

# 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	MSE 002L <i>General Materials Lab</i>	1
MSE 001 <i>Fund. of Materials Science &amp; Engr.</i>	2	Breadth _____ <i>Biological Sci (BIOL 002, or 003, or 005A/LA)</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
<b>SECOND YEAR</b>					
CHEM 008A & CHEM 08LA <i>Organic Chemistry</i>	4	MATH 010A <i>Multivariable Calculus</i>	4	CS 009M or 009P <i>Intro to Programming</i>	4
MATH 046 <i>Differential Equations</i>	4	ME 010 <i>Statics</i>	4	MATH 010B <i>Multivariable Calculus</i>	4
MSE 003L <i>General Materials Lab</i>	1	MSE 004L <i>General Materials Lab</i>	1	PHYS 040C <i>Physics (Electricity/Magnetism)</i>	5
PHYS 040A <i>Physics (Mechanics)</i>	5	PHYS 040B <i>Physics (Heat/Waves/Sound)</i>	5	Breadth _____ <i>Humanities/Social Sciences</i>	4
<b>THIRD YEAR</b>					
EE 005 <i>Engineering Circuit Analysis I &amp; Lab</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 135 <i>Intro to Inorganic Mat Synthesis</i>	4
ME 114 <i>Intro to Materials Science &amp; Engr</i>	4	ME 110 <i>Mechanics of Materials</i>	4	MSE 160 <i>Nanostructure Characterization Lab</i>	4
STAT 155 <i>Probability &amp; Statistics for Engr</i>	4	MSE 134 <i>Microstruct Transform in Materials</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
Technical Elective** _____	4	Technical Elective** _____	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4

To earn a B.S., you must complete all College and University requirements. For a full list of requirements, go to [catalog.ucr.edu](http://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. Units are listed in ().

## Polymers and Biomaterials

BIEN/MSE 136	Tissue Engineering (4)
BIEN 140B	Biomaterials (4)
MSE 197	Research for Undergraduates (1-4)

## Electronic, Photonic, and Magnetic Materials

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)

## Synthesis and Processing of Nanomaterials

CHE 105	Introduction to Nanoscale Engineering (4)
CHE 161	Nanotechnology Processing Laboratory (3)
EE 162	Introduction to Nanoelectronics (4)
MSE 197	Research for Undergraduates (1-4)

## Structural Materials

MSE 142	Corrosion Science (4)
MSE 143	Failure Analysis and Prevention (4)
MSE 148	Advanced Solidification Processing (4)
MSE 197	Research for Undergraduates (1-4)

## Computation and Modeling of Materials

ME 153	Finite Element Methods (4)
MSE 155	Materials Science of the Solid State (4)
MSE 156	Atomistic Modeling of Materials (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.