year

### Fall Quarter | Units | Winter Quarter | Units | Spring Quarter | Units
--- | --- | --- | --- | --- | ---
ME 156 | 4 | MSE 175A | 4 | MSE 175B | 4
Mechanical Behavior of Materials | | Senior Design Project | | Senior Design Project | |
MSE 161 | 4 | Technical Elective** | 4 | Technical Elective** | 4
Analytical Materials Characterization | | | | | |
STAT 155 | 4 | Breadth | 4 | Breadth | 4
Probability & Statistics for Engr | | Humanities/Social Sciences | | Humanities/Social Sciences | |
Technical Elective** | 4 | | | | |

---

**Total Units:** 180  
**Maximum units:** 216

---

To earn a B.S., you must complete all College and University requirements. For a full list of requirements, go to www.catalog.ucr.edu.

**English Composition**

A C or better is required in all English Composition courses to satisfy the graduation requirement. ENGR 180W fulfills the third quarter of English Composition.

**Breadth Requirements**

For an approved list of Breadth courses:  
[http://student.engr.ucr.edu/policies/requirements/breadth.html](http://student.engr.ucr.edu/policies/requirements/breadth.html).

**Humanities: (3 courses)**

A. World History:  
B. Fine Arts, Lit., Phil. or Rlst:  
C. Human Persp. on Science:

**Social Sciences: (3 courses)**

A. Econ. or Posc.:  
B. Anth., Psyc, or Soc.:  
C. General Social Science:  
Biological Science

**Ethnicity: (1 course)**

1. ________

**Upper Division: (2 courses)**

1. ________  
2. ________

**Technical Electives**

Please note that Technical Electives may be offered throughout the Academic Year. Consult with your Academic Advisor about potential offerings. See approved technical electives on back.

Course Plan is subject to change.
# Materials Science & Engineering Technical Electives & Focus Areas

You must complete 5 courses (at least 20 units) of Technical Elective coursework, selected from the courses below. It is recommended that you select at least 4 courses within one of the Focus Areas below. Units are listed in ()

<table>
<thead>
<tr>
<th>Polymers and Biomaterials (BIEN)</th>
<th>Electronic and Magnetic Materials (EE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIEN/MSE 136: Tissue Engineering</td>
<td>EE 133: Solid-State Electronics (4)</td>
</tr>
<tr>
<td>BIEN 140B: Biomaterials (4)</td>
<td>EE 136: Semiconductor Device Processing (4)</td>
</tr>
<tr>
<td>CHE 105: Introduction to Nanoscale Engineering (4)</td>
<td>EE 137: Intro to Semiconductor Optoelectronic Devices (4)</td>
</tr>
<tr>
<td>EE 139: Magnetic Materials (4)</td>
<td>EE 139: Magnetic Materials (4)</td>
</tr>
<tr>
<td>MSE 197: Research for Undergraduates (1-4)</td>
<td>EE 162: Introduction to Nanoelectronics (4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nanomaterials and Sensors (CEE)</th>
<th>Structural Materials (ME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 105: Introduction to Nanoscale Engineering (4)</td>
<td>ME 103: Dynamics (4)</td>
</tr>
<tr>
<td>CHE 161: Nanotechnology Processing Laboratory (3)</td>
<td>ME 116B: Heat Transfer (4)</td>
</tr>
<tr>
<td>EE 133: Solid-State Electronics (4)</td>
<td>ME 122: Vibrations (4)</td>
</tr>
<tr>
<td>EE 139: Magnetic Materials (4)</td>
<td>ME 138: Transport Phenomena in Living Systems (4)</td>
</tr>
<tr>
<td>EE 162: Introduction to Nanoelectronics (4)</td>
<td>ME 153: Applied Finite Element Methods (4)</td>
</tr>
<tr>
<td>MSE 197: Research for Undergraduates (1-4)</td>
<td>ME 180: Optics and Lasers in Engineering (4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computation and Modeling (CSE)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 131: Linear Algebra I</td>
<td></td>
</tr>
<tr>
<td>MATH 135A: Numerical Analysis (4)</td>
<td></td>
</tr>
<tr>
<td>MATH 135B: Numerical Analysis (4)</td>
<td></td>
</tr>
<tr>
<td>CS 160: Concurrent Programming and Parallel Systems (4)</td>
<td></td>
</tr>
<tr>
<td>MSE 197: Research for Undergraduates (1-4)</td>
<td></td>
</tr>
</tbody>
</table>

* Note that many Technical Electives will require that you complete additional courses as pre-requisites not accounted for in the undergraduate program. Consult the Faculty Advisor regarding the pre-requisite coursework for the Technical Electives you would like to take.*