

# MATERIALS SCIENCE & ENGINEERING

<i>Fall Quarter</i>	<i>Units</i>	<i>Winter Quarter</i>	<i>Units</i>	<i>Spring Quarter</i>	<i>Units</i>
<b>FIRST YEAR</b>					
CHEM 001A & CHEM 01LA <i>General Chemistry &amp; Lab</i>	5	CHEM 001B & CHEM 01LB <i>General Chemistry &amp; Lab</i>	5	CHEM 001C & CHEM 01LC <i>General Chemistry &amp; Lab</i>	5
ENGL 001A <i>Beginning Composition</i>	4	ENGL 001B <i>Intermediate Composition</i>	4	MATH 009C <i>First Year Calculus</i>	4
MATH 009A <i>First Year Calculus</i>	4	MATH 009B <i>First Year Calculus</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
MSE 001 <i>Fund. of Materials Science &amp; Engr.</i>	2	Breadth _____ <i>Biological Sci (BIOL 002, or 003, or 005A/LA)</i>	4		
<b>SECOND YEAR</b>					
CHEM 008A & CHEM 08LA <i>Organic Chemistry</i>	4	MATH 010A <i>Multivariable Calculus</i>	4	CS 009M <i>Intro to Programming</i>	4
MATH 046 <i>Differential Equations</i>	4	ME 010 <i>Statics</i>	4	EE 001A & EE 01LA <i>Engineering Circuit Analysis I &amp; Lab</i>	4
PHYS 040A <i>Physics (Mechanics)</i>	5	PHYS 040B <i>Physics (Heat/Waves/Sound)</i>	5	MATH 010B <i>Multivariable Calculus</i>	4
Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4	PHYS 040C <i>Physics (Electricity/Magnetism)</i>	5
<b>THIRD YEAR</b>					
CEE 135 <i>Chemistry of Materials</i>	4	BIEN 140A/CEE 140A <i>Biomaterials</i>	4	ENGR 180W* <i>Technical Communications</i>	4
EE 138 <i>Electrical Properties of Materials</i>	4	CHE 100 <i>Engineering Thermodynamics</i>	4	MSE 160 <i>Nanostructure Characterization Lab</i>	4
ME 114 <i>Intro to Materials Science &amp; Engr</i>	4	ME 110 <i>Mechanics of Materials</i>	4	Technical Elective** _____	4
Breadth _____ <i>Humanities/Social Sciences</i>	4	Technical Elective** _____	4		
<b>FOURTH YEAR</b>					
ME 156 <i>Mechanical Behavior of Materials</i>	4	MSE 175A <i>Senior Design Project</i>	4	MSE 175B <i>Senior Design Project</i>	4
MSE 161 <i>Analytical Materials Characterization</i>	4	Technical Elective** _____	4	Technical Elective** _____	4
STAT 155 <i>Probability &amp; Statistics for Engr</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
Technical Elective** _____	4				

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](http://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>.

#### 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 ().

## Polymers and Biomaterials (BIEN)

BIEN/MSE 136	Tissue Engineering (4)
BIEN 140B:	Biomaterials (4)
CHE 105:	Introduction to Nanoscale Engineering (4)
EE 139:	Magnetic Materials (4)
MSE 197:	Research for Undergraduates (1-4)

## Nanomaterials and Sensors (CEE)

CHE 105:	Introduction to Nanoscale Engineering (4)
CEE 147:	Bio-microelectromechanical Systems (4)
CHE 161:	Nanotechnology Processing Laboratory (3)
EE 133:	Solid-State Electronics (4)
EE 139:	Magnetic Materials (4)
EE 162:	Introduction to Nanoelectronics (4)
MSE 197:	Research for Undergraduates (1-4)

## Computation and Modeling (CSE)

MATH 131:	Linear Algebra I
MATH 135A:	Numerical Analysis (4)
MATH 135B:	Numerical Analysis (4)
CS 160:	Concurrent Programming and Parallel Systems (4)
MSE 197:	Research for Undergraduates (1-4)

## Electronic and Magnetic Materials (EE)

EE 133:	Solid-State Electronics (4)
EE 136:	Semiconductor Device Processing (4)
EE 137:	Intro to Semiconductor Optoelectronic Devices (4)
EE 139:	Magnetic Materials (4)
EE 162:	Introduction to Nanoelectronics (4)
MSE 197:	Research for Undergraduates (1-4)

## Structural Materials (ME)

ME 103:	Dynamics (4)
ME 113:	Fluid Mechanics (4)
ME 116B:	Heat Transfer (4)
ME 122:	Vibrations (4)
ME 138	Transport Phenomena in Living Systems (4)
ME 153:	Applied Finite Element Methods (4)
ME 180:	Optics and Lasers in Engineering (4)
MSE 197:	Research for Undergraduates (1-4)

\* 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.