Marlan and Rosemary Bourns College of Engineering

Suggested Course Plan for a UC Riverside Major in

MATERIALS SCIENCE & ENGINEERING

Catalog Year: 2020

Fall Quarter	*Units*	*Winter Quarter*	*Units*	*Spring Quarter*	*Units*
FIRST YEAR					
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*	
MSE 001	2	Breadth _____	4	MSE 002L	1
Fund. of Materials Science & Engr.		*Biological Sci (BIOL 002, or 003, or 005A/LA)*		*General Materials Lab*	
SECOND YEAR					
CHEM 008A & CHEM 08LA	4	MATH 010A	4	CS 009M or 009P	4
Organic Chemistry		*Multivariable Calculus*		*Intro to Programming*	
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*	
MSE 003L	1	MSE 004L	1	PHYS 040C	5
General Materials Lab		*General Materials Lab*		*Physics (Electricity/Magnetism)*	
THIRD YEAR					
EE 138	4	BIEN 140A/CEE 140A	4	ENGR 180W*	4
Electrical Properties of Materials		*Biomaterials*		*Technical Communications*	
ME 114	4	CHE 100	4	MSE 135	4
Intro to Materials Science & Engr		*Engineering Thermodynamics*		*Intro to Inorganic Mat Synthesis*	
STAT 155	4	ME 110	4	MSE 160	4
Probability & Statistics for Engr		*Mechanics of Materials*		*Nanostructure Characterization Lab*	
Breadth _____	4	MSE 134	4	Technical Elective**	4
Humanities/Social Sciences		*Microstruct Transform in Materials*		_____	
FOURTH YEAR					
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		_____		_____	
Technical Elective**	4	Technical Elective**	4	Breadth _____	4
_____		_____		*Humanities/Social Sciences*	
Breadth _____	4	Breadth _____	4	Breadth _____	4
Humanities/Social Sciences		*Humanities/Social Sciences*		*Humanities/Social Sciences*	

Total Units: 190

Maximum units: 216

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