



**Campus Curricula Committee Meeting Agenda**

**April 3, 2013**

**12 pm**

**Room 117 Fulton Hall**

**Review of submitted DC forms:**

DC #0454, Electrical and Computer Engineering, Bachelor of Science in Electrical Engineering, effective Fall 2013.

DC #0455, Electrical and Computer Engineering, Bachelor of Science in Electrical Engineering, effective Fall 2013.

DC #0456, Electrical and Computer Engineering, Bachelor of Science in Computer Engineering, effective Fall 2013.

DC #0466, Materials Science and Engineering, Minor in Materials Science and Engineering, effective Fall 2013.

DC #0467, Psychological Science, Bachelor of Arts in Psychology and Bachelor of Science in Psychology, effective Fall 2013.

DC #0468, Psychological Science, Bachelor of Science in Psychology and Bachelor of Science in Psychology with Secondary Education Emphasis, effective Fall 2013.

DC #0469, Civil, Architectural and Environmental Engineering, Bachelor of Science in Civil Engineering, effective Fall 2013.

DC #0470, Civil, Architectural and Environmental Engineering, Bachelor of Science in Civil Engineering, effective Fall 2013.

DC #0471, Information Science and Technology, Minor in Digital Supply Chain Management, effective Fall 2013.

DC #0472, Manufacturing Engineering, Master of Science in Manufacturing Engineering, effective Fall 2013.



DC #0473, Mechanical and Aerospace Engineering, Bachelor of Science in Mechanical Engineering, effective Fall 2013.

**Review of submitted CC forms:**

CC #8370, Computer Engineering 202, Cooperative Engineering Training, effective Fall 2013.

CC #8371, Electrical Engineering 202, Cooperative Engineering Training, effective Fall 2013.

CC #8372, Electrical Engineering 205, Electromechanics, effective Fall 2013.

CC #8373, Electrical Engineering 207, Power System Design and Analysis, effective Fall 2013.

CC #8374, Electrical Engineering 208, Electromechanics Laboratory, effective Fall 2013.

CC #8375, Electrical Engineering 209, Power System Design and Analysis Laboratory, effective Fall 2013.

CC #8376, Electrical Engineering 215, Discrete Linear Systems, effective Fall 2013.

CC #8377, Electrical Engineering 216, Discrete Linear Systems Laboratory, effective Fall 2013.

CC #8378, Electrical Engineering 218, Continuous Linear Systems Laboratory, effective Fall 2013.

CC #8380, Geological Engineering 352, International Engineering and Design, effective Spring 2014.

CC #8381, Mining Engineering 411, Research Methods, effective Fall 2013.

CC #8382, Architectural Engineering 204, Architectural Design II, effective Fall 2013.

CC #8383, Architectural Engineering 203, Architectural Design I, effective Fall 2013.

CC #8384, Electrical Engineering 217, Continuous Linear Systems, effective Fall 2013.

CC # 8385, Ceramic Engineering 261, Materials Senior Design I, effective Fall 2013.

CC # 8386, Ceramic Engineering 262, Materials Senior Design II, effective Fall 2013.



CC #8387, Ceramic Engineering 103, Introduction to Glass Science & Technology, effective Fall 2013.

CC #8388, Ceramic Engineering 122, Ceramic Materials Laboratory II – Glass & Ceramic Processing, effective Fall 2013.

CC #8389, Ceramic Engineering 222, Applied Glass Forming, effective Fall 2013.

CC #8390, Ceramic Engineering 231, Ceramic Processing Lab I, effective Fall 2013.

CC #8391, Ceramic Engineering 242, Ceramic Processing Lab II, effective Fall 2013.

CC #8392, Ceramic Engineering 251, Phase Equilibria, effective Fall 2013.

CC #8393, Ceramic Engineering 369, Glass Science & Engineering, effective Fall 2013.

CC #8394, Ceramic Engineering 284, Electrical Properties of Ceramics, effective Fall 2013.

CC #8395, Ceramic Engineering 306, Mechanical Properties of Ceramics, effective Fall 2013.

CC #8396, Ceramic Engineering 396, Glass Science & Engineering, effective Fall 2013.

CC #8397, Ceramic Engineering 371, Dielectric & Electrical Properties of Oxides, effective Fall 2013.

CC #8398, Metallurgical Engineering 315, Metallurgical Process Design Principles, effective Fall 2013.

CC #8399, Metallurgical Engineering 316, Metallurgical Design Project, effective Fall 2013.

CC #8400, Metallurgical Engineering 318, Principles for Microstructural Design, effective Fall 2013.

CC #8401, Metallurgical Engineering 332, Metals Treatment Laboratory, effective Fall 2013.

CC #8402, Metallurgical Engineering 354, Electrical Systems and Controls for Materials, effective Fall 2013.

CC #8403, Metallurgical Engineering 365, Microfabrication Materials and Processes, effective Fall 2013.



- CC #8404, Metallurgical Engineering 385, Mechanical Metallurgy, effective Fall 2013.
- CC #8405, Metallurgical Engineering 403, High Temperature and Corrosion Resistant Alloys, effective Fall 2013.
- CC # 8406, Metallurgical Engineering 216, Mechanical Testing of Materials, effective Fall 2013.
- CC #8407, Metallurgical Engineering 218, Microstructural Development Laboratory, effective Fall 2013.
- CC #8408, Metallurgical Engineering 125, Chemistry of Materials, effective Fall 2013.
- CC # 8409, Metallurgical Engineering 202, Extractive Metallurgy Lab, effective Fall 2013.
- CC #8410, Metallurgical Engineering 203, Introduction to Extractive Metallurgy, effective Fall 2013.
- CC #8411, Metallurgical Engineering 204, Transport Phenomena in Metallurgy, effective Fall 2013.
- CC #8412, Metallurgical Engineering 215, Fundamentals of Materials Behavior, effective Fall 2013.
- CC #8413, Metallurgical Engineering 217, Metals Microstructural Development, effective Fall 2013.
- CC #8443, Metallurgical Engineering 221, Principles of Materials Processing, effective Fall 2013.
- CC #8444, Ceramic Engineering 259, Thermodynamics of Materials, effective Fall 2013.
- CC # 8445, Metallurgical Engineering 261, Materials Senior Design I, effective Fall 2013.
- CC #8446, Metallurgical Engineering 262, Materials Senior Design II, effective Fall 2013.
- CC #8447, Ceramic Engineering 262, Materials Senior Design II, effective Fall 2013.
- CC #8448, Ceramic Engineering 291, Characterization of Inorganic Solids, effective Fall 2013.
- CC #8449, Metallurgical Engineering 307, Metals Casting, effective Fall 2013.
- CC #8450, Metallurgical Engineering 329, Material Selection, Fabrication & Failure, effective Fall 2013.





CC #8451, Metallurgical Engineering 331, Steels and Their Treatment, effective Fall 2013.

CC #8452, Metallurgical Engineering 355, Process Metallurgy Applications, effective Fall 2013.

CC #8453, Metallurgical Engineering 381, Corrosion and Its Prevention, effective Fall 2013.

CC #8454, Engineering Management 257, Materials Handling and Plant Layout, effective Fall 2013.

CC #8455, Mechanical Engineering 256, Materials Handling and Plant Layout, effective Fall 2013.

CC #8456, Mechanical Engineering 316, Concurrent Engineering II, effective Fall 2013.

CC #8457, Mechanical Engineering 315, Concurrent Engineering I, effective Fall 2013.

CC #8458, Mechanical Engineering 381, Mechanical and Aerospace Control Systems, effective Fall 2013.

CC #8459, Mechanical Engineering 363, Principles and Practice of Computer Aided Design, effective Fall 2013.

CC #8460, Aerospace Engineering 213, Aerospace Mechanics I, effective Fall 2013.

CC #8461, Arts, Languages and Philosophy 397, Multidisciplinary Studies Capstone, effective Fall 2013.

CC #8462, Physics 382, Transport in Nanostructures: An Introduction, effective Fall 2013.

CC #8463, Electrical Engineering 339, Autonomous Mobile Robots, effective Fall 2013.

**Review of submitted EC forms:**

EC #2459, Nuclear Engineering 301, Applied Mathematics in Nuclear Engineering, effective Fall 2013.

EC #2461, Architectural Engineering 301, Passive Solar Engineering, effective Fall 2013.

EC #2462, Marketing 301, Integrated Marketing Communications, effective Summer 2013.



**Tabled Items:**

DC #0450, Bachelor of Science in Mechanical Engineering.

DC #0451, Bachelor of Science in Aerospace Engineering.

CC #8307, Explosives Engineering 411, Research Methods.

CC #8425, Mining Engineering 476, Sustainability In Mining.

CC #8426, Mining Engineering 424, Underground Mine Design.

CC #8427, Mining Engineering 426, Surface Mine Design.

**Effective Year:** FS2013

**Effective Term:** Summer ☐ Fall ☒ Spring ☐

(Creating or modifying a degree program must be effective for a Fall term)

DC # 0454-2013-EE-000-00

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

**Title of degree program, emphasis area, or minor:**

Electrical Engineering B.S. Program (General & all 7 Emphasis Areas)

**Department:** Electrical & Computer Engineering

**Briefly describe action requested (Attach documentation as appropriate):**

The El Eng Elective D, Elective E, and free elective courses are updated. The El Eng 202 and Cp Eng 202 requirements are changed to allow only 1 credit hour with pass-fail grading (Approved at the Jan. 24, 2013 ECE Faculty Meeting).

The El Eng Elective D footnote (16) from the the catalog will be modified:  
El Eng Elective D must be a 300-level El Eng or Cp Eng course with at least a 3-hour lecture component. El Eng and Cp Eng 300, 38X, 390, 391, and 392 may not be used for Elective D.

The El Eng Elective E footnote (17) from the the catalog will be modified:  
El Eng Elective E may be any 200 or 300-level El Eng or Cp Eng course except El Eng 202, 28X, 391, and 392 and Cp Eng 202, 300, 390, 391, and 392.

The free elective footnote (18) from the the catalog will be modified:  
Students are required .... at least three credit hours. El Eng and Cp Eng 28X, 391, and 392 may not be used for free electives. No more than one credit hour (pass-fail only) of El Eng 202 or Cp Eng 202 may be applied to the B.S. degree for free electives.

Recommended by Department: Keln E...  
(Chair signature)

Date: 1/29/13

Recommended by: ...  
Discipline Specific Curricula Committee (Chair signature)

Date: 02/19/13

Approved by Curricula Committee: \_\_\_\_\_  
(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate: \_\_\_\_\_  
(Chair signature)

Date: \_\_\_\_\_

**Effective Year:** FS2013**Effective Term:** Summer ☐ Fall ☒ Spring ☐

(Creating or modifying a degree program must be effective for a Fall term)

DC #0455-2013-EE-000-00

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

**Title of degree program, emphasis area, or minor:**

Electrical Engineering B.S. Program (General &amp; all 7 Emphasis Areas)

**Department:** Electrical & Computer Engineering**Briefly describe action requested (Attach documentation as appropriate):**

Update the degree footnotes. The EI Eng 217 and EI Eng 218 prerequisites have been changed. These courses may be taken with just EI Eng 153 and Math 204 each with a grade of "C" or better and passing the EI Eng Advancement Exam II. Approved at the April 16, 2012 ECE Faculty Meeting

The EI Eng footnote (9) from the the catalog will be modified (modify list):

Students must earn a passing grade in the EI Eng Advancement Exam II (associated with EI Eng 153) before they enroll in EI Eng 205, 207, 208, 209, 215, 216, 217, 218, 253, 255, or 271, or other courses with EI Eng 153 as a prerequisite.

The recommended degree progression in the catalog should apply footnote (9) to EI Eng 217 and EI Eng 218. Also, EI Eng 217 and EI Eng 218 should appear in the First Semester Junior year and EI Eng 215 and EI Eng 216 should appear in the Second Semester Junior year.

Recommended by Department: Kela Enslin  
(Chair signature)

Date: 1/29/13

Recommended by: Stephen G. Raper  
Discipline Specific Curricula Committee (Chair signature)

Date: 02/19/13

Approved by Curricula Committee: \_\_\_\_\_  
(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate: \_\_\_\_\_  
(Chair signature)

Date: \_\_\_\_\_

01/29/13

(Revised 1/31/2008)

**Effective Year:** FS2013**Effective Term:** Summer ☐ Fall ☒ Spring ☐

(Creating or modifying a degree program must be effective for a Fall term)

DC #0456-2013-CpE+DDD-00

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

**Title of degree program, emphasis area, or minor:**

Computer Engineering B.S. Program

**Department:** Electrical & Computer Engineering**Briefly describe action requested (Attach documentation as appropriate):**

The Cp Eng Elective B, Elective C, Elective D, and free elective courses are updated. The Cp Eng 202 and El Eng 202 requirements are changed to allow only 1 credit hour with pass-fail grading (Approved at the Jan. 24, 2013 ECE Faculty Meeting).

The Cp Eng Electives B, C, D footnote (15) from the the catalog will be modified:

Cp Eng Electives B, C, or D must be a 200 or 300-level courses from an approved list of science, mathematics, and engineering courses. This list includes all 200 or 300-level Cp Eng, El Eng, and Cp Sc courses except required Cp Eng courses, required El Eng courses, required Cp Sc courses, Cp Eng 391 and 392, Cp Eng 202, El Eng 391 and 392, El Eng 202, El Eng 28X, Cp Sc 397, and Cp Sc 202.

The Cp Eng Elective B, C, D, footnote (16) from the the catalog will be modified:

Cp Eng Elective B, C, and D cannot include more than three hours of Cp Eng or El Eng 300 or 390.

The free elective footnote (18) from the the catalog will be modified:

Students are required ... at least three credit hours. El Eng and Cp Eng 28X, 391, and 392 may not be used for free electives. No more than one credit hour (pass-fail only) of Cp Eng 202 or El Eng 202 may be applied to the B.S. degree for free electives.

Recommended by Department:

Kelvin Enns  
(Chair signature)

Date:

1/24/13

Recommended by:

Shirley Roper  
(Chair signature)

Date:

02/19/13

Discipline Specific Curricula Committee

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

DC # 0466 - 2013 - MS&amp;E - 000-00

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐  
 (Creating or modifying a degree program must be effective for a Fall term.)

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

Title of degree program, emphasis area, or minor:

**B.S. minor in Materials Science & Engineering**

Department: **Materials Science & Engineering**

Briefly describe action requested (attach documentation as appropriate):

**Discontinue offering the Minor in Materials**

**In the January 2013 curriculum review meeting by the Materials Science and Engineering Department faculty, it was decided to discontinue offering the Materials Minor (Vote of 15 to discontinue minor, 2 to continue offering the minor and 1 abstaining). The faculty felt that the the current Materials Minor requirements of 15 hours does not provide students with sufficient materials background to be designated a Materials Minor. Most Materials Minors come from the Mechanical Engineering Department where students can take 12 hours as a part of their required ME curriculum (ME153, Met 121 and two ME tech electives: ME 336 and ME 338) allowing students to get a minor in materials with only one more 3 hour course. The faculty found this to be an insufficient materials background to continue providing a minor in materials.**

Recommended by Department:

*(Chair signature)*

Date:

2/6/13

Recommended by DSCC:

*(Chair signature)*

Date:

02/19/13

Approved by Curricula Committee:

*(Chair signature)*

Date:

Approved by Faculty Senate:

*(Chair signature)*

Date:

Effective Year: 2013

Effective Term: Summer ☐ Fall ☒ Spring ☐

(Creating or modifying a degree program must be effective for a Fall term)

DC # 0467-2013-Psych-  
000-00

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

**Title of degree program, emphasis area, or minor:**

Bachelor of Science Psychology

Bachelor of Arts Psychology

**Department:** Psychological Science

**Briefly describe action requested (Attach documentation as appropriate):**

The department is requesting that the following course be added to our list of Capstone courses for the department degrees.

