To be adopted:

Proposed Changes to Materials Science & Engineering Undergraduate Program

PRESENT:

Major
The B.S. degree in Materials Science and Engineering is offered jointly by the five participating departments of The Marlan and Rosemary Bourns College of Engineering. The program aims to produce students who are effective team players in materials engineering or related engineering, science or managerial positions, who use and improve on their skills in the job; who can enter into graduate or professional degree programs; and who are responsible engineers, professionals or scientists demonstrating ethical and professional responsibility and continuing to learn through a variety of educational experiences.

The program aims to produce graduates who:

• can apply knowledge of the scientific and engineering principles underlying major elements of materials engineering – the structure, properties, processing, and performance of materials
• can design and conduct experiments relevant to materials science and engineering as well as analyze and interpret experimental data
• can identify, formulate, and solve materials selection and design problems
• can work in multidisciplinary teams
• can appreciate professional and ethical responsibility and the importance of continued learning after graduation
• can communicate effectively
• have a basic understanding of the impact of engineering on society, including the economy and environment
• have an elementary understanding of contemporary issues in materials science and engineering

PROPOSED:

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• have an elementary understanding of contemporary issues in materials science and engineering
**University Requirements**
See Undergraduate Studies section.

**College Requirements**
See The Marlan and Rosemary Bourns College of Engineering, Colleges and Programs section. The Materials Science and Engineering major uses the following major requirements to satisfy the college’s Natural Sciences and Mathematics breadth requirement.

1. One course in the biological sciences chosen from an approved list
2. CHEM 001A, CHEM 001LA
3. MATH 008B or MATH 009A
4. PHYS 040A, PHYS 040B

**Major Requirements**

1. Lower-division requirements (68 units)
   a) CHEM 001A, CHEM 01LA, CHEM 001B, CHEM 01LB, CHEM 001C, CHEM 01LC
   b) CS 030
   c) EE 001A, EE 01LA
   e) MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046
   d) ME 010
   f) MSE 001
   g) PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division requirements (53 units)
   a) CHEM 112A
   b) CEE 135
   c) CHE 100
   d) EE 138
   e) ENGR 180W

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   f) MSE 001
   g) PHYS 040A, PHYS 040B, PHYS 040C

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   a) CHEM 112A
   b) CEE 135
   c) CHE 100
   d) EE 138
   e) ENGR 180W
f) ME 110, ME 114, ME 156  
g) MSE 160, MSE 161, MSE 175A, MSE 175B  
h) STAT 155  
i) Technical Electives (20 units): chosen from BIEN 140A/CEE 140A, BIEN 140B/CEE 140B, CEE 147, EE 133, EE 136, EE 137, EE 139, ME 113, ME 116, ME 138, ME 153, ME 180  

Visit the Student Affairs Office in the College of Engineering or student.engr.ucr.edu for a sample program.

JUSTIFICATION:

BIEN 140A (Biomaterials) is a course that emphasizes materials science and engineering concepts applied to materials for bio-applications. MSE students will benefit from having exposure to the increasingly important bio-related fields.

APPROVALS:

Approved by the faculty of the Department of Materials Science & Engineering: April 5, 2012
Approved by the Executive Committee of the College of Engineering: November 14, 2012
Approved by the Committee on Educational Policy: February 6, 2013