

# 2016 Curriculum in Materials Engineering Course Catalog (128 Credits Required)

## Freshman Year: Semester 1 (16 cr)

Math 165: Calculus I (4 cr)  
Chem 177: General Chemistry I (4 cr)  
Chem 177L: General Chemistry I Lab (1 cr)  
English 150: Critical Thinking and Communication (3 cr)  
Engr 101: Engineering Orientation (R cr)  
Engr 160: Engineering Problems with Computer Applications Lab (3 cr)  
Lib 160: Information Literacy (1 cr)

## Semester 2 (17 cr)

Math 166: Calculus II (4 cr)  
Chem 178: General Chemistry II (3 cr)  
Chem 178L: General Chemistry II Lab (1 cr)  
English 250: Written, Oral, Visual, and Electronic Composition (3cr)  
Gen Ed: \_\_\_\_\_(3 cr)  
Gen Ed: \_\_\_\_\_(3 cr)

## Sophomore Year: Semester 3 (16 cr)

Math 265: Calculus III (4 cr)  
Mat E 215: Intro to MSE I (3 cr)  
Mat E 215L: Intro to MSE I Lab (1 cr)  
Phys 221: Introduction to Classical Physics I (5 cr)  
Gen Ed: \_\_\_\_\_(U.S. Diversity) (3 cr)

## Semester 4 (16 cr)

Math 267: Elementary Differential Equations and Laplace Transformations (4 cr)  
Mat E 214: Structural Characterization of Materials (3 cr)  
Mat E 216: Intro To MSE II (3 cr)  
Mat E 216L: Intro to MSE II Lab (1 cr)  
Phys 222: Intro to Classical Physics II (5 cr)

## Junior Year: Semester 5 (15 cr)

Mat E 311: Thermodynamics in Materials Engineering (3 cr)  
Mat E 317: Intro to Electronic Properties of Ceramic, Metallic, and Polymeric Materials (3 cr)  
Specialization: \_\_\_\_\_(3 cr)  
Mat E elec.: \_\_\_\_\_(3 cr)  
E M 274: Engineering Statics (3 cr)

## Semester 6 (18 cr)

Mat E 314: Kinetics and Phase Equilibria in Materials (3 cr)  
Mat E 316: Computational Methods in Materials (3 cr)  
Specialization: \_\_\_\_\_(3 cr)  
Mat E elec.: \_\_\_\_\_(3 cr)  
E M 324: Mechanics of Materials (3 cr)  
Gen Ed: \_\_\_\_\_(International Perspectives) (3 cr)

## Senior Year: Semester 7 (15 cr)

Mat E 401: Materials Engineering Professional Planning (R cr)  
Mat E 413: Materials Design and Professional Practice I  
Mat E 418: Mechanical Behavior of Materials (3 cr)  
Specialization: \_\_\_\_\_(3 cr)  
Tech. elec.: \_\_\_\_\_(3 cr)  
Gen Ed\*: \_\_\_\_\_Technical Writing (3 cr)

## Semester 8 (15 cr)

Mat E 414: Materials Design and Professional Practice II (3 cr)  
Specialization: \_\_\_\_\_(3 cr)  
Tech elec.: \_\_\_\_\_(3 cr)  
Tech. elec.: \_\_\_\_\_(3 cr)  
Free elec.: \_\_\_\_\_(3 cr)

**Specialization Course Sequences: (Note: F = offered Fall only, S = offered S only)**

### Ceramics

Mat E 321 (F): Introduction to Ceramic Science  
Mat E 322 (S): Introduction to Ceramic Processing  
Mat E 425 (F): Glass Science and Engineering  
Mat E 433 (S): Advanced Electronic Materials

### Polymers

Chem 331 (F, S, SS): Organic Chemistry I  
Mat E 351 (S): Introduction to Polymeric Materials  
Mat E 453 (F): Physical and Mechanical Properties of Polymers  
Mat E 454 (S): Polymer Composites and Processing

### Metals

Mat E 341 (F): Metals Processing  
Mat E 342 (S): Structure/Property Relations in Nonferrous Metals  
Mat E 443 (F): Physical Metallurgy of Ferrous Alloys  
Mat E 444 (S): Corrosion and Failure Analysis

\*Included in the 15 total Gen Ed credits is a **3 credit technical writing requirement.**

**Choose one of the following courses: Engl 314, Engl 302, Engl 309, or JL MC 347.**

Engl 314: Technical Communication  
Engl 302: Business Communication  
Engl 309: Proposal and Report Writing  
JL MC 347: Science Communication