Psych 377 – Psychology in Media

Recommended by Department: \_\_\_\_\_

(Chair signature)

Date: 2/8/13

Recommended by: \_\_\_\_\_

Discipline Specific Curricula Committee

(Chair signature)

Date: 2/19/2013

Approved by Curricula Committee: \_\_\_\_\_

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate: \_\_\_\_\_

(Chair signature)

Date: \_\_\_\_\_

**Effective Year: 2013**

**Effective Term: Summer** ☐ **Fall** ☒ **Spring** ☐  
(Creating or modifying a degree program must be effective for a Fall term)

DC # 0468-2013-Psych-  
000-00

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

**Title of degree program, emphasis area, or minor:**

Bachelor of Science Psychology

Bachelor of Science Psychology (Secondary Education Emphasis)

**Department:** Psychological Science

**Briefly describe action requested (Attach documentation as appropriate):**

Currently, the science and mathematics requirements for the two programs listed above indicate that the student must take Computer Science 53, 73, or 77, or IST 51 (BS in psychology) or Computer Science 53, 73, or 77 (BS in psychology, secondary education emphasis). Given that the computer science courses require a lab, but only one lab is listed as an optional course (CS 77), we wish to clarify the course and lab sequences that are acceptable as well as add one additional lab and course sequence as an option (CS 74 & 78).

Therefore, the requirement for the BS in psychology would include: Computer Science 53 and 54, 73 and 77, or 74 and 78, or IST 51. The requirement for the BS in psychology (secondary education emphasis) would include: Computer Science 53 and 54, 73 and 77, or 74 and 78.

Recommended by Department:

*Nancy Stone*  
(Chair signature)

Date:

*2/8/13*

Recommended by:

*Doug MacIsaac*  
(Chair signature)

Date:

*2/19/2013*

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:



DC # *0469-2013-Civ Eng-000-00*

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐  
(Creating or modifying a degree program must be effective for a Fall term.)

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

Title of degree program, emphasis area, or minor:

**BS in Civil Engineering**

Department: **Civil Engineering**

Briefly describe action requested (attach documentation as appropriate):

**The following courses are required civil engineering courses and should no longer be listed as depth and technical electives**

**CE 221**

**CE 223**

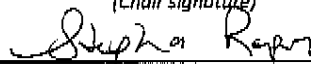
Recommended by Department:



(Chair signature)

Date: 2/5/13

Recommended by DSCC:



(Chair signature)

Date: 3-17-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

DC # 0470-2013-Civ Eng - 000-00

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐  
(Creating or modifying a degree program must be effective for a Fall term.)

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

Title of degree program, emphasis area, or minor:

**BS in Civil Engineering**

Department: **Civil Engineering**

Briefly describe action requested (attach documentation as appropriate):

**The following courses have been approved as depth electives (DE) or technical electives (TE) by the faculty of the Civil Engineering Department.**

**CE 320**

**CE 351**

**CE 356**

**CE 364**

**CE 374**

**CE 375**

**CE 384**

Recommended by Department: \_\_\_\_\_

(Chair signature)

Date: 2/5/13

Recommended by DSCC: \_\_\_\_\_

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee: \_\_\_\_\_

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate: \_\_\_\_\_

(Chair signature)

Date: \_\_\_\_\_

Effective Year: 2013

DC # 0471-2013-IST-000-00

Effective Term: Summer ☐ Fall ☒ Spring ☐

(Creating or modifying a degree program must be effective for a Fall term)

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

**Title of degree program, emphasis area, or minor:**

Information Science and Technology B.S., Minor in Digital Supply Chain Management

**Department:** Business and Information Technology

The Minor in Digital Supply Chain Management requires 15 hours of course work, as follows:

- 1) One of the following courses:  
BUS 360 Business Operations  
ME 253 Manufacturing
- 2) ERP 347 Supply Chain Management Systems in an ERP Environment
- 3) One of the following courses:  
ERP 342 Customer Relationship Management  
ME 360 / AE 360 Probabilistic Engineering Design
- 4) Two of the following courses\*:  
ERP 345 Use of Business Intelligence  
ERP 346 Enterprise Resource Planning Systems Design and Implementation  
ME 308 Rapid Product Design and Optimization  
ME 356 Design for Manufacture  
ME 357 / EMgt 354 Integrated Product and Process Design  
ME 363 Principles and Practice of Computer Aided Design

\* Non Business & Information Technology students must select ERP 346 as one of the two electives.

**Briefly describe action requested (Attach documentation as appropriate):**

Approve creation of this Minor. See attached document.

Recommended by Department: \_\_\_\_\_  
(Chair signature)

Date: 2/19/13

Recommended by: \_\_\_\_\_  
Discipline Specific Curricula Committee (Chair signature)

Date: 3/7/13

Approved by Curricula Committee: \_\_\_\_\_  
(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate: \_\_\_\_\_  
(Chair signature)

Date: \_\_\_\_\_

Concurrence by Program:  
(Manufacturing Engineering)

(Chair signature)

Date: 2-20-2013

Undergraduate Minor: Digital Supply Chain Management, Additional Information

**Overview**

Success in today's marketplace requires that organizations deliver products and services that provide easily identified value for their customers. This minor draws on strengths within two departments to integrate source (strategic procurement and supply management), production (manufacturing and service operations), and delivery processes (demand fulfillment), with a focus on the use of information technologies as the critical enabler of supply chain efficiencies and responsiveness.

The Digital Supply Chain Management Minor is designed to give the student the tools and ideas that help shape and define the various components of value creation. Students can gain knowledge and skills in the full spectrum of supply chain activities: supplier relationships, purchasing management, operations and inventory management, logistics and transportation, quality management, and information technology.

**Contributing Faculty**

Dr. Craig Claybaugh (Business and Information Technology)  
Dr. Cassie Elrod (Business and Information Technology)  
Dr. Bih-Ru Lea (Business and Information Technology)  
Dr. Frank Liou (Manufacturing Engineering)  
Dr. Vincent Yu (Business and Information Technology)

**Effective Year:** 2013

**DC #** 0472-2013-MfgEng-000-00

**Effective Term:** Summer ☐ Fall ☒ Spring ☐

(Creating or modifying a degree program must be effective for a Fall term)

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

**Title of degree program, emphasis area, or minor:**

Master of SCIENCE in Manufacturing Engineering

**Department:** Manufacturing Engineering Program

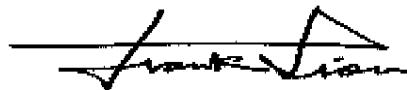
**Briefly describe action requested (Attach documentation as appropriate):**

For Manufacturing Engineering Master of SCIENCE: (to Change thesis credits from "6 credit hours" to "6 to 9 credit hours")

Current: This MS MfgE program requires 30 credit hours with a 6-hour thesis: 12 credit hours from the Manufacturing Core Curriculum (3 credit-hour core course from each area); 6 credit hours of 400 level courses in manufacturing\*\*; 3 credit hours of any suggested manufacturing courses\*\* OR approved Mathematics/Computer Science\*; 6 credit hours for thesis research, and 3 credit hours of graduate courses in manufacturing.\*\*

Proposed: This MS MfgE program requires 30 credit hours with a 6 to 9 credit hour thesis: 12 credit hours from the Manufacturing Core Curriculum (3 credit-hour core course from each area); 6 credit hours of 400 level courses in manufacturing\*\*; ~~3 credit hours of any suggested manufacturing courses\*\* OR approved Mathematics/Computer Science\*~~; 6 to 9 credit hours for thesis research, and 3 to 6 credit hours of graduate courses in manufacturing.\*\*

Recommended by Department: \_\_\_\_\_



(Chair signature)

Date: Feb 20, 2013

Recommended by: \_\_\_\_\_



Discipline Specific Curricula Committee

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee: \_\_\_\_\_

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate: \_\_\_\_\_

(Chair signature)

Date: \_\_\_\_\_

DC # 0473-2013-Mech Eng-000-00

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐  
(Creating or modifying a degree program must be effective for a Fall term.)

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

Title of degree program, emphasis area, or minor:

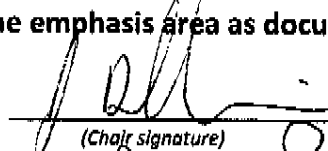
**B.S. in Mechanical Engineering, Manufacturing Processes Emphasis Area**

Department: **Mech & Aero Engineering**

Briefly describe action requested (attach documentation as appropriate):

**Modify the description for the emphasis area as documented on the accompanying page.**

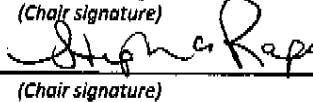
Recommended by Department:

  
(Chair signature)

Date:

2/20/2013

Recommended by DSCC:

  
(Chair signature)

Date:

2-11-13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

Manufacturing Emphasis Area Modification p. 1 of 2

Modify the catalog description of the Manufacturing Processes emphasis area as follows:

p. 193-194 of 2011-2013 Undergraduate Catalog:

Delete words with strikethrough marking. Add words in bold.

Students desiring to obtain a Bachelor of Science in Mechanical Engineering with an Emphasis Area in Manufacturing Processes must satisfy all requirements of the Bachelor of Science in Mechanical Engineering ~~with the following modifications~~, **with the additional stipulation that four courses must be taken as follows:**

- a. ~~Mc Eng 253 is required.~~
- b. ~~One of the Mc Eng technical electives must be~~ **One course** from the following Manufacturing/Automation courses: Mc Eng 353, 355, 349, and 306.
- c. ~~One of the Mc Eng technical electives must be~~ **One course** from the following Design courses: Mc Eng 363, ~~308~~, 356, and 302.
- d. ~~Two courses 1) Mc Eng 357 or Mc Eng 308, and 2) Mc Eng 358 are required in lieu of Mc Eng 261.~~ **One course from the following list: McEng 308, 358**
- e. The Math/Stat elective must be either Stat 213 or 215.

Modify the suggested sequence for the senior year as follows:

SENIOR YEAR

First Semester Credit

Mc Eng 242-Mech Eng Systems . . . . .	2
Mc Eng 279-Auto Control of Dynamic Systems . . .	3
Mc Eng 208-Machine Design I . . . . .	3
<del>Mc Eng 357 or Mc Eng 308 . . . . .</del>	<del>3</del>
<del>Mc Eng Technical Elective<sup>f</sup> . . . . .</del>	<del>3</del>
<b>Manufacturing Technical Elective<sup>f</sup> . . . . .</b>	<b>3</b>
<b>Manufacturing Technical Elective<sup>f</sup> . . . . .</b>	<b>3</b>
Elective Literature . . . . .	3
	17

Second Semester

Eng Mg 124-Principles of Engineering Management . .	1
Eng Mg 137-Economic Analysis of Engr Projects . . .	2
<del>Mc Eng 358—Integrated Product Dev . . . . .</del>	<del>3</del>
<b>Mc Eng 261 – Engineering Design . . . . .</b>	<b>3</b>
Mc Eng 280-Control System Lab . . . . .	1
<del>Mc Eng Technical Elective<sup>f</sup> . . . . .</del>	<del>3</del>
<b>Manufacturing Technical Elective<sup>f</sup> . . . . .</b>	<b>3</b>
Electives-Hum or Soc Sci . . . . .	3
	13

Manufacturing Emphasis Area Modification p. 2 of 2

Replace footnote f with the following:

Old footnote f:

One of the technical electives must be from the following Manufacturing/Automation courses: Mc Eng 353, Mc Eng 355, Mc Eng 349, Mc Eng 306. One of the technical electives must be from the following Design courses: Mc Eng 363, Cm Eng 308, Mc Eng 356, Mc Eng 302.

New footnote f:

The 9 hours of Manufacturing technical electives must be selected as follows:

One course from the following Manufacturing/Automation courses: Mc Eng 353, 355, 349, and 306.

One course from the following Design courses: Mc Eng 363, 356, and 302.

One course from the following list: McEng 308, 358



Effective Year: FS2013

CC File # 8370-2013-CPE202-31

Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☒Prerequisites ☒Course Title ☐Catalog Description ☒Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)1. **Department:** Electrical & Computer Engineering2. **Discipline and Course Number:** Present : Cp Eng 202

Proposed:

3. **Course Title:** Present: Cooperative Engineering Training

Proposed:

**Abbreviated Course Title:**

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description** (40 Words or Less)

**Present:** On-the-job experience gained through cooperative education with industry, with credit arranged through departmental cooperative advisor. Grade received depends on quality of reports submitted and work supervisors evaluation.

**Proposed:** On-the-job experience gained through cooperative education with industry, with credit arranged through departmental cooperative advisor. Grade received depends on quality of reports submitted and work supervisor's evaluation. Not more than one hour of credit may be applied to the B.S. degree. Pass-fail grading option only.

5. **If course requires field trip check box:** ☐

6. <b>Credit Hours:</b>	<b>Present:</b>	<b>Lecture:</b> 0-6	<b>Lab:</b>	<b>Total:</b> 0-6
	<b>Proposed:</b>	<b>Lecture:</b> 1	<b>Lab:</b> 0	<b>Total:</b> 1

7. **Prerequisites:****Present:** none listed**Proposed:** Consent of the ECE Department required.8. **Required for Majors:** ☐ **Elective for Majors:** ☒9. **Justification:** Note Credit is IND.

Modification to Undergraduate Cp Eng Requirements per ECE Faculty 1/24/2013.

Revision of departmental requirements for coop credit. Accompanying DC form.

10. **Semesters previously offered as an experimental course (101, 201, 301, 401):**11. **List all co-listed courses, initiated by Dept. Chair, if signature does not appear below.**

1)

2)

3)

4)

5)

6)

Recommended by Department



(Chair signature)

Date: 1/29/13

Recommended by Discipline Specific Curricula Committee



(Chair signature)

Date: 6/19/13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

CC File # 8371-2013-EE202-31

Effective Year: FS2013

Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☒Prerequisites ☒Course Title ☐Catalog Description ☒Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)1. **Department:** Electrical & Computer Engineering2. **Discipline and Course Number:** Present : EE 202

Proposed:

3. **Course Title:** Present: Cooperative Engineering Training

Proposed:

**Abbreviated Course Title:**

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description** (40 Words or Less)

**Present:** On-the-job experience gained through cooperative education with industry, with credit arranged through departmental cooperative advisor. Grade received depends on quality of reports submitted and work supervisors evaluation.

**Proposed:** On-the-job experience gained through cooperative education with industry, with credit arranged through departmental cooperative advisor. Grade received depends on quality of reports submitted and work supervisor's evaluation. Not more than one hour of credit may be applied to the B.S. degree. Pass-fail grading option only.

5. **If course requires field trip check box:** ☐

<b>6. Credit Hours:</b>	<b>Present:</b>	<b>Lecture:</b> 0-6	<b>Lab:</b>	<b>Total:</b> 0-6
	<b>Proposed:</b>	<b>Lecture:</b> 1	<b>Lab:</b> 0	<b>Total:</b> 1

7. **Prerequisites:****Present:** none listed**Proposed:** Consent of the ECE Department required.8. **Required for Majors:** ☐ **Elective for Majors:** ☒9. **Justification:** Note Credit is IND.

Modification to Undergraduate EE Requirements per ECE Faculty 1/24/2013. Revision of departmental requirements for coop credit. Accompanying DC form.

10. **Semesters previously offered as an experimental course (101, 201, 301, 401):**11. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**

1)

2)

3)

4)

5)

6)

Recommended by Department

Kelm Emsch

(Chair signature)

Date: 1/29/13

Recommended by Discipline Specific Curricula Committee

Supriya

(Chair signature)

Date: 2/19/13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

Effective Year: FS2013

CC File # 8372-2013-EE 205-32

Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)1. **Department:** Electrical & Computer Engineering2. **Discipline and Course Number:** Present : El Eng 205

Proposed:

3. **Course Title:** Present: Electromechanics

Proposed:

**Abbreviated Course Title:**

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description** (40 Words or Less)**Present:** Magnetics and magnetically coupled circuits, rotating magnetic fields, stepper motors, DC machines, induction machines, synchronous machines, and brushless DC machines.**Proposed:**5. **If course requires field trip check box:** ☐6. **Credit Hours:****Present:****Lecture:** 3**Lab:** 0**Total:** 3**Proposed:****Lecture:****Lab:****Total:**7. **Prerequisites:****Present:**

Physics 24 with a grade of "C" or better, El Eng 153 with a grade of "C" or better, passing grade on the El Eng Advancement Exam II. El Eng 208 is a corequisite.

**Proposed:**

Physics 24 with a grade of "C" or better; El Eng 153 with a grade of "C" or better; passing grade on the El Eng Advancement Exam II.

8. **Required for Majors:** ☐ **Elective for Majors:** ☒9. **Justification:** The laboratory is no longer a corequisite for the lecture.10. **Semesters previously offered as an experimental course (101, 201, 301, 401):**11. **List all co-listed courses, Initialed by Dept. Chair, if signature does not appear below.**

1)

2)

3)

4)

5)

6)

Recommended by Department



(Chair signature)

Date: 1/29/13

Recommended by Discipline Specific Curricula Committee



(Chair signature)

Date: 02/19/13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

Effective Year: FS2013

CC File # 8373-2013-EE207-32Effective Term: Summer ☐ Fall ☒ Spring ☐

## Course Change Form (CC)

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Electrical &amp; Computer Engineering

2. Discipline and Course Number: Present : El Eng 207

Proposed:

3. Course Title: Present: Power System Design and Analysis

Proposed:

**Abbreviated Course Title:**

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)

**Present:** Power system components and transmission lines, three-phase balanced power system theory, analysis and design including economic and reliability considerations, and fault analysis. A power system design project using a graphical power flow program is included.

**Proposed:**5. If course requires field trip check box: ☐

6. Credit Hours:

Present:

Lecture: 3.

Lab: 0

Total: 3

Proposed:

Lecture:

Lab:

Total:

7. Prerequisites:

**Present:** El Eng 153 with a grade of "C" or better and passing grade on the El Eng Advancement Exam II. Co-req El Eng 209.

**Proposed:** El Eng 153 with a grade of "C" or better; passing grade on the El Eng Advancement Exam II.

8. Required for Majors: ☐ Elective for Majors: ☒

9. Justification: The laboratory is no longer a corequisite for the lecture.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initiated by Dept. Chair, if signature does not appear below.

1)

2)

3)

4)

5)

6)

Recommended by Department

*John Enslin*

(Chair signature)

Date: 1/29/13

Recommended by Discipline Specific Curricula Committee

*Don Rap*

(Chair signature)

Date: 02/19/13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8374-2013-EE 208-32

Effective Year: FS2013

Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☒Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)1. **Department:** Electrical & Computer Engineering2. **Discipline and Course Number:** Present : El Eng 208

Proposed:

3. **Course Title:** Present: Electromechanics Laboratory

Proposed:

**Abbreviated Course Title:**

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description** (40 Words or Less)**Present:** Experiments with power measurement, transformers, magnetically coupled circuits, rotating magnetic fields, stepper motors, DC machines, induction machines, synchronous machines, and brushless DC machines.**Proposed:** Experiments with power measurement, transformers, magnetically coupled circuits, rotating magnetic fields, stepper motors, DC machines, induction machines, synchronous machines, and brushless DC machines. Credit will only given for one of El Eng 208 or 209.5. **If course requires field trip check box:** ☐

6. <b>Credit Hours:</b>	<b>Present:</b>	<b>Lecture:</b> 0	<b>Lab:</b> 1	<b>Total:</b> 1
	<b>Proposed:</b>	<b>Lecture:</b>	<b>Lab:</b>	<b>Total:</b>

7. **Prerequisites:****Present:** El Eng 153 with a grade of "C" or better, passing grade on the El Eng Advancement Exam II. El Eng 205 is a corequisite.**Proposed:** El Eng 153 with a grade of "C" or better; passing grade on the El Eng Advancement Exam II. Preceded or accompanied by El Eng 205.8. **Required for Majors:** ☐ **Elective for Majors:** ☒9. **Justification:** Modification to Undergraduate EE Requirements per ECE Faculty 1/24/2013. Several experiments in El Eng 208 and El Eng 209 are similar.10. **Semesters previously offered as an experimental course (101, 201, 301, 401):**11. **List all co-listed courses, Initialed by Dept. Chair, if signature does not appear below.**

1)

2)

3)

4)

5)

6)

Recommended by Department



(Chair signature)

Date: 1/29/13

Recommended by Discipline Specific Curricula Committee



(Chair signature)

Date: 02/19/13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

Effective Year: FS2013

CC File # 8375-2013-EE 209-32

Effective Term: Summer ☐ Fall ☒ Spring ☐

## Course Change Form (CC)

This form is for creating or modifying permanent courses.

### Course Changes (Check all changes.)

New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☒Course Number ☐Co-listing ☐

### Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Electrical &amp; Computer Engineering

2. Discipline and Course Number: Present: El Eng 209 Proposed:

3. Course Title: Present: Power System Design and Analysis Laboratory  
Proposed:

#### Abbreviated Course Title:

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)

Present: Computer-aided analysis of voltage regulation, power flow, compensation, and economic analysis. Individual projects are required.

Proposed: Computer-aided analysis of voltage regulation, power flow, compensation, and economic analysis. Individual projects are required. Credit will only be given for one of El Eng 208 or 209.

5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture: 0 Lab: 1 Total: 1  
Proposed: Lecture: Lab: Total:

7. Prerequisites:

Present: El Eng 153 with a grade of "C" or better, passing grade on the El Eng Advancement Exam II. El Eng 207 is a corequisite.

Proposed: El Eng 153 with a grade of "C" or better; passing grade on the El Eng Advancement Exam II. Preceded or accompanied by El Eng 207.

8. Required for Majors: ☐ Elective for Majors: ☒

9. Justification: Modification to Undergraduate EE Requirements per ECE Faculty 1/24/2013. Several experiments in El Eng 208 and El Eng 209 are similar.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, Initialed by Dept. Chair, if signature does not appear below.

1) 2) 3)

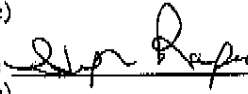
4) 5) 6)

Recommended by Department

  
(Chair signature)

Date: 1/28/13

Recommended by Discipline Specific Curricula Committee

  
(Chair signature)

Date: 2/19/13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

CC File # 8376-2013-EE215-32

Effective Year: FS2013

Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Electrical &amp; Computer Engineering

2. Discipline and Course Number: Present : EE 215

Proposed:

3. Course Title: Present: Discrete Linear Systems

Proposed:

**Abbreviated Course Title:**

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)

**Present:** Analysis methods for discrete-time signals and systems in the time and frequency domains including signal models, and Fourier transforms. Continuous-time topics are included as introductory material.

**Proposed:**5. If course requires field trip check box: ☐

6. Credit Hours:

Present:

Lecture: 3

Lab: 0

Total: 3

Proposed:

Lecture:

Lab:

Total:

7. Prerequisites:

**Present:**

Elec Eng 153 with a grade of "C" or better; passing the Elec Eng Advancement Exam II. Students should enroll in Elec Eng 215 and corequisite of Elec Eng 216.

**Proposed:**

Elec Eng 153 with a grade of "C" or better; passing the Elec Eng Advancement Exam II.

8. Required for Majors: ☒ Elective for Majors: ☐

9. Justification: Modification to Undergraduate EE Requirements per ECE Faculty 1/24/2013.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

2)

3)

4)

5)

6)

Recommended by Department



(Chair signature)

Date: 1/28/13

Recommended by Discipline Specific Curricula Committee



(Chair signature)

Date: 02/11/13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

Effective Year: FS2013

CC File # 8377-2013-EE216-32

Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Electrical &amp; Computer Engineering

2. Discipline and Course Number: Present : EE 216

Proposed:

3. Course Title: Present: Discrete Linear Systems Laboratory

Proposed:

Abbreviated Course Title:

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)

Present: Software tools for signal and system representation and for time and frequency-domain systems analysis.

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours:	Present:	Lecture: 0	Lab: 1	Total: 1
	Proposed:	Lecture:	Lab:	Total:

7. Prerequisites:

Present: Elec Eng 153 with a grade of "C" or better; passing the Elec Eng Advancement Exam II. Preceded or accompanied by El Eng 215 and corequisite of Elec Eng 216.

Proposed: Elec Eng 153 with a grade of "C" or better; passing the Elec Eng Advancement Exam II. Preceded or accompanied by El Eng 215.

8. Required for Majors: ☒ Elective for Majors: ☐

9. Justification: Modification to Undergraduate EE Requirements per ECE Faculty 1/24/2013.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 2) 3)

4) 5) 6)

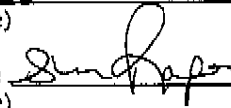
Recommended by Department



(Chair signature)

Date: 1/28/13

Recommended by Discipline Specific Curricula Committee



(Chair signature)

Date: 02/19/13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:



Effective Year: FS2013

CC File # 8378-2013-EE 218-32

Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Electrical &amp; Computer Engineering

2. Discipline and Course Number: Present : EE 218

Proposed:

3. Course Title: Present: Continuous Linear Systems Laboratory

Proposed:

Abbreviated Course Title:

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)

Present: Laboratory and software tools for the analysis of linear and non-linear systems. Topics include spectral analysis, transforms, and applications.

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours:

Present:

Lecture: 0

Lab: 1

Total: 1

Proposed:

Lecture:

Lab:

Total:

7. Prerequisites:

Present: Elec Eng 215, Elec Eng 216, and Math 204 each with a grade of "C" or better. Corequisite of Elec Eng 217.

Proposed: Math 204 with a grade of "C" or better; Elec Eng 153 with a grade of "C" or better; passing the Elec Eng Advancement Exam II. Preceded or accompanied by El Eng 217.

8. Required for Majors: ☒ Elective for Majors: ☐

9. Justification: Modification to Undergraduate EE Requirements per ECE Faculty 1/24/2013.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

2)

3)

4)

5)

6)

Recommended by Department

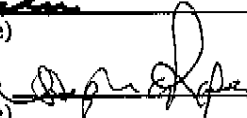


(Chair signature)

Date:

1/29/13

Recommended by Discipline Specific Curricula Committee



(Chair signature)

Date:

02/19/13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

CC File # 8380-2013-Ge Eng-352-32

Effective Year: 2014 Effective Term: Summer ☐ Fall ☐ Spring ☒**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Geological Sciences and Engineering**2. Discipline and Course Number: Present: **GE352** Proposed:3. Course Title: Present: **International Engineering and Design**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present:

Proposed:

5. If course requires field trip check box: ☒6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **Senior standing, Instructor approval**Proposed: **Senior standing, Instructor approval, GE311, GE347**8. Required for Majors: ☐ Elective for Majors: ☐9. Justification: **GE311/GE347 are the lab/lecture called "Introduction to International Engineering & Design".**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) **CerE352** *PS*

3)

5)

2) **MetE352** *PS*

4)

6)

Recommended by Department

(Chair signature)

Date: Jan 30/13

Recommended by DSCC

(Chair signature)

Date: 02/19/13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

Effective Year: 2013

Term: Summer ☐ Fall ☒ Spring ☐CC File # 8381-2013-Min Eng-  
411-34**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☒Course Number ☐Co-listing ☒**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Mining and Nuclear Engineering

2. Discipline and Course Number: Present : Min Eng 411

Proposed:

3. Course Title: Present: Research Methods

Proposed:

Abbreviated Course Title:

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (300 Character Spaces or Less.)

Present: Foundations, dimensions, and methods for designing and investigating research problems in Mining Eng. Focus on fundamentals and applied research, research methods, literature review, experimental design and experimentation, dissertation composition, concepts of originality and intellectual property

Proposed: Foundations, dimensions, and methods for designing and investigating research problems. Focus on fundamentals and applied research, research methods, literature review, experimental design and experimentation, ~~dissertation~~ <sup>dissertation</sup> composition, concepts of originality and ~~intellectual~~ <sup>intellectual</sup> property.5. If course requires <sup>intellectual</sup> field trip check box: ☐6. Credit Hours: Present: Lecture: 3 Lab: 0 Total: 3  
Proposed: Lecture: Lab: Total:

7. Prerequisites:

Present: Graduate Standing.

Proposed:

8. Required for Majors: ☐ Elective for Majors: ☐

9. Justification: We would like to co-list with Exp Eng 411 research methods (new). Above catalog description changed to remove redundancy and match

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) ExpEng 411 2) 3)

4) 5) 6)

Recommended by Department

(Chair signature)

Date: 2-7-2013

Recommended by Discipline Specific Curricula Committee

(Chair signature)

Date: 02/18/13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

Effective Year: 2013

Term: Summer ☐ Fall ☒ Spring ☐CC File # 8382-2013- Arch Eng -  
204-32**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒Course Title ☐ Catalog Description ☒ Course Number ☐ Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" Items blank if no change is being made.)

1. Department: Civil, Architectural and Envir

2. Discipline and Course Number: Present : 204 *Arch Eng* Proposed:

3. Course Title: Present: Architectural Design II

Proposed:

Abbreviated Course Title: ArchE 204

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

## 4. Catalog Description (300 Character Spaces or Less.)

Present: A continuation of Architectural Design I with an increased focus on problems and associated *modules* with detail development, principles of acoustic design and building construction as a form determinant.

Proposed:

5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture: 1 Lab: 2 Total: 3  
Proposed: Lecture: Lab: Total:

## 7. Prerequisites:

Present: ArchE 203

Proposed: Art 203

8. Required for Majors: ☒ Elective for Majors: ☐

## 9. Justification:

## 10. Semesters previously offered as an experimental course (101, 201, 301, 401):

## 11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 2) 3)

4) 5) 6)

Recommended by Department *[Signature]*

(Chair signature)

Date: 2/5/13Recommended by Discipline Specific Curricula Committee *[Signature]*

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee: \_\_\_\_\_

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate: \_\_\_\_\_

(Chair signature)

Date: \_\_\_\_\_

(Revised 1/29/09)

Effective Year: 2013

Term: Summer ☐ Fall ☒ Spring ☐CC File # 8383-2013-ArchEng-  
203-20**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☒Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Civil, Architectural and Envir

2. Discipline and Course Number: Present : 203

Proposed:

3. Course Title: Present: Architectural Design I

Proposed:

Abbreviated Course Title: ArchE 203

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

## 4. Catalog Description (300 Character Spaces or Less.)

Present: Introduction to the interaction between architecture and the engineering disciplines. Theories of building and site design, technology as an integral component of design, plan and spatial organization, structural clarity, formal composition, and environmental context are considered as principle...

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours:

Present:

Lecture:

Lab:

Total:

Proposed:

Lecture:

Lab:

Total:

## 7. Prerequisites:

Present: Sophomore Standing

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐

## 9. Justification:

All mentions of "ArchE 203" in the undergraduate catalog need to be replaced with "Art 203".

## 10. Semesters previously offered as an experimental course (101, 201, 301, 401):

## 11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

2)

3)

4)

5)

6)

Recommended by Department

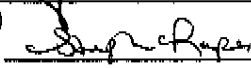


(Chair signature)

Date:

2/5/13

Recommended by Discipline Specific Curricula Committee



(Chair signature)

Date:

3-11-13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

Effective Year: FS2013

Effective Term: Summer ☐ Fall ☒ Spring ☐CC File # ~~8384~~ 2013-EE217-32

## Course Change Form (CC)

This form is for creating or modifying permanent courses.

### Course Changes (Check all changes.)

New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐

### Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Electrical &amp; Computer Engineering

2. Discipline and Course Number: Present : EE 217

Proposed:

3. Course Title: Present: Continuous Linear Systems

Proposed:

#### Abbreviated Course Title:

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)

**Present:** Analysis methods for continuous-time signals and systems in the time and frequency domains including signal models, Fourier transforms, and Laplace transforms. Examples of control and communications systems are included.

**Proposed:**5. If course requires field trip check box: ☐

6. Credit Hours:

Present:

Lecture: 3

Lab: 0

Total: 3

Proposed:

Lecture:

Lab:

Total:

7. Prerequisites:

**Present:**

Elec Eng 215, Elec Eng 216, and Math 204 each with a grade of "C" or better. Students should enroll in Elec Eng 217 and corequisite of Elec Eng 218.

**Proposed:**

Math 204 with a grade of "C" or better; Elec Eng 153 with a grade of "C" or better; passing the Elec Eng Advancement Exam II.

8. Required for Majors: ☒ Elective for Majors: ☐

9. Justification: Modification to Undergraduate EE Requirements per ECE Faculty 1/24/2013.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initiated by Dept. Chair, if signature does not appear below.

1)

2)

3)

4)

5)

6)

Recommended by Department



(Chair signature)

Date: 1/24/13

Recommended by Discipline Specific Curricula Committee



(Chair signature)

Date: 2/19/13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

CC File # 8385-2013-CER ENG-261-31

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☒Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 261<sup>Eng</sup>** Proposed:3. Course Title: Present: **Materials Senior Design I**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Students working in groups will be assigned a capstone design project related to a specific materials technology. This course will focus on project plan and all aspects of product and process design. Prerequisite: Senior standing. (Co-listed with Met Eng 261)**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 0 Lab 1 Total 1

Proposed: Lecture 0 Lab 3 Total 3

7. Prerequisites:

Present:

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: *Increased hours needed to expand course content & expectations.*

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, Initialed by Dept. Chair, if signature does not appear below.

1) **Met 261**

3)

5)

2) **Eng**

4)

6)

Recommended by Department

(Chair signature)

Date: *2/22/13*

Recommended by DSCC

(Chair signature)

Date: *3-11-13*

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8386-2013-CER ENG-262-31

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☒Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 262** <sup>ENG</sup> Proposed:3. Course Title: Present: **Materials Senior Design II**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **A continuation of the Materials Senior Design I. Students working in groups will complete a capstone design project including process and product simulation and/or fabrication, safety aspects, environmental impact and capital and operating economics. Prerequisite: Cer Eng 261 or Met Eng 261. (Co-listed with Met Eng 262)**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 0 Lab 2 Total 2

Proposed: Lecture 0 Lab 3 Total 3

7. Prerequisites: **ENG ENG**  
Present: **Cer 261 or Met 261**Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) **Met 262**

3)

5)

2) **ENG**

4)

6)

Recommended by Department

(Chair signature)

Date: **2/22/13**

Recommended by DSCC

(Chair signature)

Date: **3-11-13**

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:



CC File # 8387-2013-CER ENG-103-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 103** <sup>ENG</sup> Proposed:3. Course Title: Present: **Introduction to Glass Science & Technology**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **A study of the atomic-level structure of oxide glasses and the relationships between composition, properties and structure of glass-forming systems. Simple rate processes will be introduced to explain temperature-dependent properties. Prerequisite: Cer-Eng-102.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture Lab Total

Proposed: Lecture Lab Total

7. Prerequisites: **ENG**Present: **Cer 102**Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/20/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8388-2013-CER ENG-122-32

Effective Year: **2013** Effective Term: **Summer** ☐ **Fall** ☒ **Spring** ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: **Cer 122** Proposed: *ENG*  
 3. Course Title: Present: **Ceramic Materials Laboratory II - Glass & Ceramic Processing**  
 Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **Laboratory experience in design, processing, and characterization of glasses and ceramics. Glasses are formulated, melted and characterized to correlate composition and properties. Clay-based ceramics are formulated to meet performance specifications, prepared by slip casting/extrusion, and fired. Prerequisite: Cr Eng 111.**  
 Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture Lab Total  
 Proposed: Lecture Lab Total

7. Prerequisites: *ENG*  
Present: **Cer 111**Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department Wayne Huelken

(Chair signature)

Date: 2/20/12Recommended by DSCC Shane Raper

(Chair signature)

Date: 3-11-13Approved by Curricula Committee: \_\_\_\_\_  
(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate: \_\_\_\_\_  
(Chair signature)

Date: \_\_\_\_\_

CC File # 8389-2013-CER ENG-222-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 222** Proposed:3. Course Title: Present: **Applied Glass Forming**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Examines the properties and behavior of molten glass along with basic forming techniques, including off-hand shaping, molding and casting. Prerequisite: Cer Eng 104 or Met Eng 125; freshman, sophomore, or junior only or by instructor permission.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture Lab Total  
 Proposed: Lecture Lab Total

7. Prerequisites: **ENG** **ENG**  
 Present: **Cer 104 or Met 125**

Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
 2) 4) 6)

Recommended by Department Wayne Hudson Date: 2/20/13  
 (Chair signature)

Recommended by DSCC Shane Raper Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8390-2013-CER ENG-231-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 231** Proposed:3. Course Title: Present: **Ceramic Processing Lab I**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **The first half of a two-semester sequence that gives students practical knowledge of the methods and techniques used in the fabrication of ceramics. Prerequisite: Cer Eng 122.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture Lab Total

Proposed: Lecture Lab Total

7. Prerequisites: **ENG**Present: **Cer 122**Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/20/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8391-2013-CER ENG-242-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: **Cer 242** Proposed:  
 3. Course Title: Present: **Ceramic Processing Lab II**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **The second half of a two-semester sequence that gives students practical knowledge of the methods and techniques used in the fabrication of ceramics. Prerequisite: Cer Eng 231.**

Proposed:

5. If course requires field trip check box:
- ☐

6. Credit Hours: Present: Lecture ☐ Lab ☒ Total ☒  
 Proposed: Lecture ☐ Lab ☐ Total ☐

7. Prerequisites: **ENG**  
 Present: **Cer 231**

Proposed: **Pass prerequisite course with "C" or better**

8. Required for Majors:
- ☒
- Elective for Majors:
- ☐

9. Justification:
- Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department Wayne Huber Date: 2/20/13  
 (Chair signature)

Recommended by DSCC Stephen Raper Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8392-2013-CER ENG-251-32

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 251** <sup>ENG</sup> Proposed:3. Course Title: Present: **Phase Equilibria**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **The study of unary, binary and ternary inorganic, phase equilibrium systems with examples for solving practical engineering problems. Prerequisite: Chem 3.**

Proposed:

5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **Chem 3**Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: **2/20/13**

Recommended by DSCC

(Chair signature)

Date: **3-11-13**

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

CC File # 8393-2013-CER ENG-369-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 369** <sup>ENG</sup> Proposed:3. Course Title: Present: **Glass Science & Engineering**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **The development, manufacturing methods, applications, and properties of flat, fiber, container, chemical, and special purpose glasses. Composition/property relationships for glasses and nucleation-crystallization processes for glass-ceramics are also covered. Prerequisite: Cr Eng 103.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3

Proposed: Lecture Lab Total

7. Prerequisites: <sup>ENG</sup>Present: **Cer 103**Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/20/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8394-2013-CER ENG-284-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 284** <sup>ENG</sup> Proposed:3. Course Title: Present: **Electrical Properties of Ceramics**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **The application of ceramic chemistry and physics to the development and evaluation of electronic, dielectric, magnetic, and optical properties. Emphasis is placed on the relationships between properties and crystal structure, defects, grain boundary nature, and microstructure. Prerequisite: Physics 107.**

Proposed:

5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **Physics 107**Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

*Wayne Hucker*

Date:

*2/20/13*

Recommended by DSCC

(Chair signature)

*Sharon Rogers*

Date:

*3-11-13*

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:



CC File # 8395-2013-CER ENG-306-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 306** <sup>ENG</sup> Proposed:3. Course Title: Present: **Mechanical Properties of Ceramics**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **This course will treat the theory and testing practice related to design based on the mechanical properties of ceramics. The course also includes a laboratory consisting of experiments for the characterization of the mechanical properties of ceramics. Prerequisite: Civ Eng 110.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture **3** Lab **1** Total **4**  
 Proposed: Lecture Lab Total

7. Prerequisites:

Present: **Civ Eng 110**Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department: Wayne Hudson Date: 2/20/13  
 (Chair signature)

Recommended by DSCC: Stephen Rapa Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8396-2013-CER ENG-396-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: Cer <sup>ENG</sup>369 Proposed:3. Course Title: Present: **Glass Science & Engineering**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **The development, manufacturing methods, applications, and properties of flat, fiber, container, chemical, and special purpose glasses. Composition/property relationships for glasses and nucleation-crystallization processes for glass-ceramics are also covered. Prerequisite: Cer-Eng 103.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3

Proposed: Lecture Lab Total

7. Prerequisites: **ENG**

Present: Cer 103

Proposed: **Pass prerequisite course with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, Initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

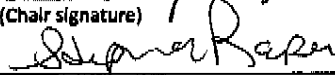
(Chair signature)



Date: 2/20/13

Recommended by DSCC

(Chair signature)



Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

CC File # 8397-2013-CER ENG-371-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: ~~Cer~~ <sup>CER ENG</sup> 371 Proposed:  
 3. Course Title: Present: **Dielectric & Electrical Properties of Oxides**  
 Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **The processes occurring in inorganic materials under the influence of an electric field are considered from basic principles. Emphasis is placed on application to real systems. Prerequisite: Cer Eng 284.**  
 Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3  
 Proposed: Lecture Lab Total

7. Prerequisites: <sup>ENG</sup>  
 Present: Cer 284

Proposed: Pass prerequisite course with "C" or better

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
 2) 4) 6)

Recommended by Department Wayne Hinkle Date: 2/20/13  
 (Chair signature)

Recommended by DSCC Shirley Pope Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8398-2013-MET ENG-315-20

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☒Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 315** <sup>ENG</sup> Proposed:3. Course Title: Present: **Metallurgical Process Design Principles**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Application of mass, component and energy balances for metallurgical design. The fundamentals of engineering economic analysis will be examined and experimental design techniques will be introduced. Students will be prepared for the selection and planning of the subsequent design project. Prerequisite: Senior standing in Mt-Eng.**

Proposed:

5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture Lab Total  
Proposed: Lecture Lab Total

7. Prerequisites:

Present:

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Course no longer offered - replaced by Met 261/262** <sup>ENG</sup>

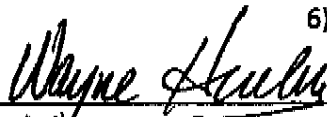
10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

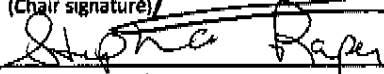
Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8399-2013-MET ENG-316-20

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☒Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met <sup>ENG</sup>316** Proposed:3. Course Title: Present: **Metallurgical Design Project**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Student groups will undertake selected projects, which will represent a capstone design experience utilizing skills, understanding and data from previous courses. The faculty supervised open-ended design projects will involve a variety of tasks appropriate to the metallurgical engineer. Prerequisite: Mt Eng 315.**

Proposed:

5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture **2** Lab **0** Total **2**

Proposed: Lecture Lab Total

7. Prerequisites:

Present:

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Course no longer offered - replaced by Met <sup>ENG</sup>261/262**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)	3)	5)
2)	4)	6)

Recommended by Department

(Chair signature)

Date: **2/20/13**

Recommended by DSCC

(Chair signature)

Date: **3-11-13**

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8400-2013-MET ENG-318-20

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☒ Credit Hours ☐ Prerequisites ☐  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering** *ENG*  
 2. Discipline and Course Number: Present: **Met 318** Proposed:  
 3. Course Title: Present: **Principles for Microstructural Design**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **This course will introduce the basics of microstructural principles that can be used to design advanced materials. It will help students learn about the basic principles and microstructural design approaches. Prerequisites: At least junior standing, Met Eng 215, Met Eng 217 or equivalent.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture *2* Lab *0* Total *2*  
 Proposed: Lecture Lab Total

## 7. Prerequisites:

Present:

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Course no longer offered**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, Initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department Wayne Shapton Date: 2/22/13  
 (Chair signature)

Recommended by DSCC Steve Rapp Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8401-2013-MET ENG-332-20

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☒ Credit Hours ☐ Prerequisites ☐  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: **Met 332** Proposed: *ENG*  
 3. Course Title: Present: **Metals Treatment Laboratory**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **The students plan and perform experiments that illustrate heat treating processes and their effects on the properties and structure of commercial alloys. Prerequisite: Accompanied or preceded by Mt Eng 331.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture ☐ Lab ☐ Total ☐  
 Proposed: Lecture ☐ Lab ☐ Total ☐

## 7. Prerequisites:

Present:

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Course no longer offered**

## 10. Semesters previously offered as an experimental course (101, 201, 301, 401):

## 11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) \_\_\_\_\_ 3) \_\_\_\_\_ 5) \_\_\_\_\_  
 2) \_\_\_\_\_ 4) \_\_\_\_\_ 6) \_\_\_\_\_

Recommended by Department Wayne Hinkle Date: 2/22/13  
 (Chair signature)

Recommended by DSCC Shirley Baker Date: 2-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8402-2013-MET ENG-354-20

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☒Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 354** Proposed:3. Course Title: Present: **Electrical Systems and Controls for Materials**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **This course will cover analysis of alternating and direct current circuits as experienced in the materials industry. Current, voltage, and power relationships in single and three-phase electrical power systems. Introduction to continuous and batch instrumentation including programmable logic controllers (PLCs) and computer interfacing for materials applicat**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 2 Lab 1 Total 3

Proposed: Lecture Lab Total

7. Prerequisites:

Present:

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Course no longer offered**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/20/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:



CC File # 8403-2013-MET ENG-365-20

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☒Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 365** <sup>Eng</sup> Proposed:3. Course Title: Present: **Microfabrication Materials and Processes**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **An overview course on the materials and processes used to fabricate integrated circuits, microelectromechanical systems (MEMS), interconnect substrates and other microelectronic components from starting material to final product. The emphasis will be on the influence of structure and processing on the electrical, mechanical, thermal, and optical proper**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3

Proposed: Lecture Lab Total

7. Prerequisites:

Present:

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Course no longer offered**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8404-2013-MET ENG-385-20

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☒Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering** *ENG*2. Discipline and Course Number: Present: **Met 385** Proposed:3. Course Title: Present: **Mechanical Metallurgy**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Elastic and plastic behavior of metallic single crystals and polycrystalline aggregates. Resulting changes in mechanical properties are considered. Included are applications to metal fabrication. Prerequisites: Met Eng 215, 216, Civ Eng 110.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3

Proposed: Lecture Lab Total

7. Prerequisites:

Present:

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Course no longer offered**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

*Wayne Healy*Date: *2/22/13*

Recommended by DSCC

(Chair signature)

*Stephen Raper*Date: *3-11-13*

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8405-2013-MET ENG-403-20

Effective Year: **2013** Effective Term: **Summer** ☐ **Fall** ☒ **Spring** ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☒ Credit Hours ☐ Prerequisites ☐  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 403** <sup>ENG</sup> Proposed:3. Course Title: Present: **High Temperature and Corrosion Resistant Alloys**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Fabrication and use of nickel, titanium, and refractory metal based alloys for use at high temperatures or in chemically corrosive environments. Properties and strengthening mechanisms of these alloys. Theory of high temperature oxidation and corrosion and design of alloys to prevent them. Prerequisites: Mt Eng 217, 218.**

Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**  
 Proposed: Lecture Lab Total

7. Prerequisites:

Present:

Proposed:

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Course no longer offered**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department Wayne Hauling Date: 2/22/13  
 (Chair signature)

Recommended by DSCC Steph E. Roper Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8406-2013-MET ENG-216-31

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☒Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 216** Proposed:3. Course Title: Present: **Mechanical Testing of Materials**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Deformation of materials and mechanical testing of materials; tensile testing, creep; impact testing; fracture mechanics and fatigue. Prerequisites: Met Eng 121, accompanied by Met Eng 215.**Proposed: **Deformation of materials and mechanical testing of materials; tensile testing, creep; impact testing; fracture mechanics and fatigue. Prerequisites: Met Eng 121 with a "C" or better, preceded or accompanied by Met Eng 215.**5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 0 Lab 1 Total 1

Proposed: Lecture 1 Lab 1 Total 2

7. Prerequisites:

Present: **Met 121, and preceded or accompanied by Met 215**Proposed: **Met 121 with "C" or better, and preceded or accompanied by Met 215**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Prerequisite grade "C" - new department standard to improve student success; increased credit hours**10. Semesters previously offered as an experimental course (101, 201, 301, 401): **due to adding lecture section**

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8407-2013-MET ENG-218-31

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☒ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering** <sup>ENG</sup>  
 2. Discipline and Course Number: Present: **Met 218** Proposed:  
 3. Course Title: Present: **Microstructural Development Laboratory**  
 Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)  
 Present: **Investigation of the relationships between microstructures, and processing for various materials.**  
~~Prerequisites: Met Eng 121, accompanied by Met Eng 217.~~  
 Proposed: **Investigation of the relationships between microstructures, and processing for various materials.**  
~~Prerequisites: Accompanied or preceded by Met Eng 217.~~

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 0 Lab 1 Total 1  
 Proposed: Lecture 1 Lab 1 Total 2

7. Prerequisites: <sup>ENG</sup>  
 Present: **Met 121; accompanied or preceded by Met 217** <sup>ENG</sup>  
 Proposed: **Accompanied or preceded by Met 217** <sup>ENG</sup>

8. Required for Majors: ☒ Elective for Majors: ☐

9. Justification: **Increase credit hours due adding lecture section**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
 2) 4) 6)

Recommended by Department Wayne Hucker Date: 2/22/13  
 (Chair signature)

Recommended by DSCC Stephen Raper Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8408-2013-MET ENG-125-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 125** <sup>ENG</sup> Proposed:3. Course Title: Present: **Chemistry of Materials**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Basic Inorganic Chemistry of Materials. Topics will include chemical properties, structure and bonding of solids, energy, enthalpy, entropy, thermochemistry, kinetics and rate processes. Application of chemistry principles to materials engineering through flowsheeting, reactor design, materials/metals processing and the environment.**~~Prerequisite: Chem 1.~~Proposed: **Basic Inorganic Chemistry of Materials. Topics will include chemical properties, structure and bonding of solids, energy, enthalpy, entropy, thermochemistry, kinetics and rate processes. Application of chemistry principles to materials engineering through flowsheeting, reactor design, materials/metals processing and the environment.**~~Prerequisite: Chem 1, with "C" or better.~~5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **Chem1**Proposed: **Chem 1 with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

(Revised December 2012)

CC File # 8409-2013-MET ENG-202-32

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 202** Proposed:3. Course Title: Present: **Extractive Metallurgy Lab**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **A series of laboratory experiments designed to illustrate the principles of pyrometallurgy, hydrometallurgy, and electrometallurgy. Prerequisites: Preceded or accompanied by Mt Eng 203, or an equivalent training program approved by S&T.**Proposed: **A series of laboratory experiments designed to illustrate the principles of pyrometallurgy, hydrometallurgy, and electrometallurgy. Prerequisites: Preceded or accompanied by Mt Eng 203.**5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture ☒ Lab ☐ Total ☐Proposed: Lecture ☐ Lab ☐ Total ☐

7. Prerequisites:

Present: **Met203 prior or concurrent, Chem 4 prior or concurrent**Proposed: **Met 203 prior or concurrent**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8410-2013-MET ENG-203-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: **Met 203** <sup>ENG</sup> Proposed:  
 3. Course Title: Present: **Introduction to Extractive Metallurgy**  
 Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **Production and refining of metals by pyrometallurgy, hydrometallurgy, and electrometallurgy. Emphasis on heat and mass balance calculations for the unit processes of metals extraction. Introduction to the principles of combustion, heat utilization and recovery. Prerequisite: Mt Eng 125.**

Proposed: **Production and refining of metals by pyrometallurgy, hydrometallurgy, and electrometallurgy. Emphasis on heat and mass balance calculations for the unit processes of metals extraction. Introduction to the principles of combustion, heat utilization and recovery. Prerequisite: Mt Eng 125 with "C" or better.**

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3  
 Proposed: Lecture Lab Total

7. Prerequisites: <sup>ENG</sup> Present: **Met 281, or Cer 259, or Ch Eng 143**  
<sup>ENG</sup> Proposed: **Met 125 with "C" or better**

8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
 2) 4) 6)

Recommended by Department Wayne Huber Date: 2/22/13  
 (Chair signature)

Recommended by DSCC Stephen Raper Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)



CC File # 8411-2013-MET ENG-204-32

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 204** <sup>ENG</sup> Proposed:3. Course Title: Present: **Transport Phenomena in Metallurgy**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **The application of the principles of fluid flow and heat transfer to the solution of practical problems in metallurgical engineering. Prerequisite: Civ Eng 50.**Proposed: **The application of the principles of fluid flow and heat transfer to the solution of practical problems in metallurgical engineering. Prerequisite: Civ Eng 50 with "C" or better.**5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **Civ Eng 50**Proposed: **Civ Eng 50 with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)	3)	5)
2)	4)	6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8412-2013-MET ENG-215-32

Effective Year: **2013** Effective Term: **Summer** ☐ **Fall** ☒ **Spring** ☐

## Course Change Form (CC)

This form is for creating or modifying permanent courses.

### Course Changes (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

### Course Information (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**
2. Discipline and Course Number: Present: **Met <sup>ENG</sup>215** Proposed:
3. Course Title: Present: **Fundamentals of Materials Behavior**  
Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)  
Present: **An introduction to crystal defects and deformation; mechanical testing; creep; fracture mechanics and fatigue**  
**Prerequisites: Met Eng 121 and Civ Eng 110.**  
Proposed: **An introduction to crystal defects and deformation; mechanical testing; creep; fracture mechanics and fatigue. Prerequisites: Met Eng 121 and Civ Eng 110 with a "C" or better.**

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**  
Proposed: Lecture Lab Total

7. Prerequisites: **ENG**  
Present: **Met 121 and Civ Eng 110**  
Proposed: **Met <sup>ENG</sup>121 and Civ <sup>ENG</sup>110 with "C" or better**

8. Required for Majors: ☐ Elective for Majors: ☐

9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department Wayne Hicken Date: 2/22/13  
(Chair signature)

Recommended by DSCC Don Raper Date: 3-11-13  
(Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
(Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
(Chair signature)

CC File # 8413-2013-MET ENG-217-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: **Met217** Proposed:  
 3. Course Title: Present: **Metals Microstructural Development**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **Fundamentals of microstructural developments as relating to solid solutions, solidification and transformations; phase diagrams; case studies. Prerequisite: Met Eng 121.**Proposed: **Fundamentals of microstructural developments as relating to solid solutions, solidification and transformations; phase diagrams; case studies. Prerequisite: Met Eng 121 with a "C" or better; accompanied or preceded by Cer Eng 259.**5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**  
 Proposed: Lecture Lab Total

7. Prerequisites: **ENG**  
Present: **Met 121**Proposed: **Met 121 with "C" or better; accompanied or preceded by Cer E 259**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

## 10. Semesters previously offered as an experimental course (101, 201, 301, 401):

## 11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department

(Chair signature)

Date: **2/22/13**

Recommended by DSCC

(Chair signature)

Date: **3-11-13**

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8443-2013-MET ENG-221-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 221** Proposed:3. Course Title: Present: **Principles of Materials Processing**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **An introduction to various methods of processing of metals and influences of processing on design. Includes: casting, welding, shaping, inspection and testing. Prerequisite: Mt Eng 121.**Proposed: **An introduction to various methods of processing of metals and influences of processing on design. Includes: casting, welding, shaping, inspection and testing. Prerequisite: Mt Eng 121 with a "C" or better.**5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3  
 Proposed: Lecture Lab Total

7. Prerequisites: **ENG**Present: **Met 121**Proposed: **Met 121 with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
 2) 4) 6)

Recommended by Department Wayne Huber Date: 3/22/13  
(Chair signature)Recommended by DSCC [Signature] Date: 3-11-13  
(Chair signature)Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
(Chair signature)Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
(Chair signature)

CC File # 8444-2013-CER ENG-259-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: **Cer 259** Proposed:  
 3. Course Title: Present: **Thermodynamics of Materials** *Materials*  
 Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **Basic thermodynamic concepts are applied to materials. Calculations involving enthalpy, entropy, and Gibbs' free energy are studied. Inter-relationships among properties are emphasized. Fundamental concepts of phase equilibria are presented. Prerequisite: Met Eng 125 or Chem 3.**

Proposed: **Basic thermodynamic concepts are applied to materials. Calculations involving enthalpy, entropy, and Gibbs' free energy are studied. Inter-relationships among properties are emphasized. Fundamental concepts of phase equilibria are presented. Prerequisite: Met Eng 125 or Chem 3 with "C" or better.**

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3  
 Proposed: Lecture Lab Total

## 7. Prerequisites:

Present: **Met 125 or Chem 3**Proposed: **Met 125 or Chem 3 with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

## 10. Semesters previously offered as an experimental course (101, 201, 301, 401):

## 11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
 2) 4) 6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8445-2013-MET ENG-261-31

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☒Prerequisites ☒Course Title ☐Catalog Description ☒Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 261** <sup>ENG</sup> Proposed:3. Course Title: Present: **Materials Senior Design I**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Students working in groups will be assigned a capstone design project related to a specific materials technology. This course will focus on project plan and all aspects of product and process design. Prerequisite: Senior standing. (Co-listed with Cer Eng 261)**Proposed: **Overview of the methods, approaches, and techniques required to execute materials related capstone senior design projects. Formation of teams, assignment of projects, review of department curriculum concepts and topics, and comprehensive project management skills needed to complete projects will be used as means to learn the design process. Prerequisite:**5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture ☐ Lab **1** Total **1**Proposed: Lecture **3** Lab ☐ Total **3**

7. Prerequisites:

Present: **Senior Standing**Proposed: <sup>ENG</sup> **Met 216** and <sup>ENG</sup> **Met 218**, or <sup>ENG</sup> **Cer 231** with a "C" or better8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Increased hours needed to expand course content & expectations; prerequisite grade of "C" new dept. standard**

10. Semesters previously offered as an experimental course (101, 201, 301, 401): to improve student success

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) **Cer 261**

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-13-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

(Revised December 2012)

CC File # 8446-2013-MET ENG-262-31

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☒ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: **Met 262** <sup>ENG</sup> Proposed:  
 3. Course Title: Present: **Materials Senior Design II**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **A continuation of the Materials Senior Design I. Students working in groups will complete a capstone design project including process and product simulation and/or fabrication, safety aspects, environmental impact and capital and operating economics. Prerequisite: Cer Eng 261 or Met Eng 261. (Co-listed with Cer Eng 262)**

Proposed: **A continuation of the Materials Senior Design I. Students working in groups will complete a capstone design project including process and product simulation and/or fabrication, safety aspects, environmental impact and capital and operating economics. Prerequisite: Cer Eng 261 or Met Eng 261 with "C" or better. (Co-listed with Cer Eng 262)**

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture ☐ Lab 2 Total 2  
 Proposed: Lecture ☐ Lab 3 Total 3

7. Prerequisites: <sup>ENG</sup> Present: **Cer 261 or Met 261**  
<sup>ENG</sup> Proposed: **Cer 261 or Met 261 with "C" or better**

8. Required for Majors: ☒ Elective for Majors: ☐

9. Justification: **Increased hours needed to expand course content & expectations; Prerequisite grade requirement - new dept. standard to improve student success**

## 10. Semesters previously offered as an experimental course (101, 201, 301, 401):

## 11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

- 1) **Cer 262** <sup>ENG</sup> 3) 5)  
 2) 4) 6)

Recommended by Department

(Chair signature)

Date: 2/28/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

(Revised December 2012)

CC File # 8447-2013-CER ENG-262-31

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☒Prerequisites ☒Course Title ☐Catalog Description ☒Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer <sup>ENG</sup>262** Proposed:3. Course Title: Present: **Materials Senior Design II**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **A continuation of the Materials Senior Design I. Students working in groups will complete a capstone design project including process and product simulation and/or fabrication, safety aspects, environmental impact and capital and operating economics. Prerequisite: Cer Eng 261 or Met Eng 261. (Co-listed with Met Eng 262)**Proposed: **Overview of the methods, approaches, and techniques required to execute materials related capstone senior design projects. Formation of teams, assignment of projects, review of department curriculum concepts and topics, and comprehensive project management skills needed to complete projects will be used as means to learn the design process. Prerequisites: Cer 261 or Met 261 with "C" or better.**5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture ☒ Lab 2 Total 2Proposed: Lecture ☒ Lab 3 Total 37. Prerequisites: **ENG** **ENG**Present: **Cer 261 or Met 261**Proposed: **Cer <sup>ENG</sup>261 or Met <sup>ENG</sup>261 with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Increased prerequisite grade - new department standard to improve student success; increased credit hours**10. Semesters previously offered as an experimental course (101, 201, 301, 401): **needed to expand course content & expectations.**

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) **Met 262**

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: **2/22/13**

Recommended by DSCC

(Chair signature)

Date: **3-11-13**

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

(Revised December 2012)



CC File # 8448-2013-CER ENG-291-32

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Cer 291** Proposed:3. Course Title: Present: **Characterization of Inorganic Solids**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **X-ray diffraction analysis is emphasized including lattice parameter determination, qualitative and quantitative analysis methods, and sources of error. In addition, the basic principles of other common characterization techniques including electron microscopy, thermal analysis, and energy dispersive spectroscopy are discussed.**~~Prerequisite: Cr Eng 102 or Mt~~Proposed: **X-ray diffraction analysis is emphasized including lattice parameter determination, qualitative and quantitative analysis methods, and sources of error. In addition, the basic principles of other common characterization techniques including electron microscopy, thermal analysis, and energy dispersive spectroscopy are discussed.**~~Prerequisite: Cr Eng 102 or Mt 121 with a "C" or better.~~5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture Lab Total

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **Cer 102 or Met 121, or a similar introductory course on structure of solids**Proposed: **Cer 102 or Met 121, or a similar introductory course on structure of solids, with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8449-2013-MET ENG-307-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: **Met 307<sup>ENG</sup>** Proposed:  
 3. Course Title: Present: **Metals Casting**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **An advanced course in the materials and methods used in modern metals casting processes. Application of metallurgical principles to the casting of metals. Design of castings and metals casting mold features using commercial casting process simulation software. Prerequisite: Met Eng 221 or Mech Eng 153.**

Proposed: **An advanced course in the materials and methods used in modern metals casting processes. Application of metallurgical principles to the casting of metals. Design of castings and metals casting mold features using commercial casting process simulation software. Prerequisite: Met Eng 221 or Mech Eng 153 with "C" or better.**

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**  
 Proposed: Lecture Lab Total

## 7. Prerequisites:

Present: **Met 221<sup>ENG</sup> or MechE 153<sup>NE</sup>**Proposed: **Met 221<sup>ENG</sup> or MechE 153<sup>NE</sup> with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department: Wayne Hudson Date: 2/22/13  
 (Chair signature)

Recommended by DSCC: David R. Rye Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8450-2013-MET ENG-329-32

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 329** <sup>ENG</sup> Proposed:3. Course Title: Present: **Material Selection, Fabrication & Failure**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Factors governing the selection of materials for specific needs, fabrication, heat treatment, surface treatment, and other aspects in the production of a satisfactory component. Failure analysis and remedies. Lecture plus assigned problems. Prerequisites: Met 217, 218, 221**Proposed: **Factors governing the selection of materials for specific needs, fabrication, heat treatment, surface treatment, and other aspects in the production of a satisfactory component. Failure analysis and remedies. Lecture plus assigned problems. Prerequisites: Met 217, 218, and 221 with "C" or better.**5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **Met 217, Met 218, and Met 221** <sup>ENG</sup> <sup>ENG</sup> <sup>ENG</sup>Proposed: **Met 217, Met 218, and Met 221 with "C" or better** <sup>ENG</sup> <sup>ENG</sup> <sup>ENG</sup>8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

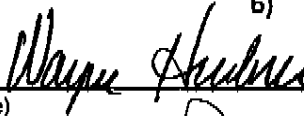
2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8451-2013-MET ENG-331-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 331** Proposed:3. Course Title: Present: **Steels and Their Treatment**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Industrially important ferrous alloys are described and classified. The selection of proper heat treatments to facilitate fabrication and to yield required service properties in steels suitable for various applications is considered.**~~Prerequisites: Met Eng 217 and Met Eng 218.~~Proposed: **Industrially important ferrous alloys are described and classified. The selection of proper heat treatments to facilitate fabrication and to yield required service properties in steels suitable for various applications is considered.**~~Prerequisites: Met Eng 217 and Met Eng 218 with "C" or better.~~5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3

Proposed: Lecture Lab Total

7. Prerequisites: **ENG**Present: **Met 217 and Met 218**Proposed: **Met 217 and Met 218 with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)

2) 4) 6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

CC File # 8452-2013-MET ENG-355-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☐Credit Hours ☐Prerequisites ☒Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Materials Science & Engineering**2. Discipline and Course Number: Present: **Met 355** Proposed:3. Course Title: Present: **Process Metallurgy Applications**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Application of thermodynamics to process metallurgy. Equilibrium calculations with stoichiometry and heat balance restrictions, phase transformations, and solution thermodynamics. Use of thermodynamic software to solve complex equilibria in metallurgical applications. Prerequisite: Cer Eng 259.**Proposed: **Application of thermodynamics to process metallurgy. Equilibrium calculations with stoichiometry and heat balance restrictions, phase transformations, and solution thermodynamics. Use of thermodynamic software to solve complex equilibria in metallurgical applications. Prerequisite: Cer Eng 259 with "C" or better.**5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture 3 Lab 0 Total 3

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **Cer 259**Proposed: **Cer 259 with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **New department standard to improve student success**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/22/13

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

CC File # 8453-2013-MET ENG-381-32Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Materials Science & Engineering**  
 2. Discipline and Course Number: Present: **Met <sup>Eng</sup> 381** Proposed: \_\_\_\_\_  
 3. Course Title: Present: **Corrosion and its Prevention** Proposed: \_\_\_\_\_

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

## 4. Catalog Description (360 character spaces or less.)

Present: **A study of the theories of corrosion and its application to corrosion and its prevention. Prerequisite: Chem 243 or Cer Eng 259. (Co-listed with Chem Eng 381)**

Proposed: \_\_\_\_\_

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**  
 Proposed: Lecture \_\_\_\_\_ Lab \_\_\_\_\_ Total \_\_\_\_\_

## 7. Prerequisites:

Present: **Chem 243 or Cer 259**Proposed: **Pass Chem 243 or Cer <sup>Eng</sup> 259 with "C" or better**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Encourage student success through a better understanding of core material**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) **ChemE 381**

3)

5)

2)

4)

6)

Recommended by Department

*Wayne Hinkle*  
(Chair signature)*Matthew D. Parker*Date: 2/28/13

Recommended by DSCC

*Stephen Raper*  
(Chair signature)Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

(Revised December 2012)

CC File # *PY54-2013-Eng Mgt - 257-34*Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☐  
 Course Title ☐ Catalog Description ☒ Course Number ☐ Co-listing ☒

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Eng Mg & Sys Eng**  
 2. Discipline and Course Number: Present: **Eng Mg 257** Proposed:  
 3. Course Title: Present: **Materials Handling and Plant Layout**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **The design and objectives of materials handling equipment including diversity of application in industry from the viewpoint of efficient movement of materials and products from the receiving areas to the shipping areas. ... Cost comparison of various systems will be made. (Co-listed with Eng Mg 257)**

Proposed: **The design and objectives of materials handling equipment including diversity of application in industry from the viewpoint of efficient movement of materials and products from the receiving areas to the shipping areas. The layout of a plant to include materials handling equipment is considered throughout. Cost comparison of various systems will be made.**

5. If course requires field trip check box:
- ☐

6. Credit Hours: Present: Lecture **2** Lab **1** Total **3**  
 Proposed: Lecture Lab Total

7. Prerequisites:

Present: **None**

Proposed:

8. Required for Majors:
- ☐
- Elective for Majors:
- ☒

9. Justification:
- Dropping the co-list with McEng 256, which is being deleted with a separate form.**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department *Paul Embe* Date: 2/19/13  
 (Chair signature)

Recommended by DSCC *Stephen Rapp* Date: 3-11-13  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # 8455-2013-Mech Eng-256-20

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☒ Credit Hours ☐ Prerequisites ☐  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Mech & Aero Engineering**  
 2. Discipline and Course Number: Present: **McEng 256** Proposed:  
 3. Course Title: Present: **Materials Handling and Plant Layout**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **The design and objectives of materials handling equipment including diversity of application in industry from the viewpoint of efficient movement of materials and products from the receiving areas to the shipping areas...**

Proposed:

5. If course requires field trip check box:
- ☐

6. Credit Hours: Present: Lecture **2** Lab **1** Total **3**  
 Proposed: Lecture Lab Total

7. Prerequisites:

Present: **None**

Proposed:

8. Required for Majors:
- ☐
- Elective for Majors:
- ☒

9. Justification:
- This course has been co-listed with Eng Mg 257. We are deleting only the McEng course.**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: 2/20/2013

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

(Revised December 2012)



CC File # *8456-2013-Mech Eng-316-20*Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☐Course Deletion ☒Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Mech & Aero Engineering**2. Discipline and Course Number: Present: **MeEng 316** Proposed:3. Course Title: Present: **Concurrent Engineering II**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Students will form groups and then using the electronic data based approach apply the concurrent engineering process to develop products...(co-listed with AeEng 316)**

Proposed:

5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture **0** Lab **3** Total **3**

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **AeEng 315 or McEng 315**

Proposed:

8. Required for Majors: ☐ Elective for Majors: ☒9. Justification: **This course has not been taught in many years. Delete both McEng 316 and the co-listed AeEng 316.**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) **AeEng 316**2) **AERO**

3)

5)

4)

6)

Recommended by Department

(Chair signature)

Date: *2/20/2013*

Recommended by DSCC

(Chair signature)

Date: *3-11-13*

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

CC File # 8457-2013-mech Eng-315-33

Effective Year: 2103 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☐  
 Course Title ☒ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Mech & Aero Engineering**  
 2. Discipline and Course Number: Present: **MECH MeEng 315** Proposed:  
 3. Course Title: Present: **Concurrent Engineering I**  
 Proposed: **Concurrent Engineering**

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.): **Concurrent Engineering**

## 4. Catalog Description (360 character spaces or less.)

Present: **Students will be introduced to the concurrent engineering approach to product development. They will learn to set up quantitative requirements and then use a quantitative rating process to identify the critical requirements relating to the desired product. The interaction between design, manufacturing, assembly, cost, and supportability will be covered..**  
 Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**  
 Proposed: Lecture Lab Total

7. Prerequisites: **MECH AERO CIV**  
 Present: **Me Eng 213 or AeEng 231, and EvEng 110**  
 Proposed:

8. Required for Majors: ☐ Elective for Majors: ☒

9. Justification: **With the deletion of the second course in the sequence, this one does not need to be identified as the first.**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) **Ae Eng 315** 3) 5)  
 2) **AERO** 4) 6)

Recommended by Department: \_\_\_\_\_ Date: **2/20/2013**  
 (Chair signature)

Recommended by DSCC: \_\_\_\_\_ Date: **3-11-13**  
 (Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Chair signature)

CC File # *8458-2013-Mech Eng-381-32*Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Mech & Aero Engineering**  
 2. Discipline and Course Number: Present: *MECH* **McEng 381** Proposed:  
 3. Course Title: Present: **Mechanical and Aerospace Control Systems**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Synthesis of mechanical and aerospace systems to perform specific control functions. Response and stability are studied. Singular value analysis for stability margins is introduced. (Co-listed with Ae Eng 381)**

Proposed:

5. If course requires field trip check box:
- ☐

6. Credit Hours: Present: Lecture
- 3**
- Lab
- 0**
- Total
- 3**

Proposed: Lecture Lab Total

7. Prerequisites:
- MECH*
- AERO*
- 
- Present:
- Mc Eng 279 or Ae Eng 361**

Proposed: **Mc Eng 279 or Ae Eng 261**

8. Required for Majors:
- ☐
- Elective for Majors:
- ☒

9. Justification:
- Lower level prerequisite is sufficient for the current material covered.**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) *AERO* **Ae Eng 381**

3)

5)

2)

6)

Recommended by Department

(Chair signature)

Date: *3/20/2013*

Recommended by DSCC

(Chair signature)

Date: *3-11-13*

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

(Revised December 2012)

CC File # 8459-2013-MechEng-363-32

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☒ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)

1. Department: **Mech & Aero Engineering**  
 2. Discipline and Course Number: Present: **MECH McEng 363** Proposed:  
 3. Course Title: Present: **Principles and Practice of Computer Aided Design**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **This course introduces the fundamentals of computer-aided design with emphasis on mathematical representations of curves and surfaces, modeling of solids, and graphic displays. Students will also practice with commercial CAD/CAM packages to gain experiences and to help grasp fundamentals**

Proposed: **Lectures cover the fundamentals of computer-aided design with emphasis on geometric modeling of curves, surfaces and solids, CAD/CAM data exchange, and computer graphics. In the lab session, students practice with commercial CAD/CAM systems including NX and SolidWorks to gain practical experience.**

5. If course requires field trip check box:
- ☐

6. Credit Hours: Present: Lecture 2 Lab 1 Total 3

Proposed: Lecture Lab Total

7. Prerequisites:
- COMP SCI**
- MECH ENG**
- 
- Present:
- Comp Sc 53 or 73 or 74, Me-Eng 161, at least junior standing**

Proposed: **Comp Sc 53 or 73 or 74, Me-Eng 161, Math 22, at least junior standing**

8. Required for Majors:
- ☐
- COMP SCI**
- MECH ENG**
- Elective for Majors:
- ☒

9. Justification:
- The description is reworded to reflect current coverage. The additional math prereq is needed.**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department

(Chair signature)

Date: 2/20/2013

Recommended by DSCC

(Chair signature)

Date: 3-11-13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

(Revised December 2012)

CC File # *8460-2013-Aero Eng-213-32*Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☐ Course Deletion ☐ Credit Hours ☐ Prerequisites ☒  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Mech & Aero Engineering**2. Discipline and Course Number: Present: **AERO Ae Eng 213** Proposed:3. Course Title: Present: **Aerospace Mechanics I**

Proposed:

Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.):

4. Catalog Description (360 character spaces or less.)

Present: **Introduction to celestial mechanics and an analytical study of space flight. Emphasis is placed on satellite orbits and general theory of gyro dynamics.**

Proposed:

5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**

Proposed: Lecture Lab Total

7. Prerequisites:

Present: **A grade of "C" or better in Ae Eng 160 (or McEng 160), Math 14 (or 8), 15 (or 21), 22, and Physics 23**Proposed: **Math 204; A grade of "C" or better in each of Aero Eng 160 (or Mech Eng 160), Math 14 (or 8), 15 (or 21), 22, and Physics 23**8. Required for Majors: ☒ Elective for Majors: ☐9. Justification: **Additional math background needed.**

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

3)

5)

2)

4)

6)

Recommended by Department

(Chair signature)

Date: *2/20/2013*

Recommended by DSCC

(Chair signature)

Date: *3-11-13*

Approved by Curricula Committee:

(Chair signature)

Date:

Approved by Faculty Senate:

(Chair signature)

Date:

Effective Year: 2013  
 Term: Summer ☐ Fall ☒ Spring ☐

CC File # 8461-2013-ALP-  
397-10

## Course Change Form (CC)

This form is for creating or modifying permanent courses.

### Course Changes (Check all changes.)

New Course ☒ Course Deletion ☐ Credit Hours ☐ Prerequisites ☐  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

### Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: ALP  
 2. Discipline and Course Number: Present : Proposed: 397  
 3. Course Title: Present:  
 Proposed: Multidisciplinary Studies Capstone

#### Abbreviated Course Title:

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (300 Character Spaces or Less.)

Present:

Proposed: Individually designed by the student and advisor with the approval of the advisory committee, this course is to reflect the student's ability to synthesize methods and knowledge from each focus area in his/her program into an academically coherent product.

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture: Lab: Total:  
 Proposed: Lecture: 3 Lab: 0 Total: 3

7. Prerequisites:  
 Present:

Proposed: Senior status

8. Required for Majors: ☒ Elective for Majors: ☐

9. Justification: This is the final course in the Bachelor of Multidisciplinary Studies degree program.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 2) 3)

4) 5) 6)

Recommended by Department [Signature]

(Chair signature)

Recommended by Discipline Specific Curricula Committee [Signature]

(Chair signature)

Approved by Curricula Committee: \_\_\_\_\_

(Chair signature)

Approved by Faculty Senate: \_\_\_\_\_

(Chair signature)

Date: Jun 23 2013

Date: Jan 23, 2013

Date: \_\_\_\_\_

Date: \_\_\_\_\_

CC File # 8462-2013-Physics-382-10Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☒ Course Deletion ☐ Credit Hours ☐ Prerequisites ☐  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Physics**2. Discipline and Course Number: Present: Proposed: **PHYSICS 382**3. Course Title: Present: Transport in Nanostructures: An Introduction  
Proposed: ↓Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.): **Nanostructures**

4. Catalog Description (360 character spaces or less.)  
 Present: The course overviews how wave interference, energy quantization and tunneling phenomena influence the wave (electron and light) transport in modern nanostructured materials and devices such as quantum dots, quantum wells, quantum wires, and photonic crystals.  
 Proposed:

5. If course requires field trip check box: ☐

6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**  
 Proposed: Lecture ↓ Lab ↓ Total ↓

7. Prerequisites:  
 Present: Physics 107 or 207  
 Proposed: ↓

8. Required for Majors: ☐ Elective for Majors: ☒

9. Justification: This was an experimental course that was offered in FS09 and FS11

10. Semesters previously offered as an experimental course (101, 201, 301, 401): **FS09 and FS11**

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
 2) 4) 6)

Recommended by Department [Signature]Date: 2-26-13Recommended by DSCC [Signature]Date: 3/8/2013

Approved by Curricula Committee: \_\_\_\_\_

Date: \_\_\_\_\_

Approved by Faculty Senate: \_\_\_\_\_

Date: \_\_\_\_\_

CC File # 8463-2013-ELECENG-339-10

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

New Course ☒ Course Deletion ☐ Credit Hours ☐ Prerequisites ☐  
 Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

**Course Information** (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.)1. Department: **Electrical & Computer Engineering**2. Discipline and Course Number: Present: **EE 301** Proposed: **EE 339**3. Course Title: Present: **Autonomous Mobile Robots**Proposed: **Autonomous Mobile Robots**Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Changes.): **Autonomous Mobile Robots**

4. Catalog Description (360 character spaces or less.)

Present: **This course will provide an introduction to mobile robots and current approaches to robot autonomy. Topics include mobile robot systems, modeling and control, sensors and estimation, localization and mapping, and motion planning.**Proposed: **same as above**5. If course requires field trip check box: ☐6. Credit Hours: Present: Lecture **3** Lab **0** Total **3**Proposed: Lecture **3** Lab **0** Total **3**

7. Prerequisites:

Present: **EE 231 or equivalent and Stat 217 or equivalent, or consent of instructor**Proposed: **EE 231 or equivalent and Stat 217 or equivalent, or consent of instructor**8. Required for Majors: ☐ Elective for Majors: ☒9. Justification: **This is a popular and relevant course for the control area.**10. Semesters previously offered as an experimental course (101, 201, 301, 401): **FS2012 & SP2013**

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 3) 5)  
2) 4) 6)

Recommended by Department

*Kehi Eucker*

(Chair signature)

Date: **6 Mar 2013**

Recommended by DSCC

*Stephen Brown*

(Chair signature)

Date: **3-11-13**

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

(Revised December 2012)



EC # *2459-FS2013-Nuc Eng-301*Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐

## Experimental Course Form (EC)

An EC form must be submitted before an experimental course is to be offered. EC forms approved Spring 2009 or later allow the course to be offered twice at any time during the following three year period. After an experimental course has been offered twice, a CC form may be submitted to request a permanent course number.

A new course that is required as part of a degree program, minor, or graduate certificate may be submitted on a CC form to receive a permanent course number.

Co-listed offerings should be submitted on one form, originating from the primary discipline.

Department: **Mining and Nuclear Engineering**

Discipline and Course Number: *NUC ENG*  
**NE 301**

Course Title: **Applied Mathematics in Nuclear Engineering**

Abbreviated Title (24 spaces or less): **Applied Math in NE**

Instructor(s): **Dr. Gary E. Mueller**

Credit Hours: **Lecture 3.0 Lab 0 Total 3**

Prerequisites: **NE 303**

Semester(s) previously taught: **FS2008**

Brief Course Description (360 character spaces or less): **Application of ordinary and partial differential equations in the solution of nuclear engineering problems, particularly with the neutron kinetics equations. Bessel's equation and special functions, eigenvalue problems, Green's function, integral methods and transformations.**

List all co-listed courses: Include initials of Department Chair, if signature is not already included below.

1) 3) 5)  
2) 4) 6)

Recommended by Department: *Arnold Beuman*  
(Chair signature)

Date: 2012-01-17

Recommended by DSCC: *Shon E. Dyer*  
(Chair signature)

Date: 02/19/13

Approved by Curricula Committee: \_\_\_\_\_  
(Chair signature)

Date: \_\_\_\_\_

Effective Term: FS13

EC File # 2461 - Fall 2013 - Arch Eng - 301

## Experimental Course Form (EC)

This form must be filed with the Secretary to the Campus Curricula Committee, after the department chair's and college dean's notation, by the appropriate deadline. Filing deadlines for inclusion in the pre-registration Schedule of Classes are as follows:

Summer and Fall Semester Offerings – January 1  
Winter Semester Offerings – August 1

Filing deadlines for inclusion in the Revised Schedule of Classes are April 30 and October 1. An EC form must be submitted each semester it is to be offered, not to exceed two offerings. An experimental course that is required should be submitted on a CC form. *Co-listed offerings should be submitted on one form, originating from the primary discipline.*

School or College: Engineering

Department: CArEE

Discipline and Course Number: ArchE 301

Course Title: Passive Solar Engineering

Abbreviated Title (24 spaces or less): Solar Engineering

Instructor(s): Baur

Credit Hours:      Lecture: 2      Lab: 1      Total: 3

Prerequisites: ME 371 or instructors consent

Semester(s) previously taught: New

### Brief Course Description: (40 words or less)


This course will treat topics in passive solar analysis and design. It will deal with various types of passive space heating and cooling systems applying principles of theory to actual application through the use of both computer modeling techniques and actual case studies. Both instantaneous and long-term performance will be analyzed. Economics and construction topics will be discussed.

List all co-listed courses: Include initials of Dept. Chair(s) and Dean(s) if signatures are not already included below.

1. \_\_\_\_\_ 4. \_\_\_\_\_
2. \_\_\_\_\_ 5. \_\_\_\_\_
3. \_\_\_\_\_ 6. \_\_\_\_\_

Department Chair:   
Chair Signature

Date: 2/11/13

College/School Dean:   
Dean Signature

Date: 3-11-13

UMR Curricula Committee: \_\_\_\_\_  
Chair Signature

Date: \_\_\_\_\_

## **ArchE 301 – PASSIVE SOLAR ENGINEERING**

**Instructor:** Stuart W. Baur, Ph.D., AIA  
Civil, Architectural and  
Environmental Engineering  
**Office:** Butler Carlton Hall - Room 329  
**Phone:** 573-341-7236  
**Email Address:** baur@mst.edu

**Class Hours:** Lec: T 10:00am-10:50am  
**Text:** Principles of Solar Engineering,  
F. Kreith, J. Kreider, D.Y., Goswami  
Heating, Cooling and Lighting  
N. Lechner

**Catalog Description:** This course will treat topics in passive solar analysis and design. It will deal with various types of passive space heating and cooling systems. Both instantaneous and long-term performance will be analyzed. Economics and construction topics will be discussed.

**Catalog Materials:** Notes will be distributed by the instructor at the start of the course and periodically throughout the semester. A selection of books will be kept on reserve in the University library. New information relating to the subject matter will be introduced throughout the course and will be implemented when and where possible.

**Course Objectives:** The purpose of this course is to expose students to the current, state-of-the-art methods for analyzing passive solar methods in buildings. This is a graduate course and a measure of independent initiative is expected along with the usual expectation for the high quality work commensurate with graduate school. Both engineering and economic aspects of solar conversion will be emphasized. To synthesize these disciplines a term project will be required of each student as described below.

**Project:** Each student will be required to complete a project by the end of the semester. The project may be selected from the attached list or devised independently pending prior approval. The project must be approved by the instructor. The final report for each project will be distributed electronically to the rest of the class for future use in their professional careers. Therefore, the topics have been selected with regard to practical utility and to innovative results.

Each report (except the first) must include:

- abstract
- introduction and problem statement
- results to date and project status
- problems encountered and their solutions
- conclusions
- bibliography
- appendices (including, for example, computer programs and output)

The report will outline a description in detail of the final output of the project (the details of the format of this report are covered by a separate handout). An oral presentation of the results will be made near the end of the semester. Copies of the final report will be provided to each member of the class in electronic form along with two paper copies for the instructor. Progress on projects will be discussed periodically in class. The highest quality reports will be submitted for publication in archival journals if the authors so choose.

**Grade Policy:** Grades will be assigned using the following grading scheme:

Homework - 40%  
Case Studies – 40%  
Final Project - 20%

**Grade Basis:** 70 > D > 60, 80 > C > 70, 90 > B > 80, 100 > A > 90

There are no exams in this course. No curve will be used on the grades

## **Project List:**

### **1. *Comparison of Measured vs. Predicted Passive System Performance (1)***

The instructor will give students some ideas for locating a passively heated solar residence in the Rolla area. Discuss with the owner his/her interest in having the system's performance analyzed. If interested, the owner should expect to provide students previous year's of utility bills and a set of plans (some of which you will want to copy and return). Compare the actual utility usage with the predictions of the un-utilizability method or an hourly simulation code (SUNCODE or TRNSYS). Students should try to avoid homes which use a significant amount of wood energy for heat since the efficiency of wood heating is nearly impossible to determine.

### **2. *Decathlon Solar House***

Principles of passive design have and have not been incorporated in the design of the solar decathlon homes and its surrounding conditions. The task in this project is to research three homes (from other schools) developing simulation models based on their designs and location and determining its effectiveness in employing their passive solar designs.

### **3. *Daylighting (1)***

Buildings with large areas of glass are difficult to calculate the benefits in terms of reducing the need for artificial lighting due to improved daylighting. The assignment for this project is to create a simplified method for determining the electricity savings due to daylighting in residences. Assess the suitability of the daylight factor method for this simplified approach (see Solar Design, by Kreider, Hoogendoorn and Kreith, 1990, for an overview in Chapter 10).

### **4. *Passive Cooling (1)***

The technologies that work for passive cooling are much less well understood than those for heating. The assignment for this project is to prepare a summary of this technology in a 10- to 15-page report with a full bibliography of quality publications. Students will want to evaluate all resources and reports on the Internet. A person picking up this report should be able to gain an understanding of the approaches that have been demonstrated to work and those that do not. Case studies and data collected on passively cooled buildings should be included.

### **5. *Sustainable Buildings (2)***

Sustainable building design is aimed at the energy efficient design of building systems and materials. It is required to assemble a complete data base on the assessment techniques to be used for Life Cycle Analysis of Buildings. A preliminary report on some resources for this study has already been assembled. The student's project is aimed at creating a quantitative tool to assess buildings on a Life Cycle Basis and to collect all data needed. The student will select an example residence and do an LCA study on it.

### **6. *Solar Chimney (2)***

One method of enhancing the flow of cooling air through a building in summer is to create a solar heated chimney. This project will not assess the economic but rather will assess the technical feasibility of this concept. The deliverable of the project is a design tool that will require a handful of inputs and will predict the ventilation airflow on a typical sunny summer day. An earlier unsuccessful attempt at this could serve as some background reading.

### **7. *Other Topics***

If a student has a topic that he/she wishes to pursue other than the ones listed above, the student may seek approval of the instructor for any topic requiring the analysis or synthesis of passive solar design principles.

EC # 2462-552013-MKT 301Effective Year: **2013** Effective Term: **Summer** ☒ **Fall** ☐ **Spring** ☐

## Experimental Course Form (EC)

An EC form must be submitted before an experimental course is to be offered. EC forms approved Spring 2009 or later allow the course to be offered twice at any time during the following three year period. After an experimental course has been offered twice, a CC form may be submitted to request a permanent course number.

A new course that is required as part of a degree program, minor, or graduate certificate may be submitted on a CC form to receive a permanent course number.

Co-listed offerings should be submitted on one form, originating from the primary discipline.

Department: **Business and Information Technology**

Discipline and Course Number: **MKT 301**

Course Title: : **Integrated Marketing Communications**

Abbreviated Title (24 spaces or less):

Instructor(s): **Dr. Sarah Stanley**

Credit Hours: **Lecture 3** **Lab 0** **Total 3**

Prerequisites: **At least Junior Standing**

Semester(s) previously taught: **None**

Brief Course Description (360 character spaces or less): **Course illustrates the importance of creating synergy within a marketing campaign. Speaking with 'one voice' allows a brand to make a stronger impact, so students will work with a local non-profit to improve their marketing message at each customer touch point. Students will analyze a marketing plan and work to improve it, including .brochures, donation lets**

List all co-listed courses: Include initials of Department Chair, if signature is not already included below.

1)                      3)                      5)  
2)                      4)                      6)

Recommended by Department: \_\_\_\_\_

(Chair signature)

Date: 3/6/2013

Recommended by DSCC: \_\_\_\_\_

(Chair signature)

Date: 3/7/2013

Approved by Curricula Committee: \_\_\_\_\_

(Chair signature)

Date: \_\_\_\_\_

DC # *0450-2013 - Mech Eng - 000-00*

Effective Year: **2013** Effective Term: Summer ☐ Fall ☒ Spring ☐  
(Creating or modifying a degree program must be effective for a Fall term.)

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

Title of degree program, emphasis area, or minor:

**B.S. in Mechanical Engineering**

Department: **Mechanical & Aerospace Engineering**

Briefly describe action requested (attach documentation as appropriate):

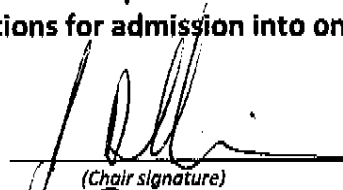
**Add the following footnote j to the ME curriculum, as shown on the attached page. The footnote should be indicated with the following courses in the curriculum (as shown on the attached page):  
Mc Eng 213, 221, 211, 208, 225, 231, 240, 242, 279, 261, 280**

The text of the footnote j is as follows:

**j) Students must be currently admitted to an engineering or science degree program, or receive permission of the MAE department chair, to enroll in this course.**

**The purpose of this modification is to prevent enrollment in these upper level courses by students that have not met the conditions for admission into one of the engineering or science degree programs.**

Recommended by Department:

  
(Chair signature)

Date: 1/12/2013

Recommended by DSCC:

  
(Chair signature)

Date: 1/22/13

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

**Mechanical Engineering — 192**

either Economics 121 or 122. The humanities course must be selected from the approved lists for art, English, foreign languages, music, philosophy, speech and media studies, or theater.

2) Depth requirement. Three credit hours must be taken in humanities or social sciences at the 100 level or above and must be selected from the approved list. This course must have as a prerequisite one of the humanities or social sciences courses already taken. Foreign language courses numbered 70 or 80 will be considered to satisfy this requirement. Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 300 level. All courses taken to satisfy the depth requirement must be taken after graduating from high school.

3) The remaining two courses are to be chosen from the list of approved humanities/social sciences courses and may include one communications course in addition to English 20.

4) Any specific departmental requirements in the general studies area must be satisfied.

5) Special topics and special problems and honors seminars are allowed only by petition to and approval by the student's department chairman.

The Mechanical Engineering program at Missouri S&T is characterized by its focus on the scientific basics of engineering and its innovative application; indeed, the underlying theme of this educational program is the application of the scientific basics to engineering practice through attention to problems and needs of the public. The necessary interrelations among the various topics, the engineering disciplines, and the other professions as they naturally come together in the solution of real world problems are emphasized as research, analysis, synthesis, and design are presented and discussed through classroom and laboratory instruction.

**FREE ELECTIVES FOOTNOTE:**

Free electives. Each student is required to take six hours of free electives in consultation with his/her academic advisor. Credits which do not count towards this requirement are deficiency courses (such as algebra and trigonometry), and extra credits in required courses. Any courses outside of Engineering and Science must be at least three credit hours.

**FRESHMAN YEAR**

First Semester	Credit
FE 10-Study and Careers in Engineering	1
Chem 1-General Chemistry <sup>a</sup>	4
Chem 2-General Chemistry Lab	1
Math 14-Calculus I for Engineers <sup>a,b</sup>	4
Engl 20-Exposition and Argumentation	3
Hist-112, 175, 176, or Pol Sc 90	3
	16
Second Semester	
IDE 20-Intro to Engineering Design	3
Math 15-Calculus II for Engineers <sup>a,b</sup>	4
Physics 23-Engineering Physics I <sup>a</sup>	4
Econ-121 or 122	3
Elective-Hum or Soc Sci <sup>c</sup>	3
	17

**SOPHOMORE YEAR**

First Semester	Credit
Programming Elective <sup>a,c</sup>	3
CE 50-Statics <sup>a</sup>	3
Math 22-Calculus w/Analytic Geometry III <sup>a</sup>	4
Physics 24-Eng Physics II <sup>a</sup>	4
Mc Eng 153-Intro to Manufacturing Processes	3
	17
Second Semester	
Mc Eng 161-Intro to Design	3
Mc Eng 219-Thermodynamics <sup>a</sup>	3
Mc Eng 160-Dynamics <sup>a</sup>	3
Math 204-Elementary Differential Equations <sup>a</sup>	3
Mt Eng 121-Metallurgy for Engineers <sup>a</sup>	3
	15

**JUNIOR YEAR**

First Semester	Credit
Mc Eng 213-Machine Dynamics <sup>a</sup>	3
Mc Eng 221-Applied Thermodynamics <sup>a</sup>	3
El Eng 281-Electrical Circuits	3
CE 110-Mechanics of Materials <sup>a</sup>	3
CE 120-Material Lab	1
Elective-Advanced Math/Stat or Cmp Sc <sup>c</sup>	3
	16
Second Semester	
Mc Eng 211-Modeling and Analysis of Dyn Syst <sup>a</sup>	3
Mc Eng 208-Machine Design I <sup>a</sup>	3
Mc Eng 225-Heat Transfer <sup>a</sup>	3
Mc Eng 231-Thermofluid Mechanics I <sup>a</sup>	3
Mc Eng 240-Mechanical Instrumentation <sup>a</sup>	2
Elective-Communications <sup>d</sup>	3
	17

**SENIOR YEAR**

First Semester	Credit
Mc Eng 242-Mech Engineering Systems <sup>a</sup>	2
Mc Eng 279-Automatic Control of Dynamic Systems <sup>a</sup>	3
Mc Eng technical elective <sup>a</sup>	3
Free Elective <sup>e</sup>	3
Literature elective <sup>f</sup>	3
Elective-Advanced Hum or Soc Sci <sup>f</sup>	3
	17
Second Semester	
Eng Mg 124-Practical Concepts for Tech Managers	1
Eng Mg 137-Economic Analysis of Engr Projects	2
Mc Eng 261-Eng Design <sup>a</sup>	3
Mc Eng 280-Control Systems Lab <sup>a</sup>	1
Mc Eng 3xx technical elective <sup>a</sup>	3
Free Elective <sup>e</sup>	3
	13

**NOTE:** Students must satisfy the common engineering freshman year course requirements, and be admitted into the department, in addition to the sophomore, junior and senior year requirements listed above with a minimum of 128 hours

<sup>a</sup> A grade of "C" or better is required in Chem 1, Math 14, 15, 22, 204, Phys 23, 24, programming elective, Met Eng 121, CE 50, 110, Mc Eng 219, 160, and 211, both as prerequisite for follow-up courses in the curriculum and for graduation.

<sup>b</sup> Math 8 and 21 may be substituted for Math 14 and 15, respectively.

## 193 — Mechanical Engineering

- e) The programming elective consists of a lecture and lab combination, and may be selected from Cmp Sc 73/77, 74/78, or 53/54. Note that Cmp Sc 53/54 requires one more credit hour than the other options.
- f) This course must be selected from the following: English 60, 160 or SP&M S 85, or the complete four course sequence in Advanced ROTC (Mil Sc 105, 106, 207 and 208 or Aerosp S 350,351,380 and 381.)
- g) This course must be selected from the following: Cmp Sc 228, Math 203, 208, Stat 213, 215 or any 300-level math or computer science course approved by the student's advisor.
- h) All electives must be approved by the student's advisor. Students must comply with the general education requirements with respect to selection and depth of study. These requirements are specified in the current catalog.
- i) Electives must be approved by the student's advisor. Six hours of technical electives, which may not include Ae Eng/EMech/Mc Eng 202, 300 or 390, must be in the Department of Mechanical and Aerospace Engineering. At least three of these technical elective hours in the Department must be at the 300 level. Honors students have special requirements for technical electives.
- j) All Mechanical Engineering students must take the Fundamentals of Engineering Examination prior to graduation. A passing grade on this examination is not required to earn a B.S. degree, however, it is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process as described in Assessment Requirements found elsewhere in this catalog. Students must sign a release form giving the University access to their Fundamentals of Engineering Examination score.
- k) Each student is required to take six hours of free electives in consultation with his/her academic advisor. Credits which do not count towards this requirement are deficiency courses (such as algebra and trigonometry), and extra credits in required courses. Any courses outside of Engineering and Science must be at least three credit hours.

### j) Energy Conversion Emphasis Area for Mechanical Engineering

Students desiring to obtain a Bachelor of Science degree in Mechanical Engineering with an Emphasis Area in Energy Conversion must satisfy all the requirements of the Bachelor of Science degree in Mechanical Engineering, with the additional stipulation that four courses must be taken as follows:

- a. Two courses from the following list: Mc Eng/Ae Eng 327, Mc Eng 333, Mc Eng 366, Mc Eng 371, Mc Eng 375, Ae Eng 369, Ae Eng 335.
- b. One course from the following list: Mc Eng/Ae Eng 319, Mc Eng/Ae Eng 325, Mc Eng/Ae Eng 331, Mc Eng/Ae Eng 339

- c. One additional course from either list "a" or list "b", or from the following list: Econ 345, El Eng 352, Env Eng 367, Nu Eng 317

**Note:** By using the free electives and technical electives to satisfy the above requirements, this emphasis area requires the same total number of credit hours as the BSME degree. A change of major form should be submitted to designate the Energy Conversion Emphasis Area

### Manufacturing Processes Emphasis Area for Mechanical Engineering

Students desiring to obtain a Bachelor of Science in Mechanical Engineering with an Emphasis Area in Manufacturing Processes must satisfy all requirements of the Bachelor of Science in Mechanical Engineering with the following modifications:

- a. Mc Eng 253 is required.
- b. One of the Mc Eng technical electives must be from the following Manufacturing/Automation courses: Mc Eng 353, 355, 349, and 306.
- c. One of the Mc Eng technical electives must be from the following Design courses: Mc Eng 363, 308, 356, and 302.
- d. Two courses 1) Mc Eng 357 or Mc Eng 308, and 2) Mc Eng 358 are required in lieu of Mc Eng 261.
- e. The Math/Stat elective must be either Stat 213 or 215.

A suggested sequence for the Junior and Senior years is given below. Note that by using the free electives and technical electives to satisfy the above requirements, this emphasis area requires the same total number of credit hours as the BSME degree. A change of major form should be submitted to designate the Manufacturing Processes Emphasis Area

#### JUNIOR YEAR

First Semester	Credit
Mc Eng 213-Machine Dynamics	3
El Eng 281-Electrical Circuits	3
Mc Eng 221-Applied Thermodynamics	3
CE 110-Mechanics of Materials <sup>a</sup>	3
CE 120-Materials Lab	1
Stat 213-Stat Meth in Eng or Stat 215-Eng Stat	3
	16

#### Second Semester

Mc Eng 211-Modeling and Analysis of Dyn Sys <sup>a</sup>	3
Mc Eng 231-Thermofluid Mechanics	3
Mc Eng 225-Heat Transfer	3
Mc Eng 240-Mechanical Instrumentation	2
Mc Eng 253-Manufacturing	3
Elective-Communications <sup>d</sup>	3
	17

#### SENIOR YEAR

First Semester	Credit
Mc Eng 242-Mech Eng Systems	2
Mc Eng 279-Auto Control of Dynamic Systems	3
Mc Eng 208-Machine Design I	3
Mc Eng 357-Integrated Prod & Proc Design	3
or Mc Eng 308-Rapid Product Design	



DC # 0451-2013-Aero Eng -000-00

Effective Year: 2013 Effective Term: Summer ☐ Fall ☒ Spring ☐  
(Creating or modifying a degree program must be effective for a Fall term.)

## Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

Title of degree program, emphasis area, or minor:

**B.S. in Aerospace Engineering**

Department: **Mechanical & Aerospace Engineering**

Briefly describe action requested (attach documentation as appropriate):

**Add the following footnote 13 to the AE curriculum, as shown on the attached page. The footnote should be indicated with the following courses in the curriculum (as shown on the attached page): Ae Eng 213, 231, 377, 251, 261, 271, 282, 235, 253, 280 or 380, 283, 281 or 382**

The text of the footnote 13 is as follows:

**13) Students must be currently admitted to an engineering or science degree program, or receive permission of the MAE department chair, to enroll in this course.**

The purpose of this modification is to prevent enrollment in these upper level courses by students that have not met the conditions for admission into one of the engineering or science degree programs.

Recommended by Department: \_\_\_\_\_ Date: 1/12/2013  
(Chair signature)

Recommended by DSCC: \_\_\_\_\_ Date: 1/22/2013  
(Chair signature)

Approved by Curricula Committee: \_\_\_\_\_ Date: \_\_\_\_\_  
(Chair signature)

Approved by Faculty Senate: \_\_\_\_\_ Date: \_\_\_\_\_  
(Chair signature)

**Aerospace Engineering — 55**

English 20	3
Math 14 <sup>4</sup>	4
H/SS History elective <sup>2</sup>	3
	17

**Second Semester**

IDE 20	3
Math 15 <sup>4</sup>	4
Physics 23 <sup>4</sup>	4
H/SS Economics elective <sup>3</sup>	3
	14

**SOPHOMORE YEAR****First Semester**

Cmp Sc 73 or 74-Basic Sci Prog <sup>11</sup>	2
Cmp Sc 77 or 78-Comp Prog Lab <sup>11</sup>	1
CE 50 or 51-Statics <sup>4</sup>	3
Math 22-Calc/Analy Geom III <sup>4</sup>	4
Physics 24-Eng Physics II <sup>4</sup>	4
Ae Eng 161-Aero Vehicle Performance	3
	17

**Second Semester**

Ae Eng 180-Intro to Aerospace Design	2
Ae Eng 160-Eng Mech-Dyn <sup>5</sup>	3
Mc Eng 219-Thermodynamics <sup>4,5</sup>	3
Math 204-Elem Diff Equations <sup>4</sup>	3
CE 110-Mech of Materials <sup>4</sup>	3
Elective/Literature	3
	17

**JUNIOR YEAR****First Semester**

Ae Eng 213-Aerospace Mech I <sup>4,13</sup>	3
Ae Eng 231-Aerodynamics I <sup>4,5,13</sup>	3
Ae Eng 377-Princ of Eng Materials <sup>13</sup>	3
El Eng 281-Electrical Circuits	3
Electives-Advanced Math/Cmp Sc <sup>6</sup>	3
	15

**Second Semester**

Ae Eng 251-Aerospace Structures I <sup>4,13</sup>	3
Ae Eng 261-Flight Dynamics and Control <sup>13</sup>	3
Ae Eng 271-Aerodynamics II <sup>13</sup>	3
Ae Eng 282-Exp Methods in Ae Eng I <sup>13</sup>	2
Elective/Ethics <sup>12</sup>	3
Elective/Communications <sup>8</sup>	3
	17

**SENIOR YEAR****First Semester**

Ae Eng 235-Aircraft & Space Vehicle Propulsion	3
Ae Eng 253-Aerospace Structures II <sup>13</sup>	3
Ae Eng 280 or 380-Aero Sys Design I <sup>13</sup>	2
Ae Eng 283-Experimental Methods in Ae Eng II <sup>13</sup>	2
Electives-Technical <sup>7</sup>	3
Electives/Hum/Soc Sci <sup>9</sup>	3
	16

**Second Semester**

Ae Eng 281 or 382-Aero Sys Design II <sup>13</sup>	3
Electives-Technical <sup>7</sup>	3
Electives-Technical <sup>7</sup>	3
Electives Free <sup>10</sup>	3
Electives-Hum/Soc Sci <sup>9</sup>	3
	15

**List of Notes:**

- <sup>1)</sup> Chemistry 1, 2 and 4 or an equivalent training program approved by Missouri S&T
- <sup>2)</sup> Must be one of the following: Political Science 90, History 112, History 175, or History 176.
- <sup>3)</sup> Must be one of the following: Economics 121 or Economics 122.
- <sup>4)</sup> A grade of "C" or better in Chem 1, Math 14, 15, 22, 204, Physics 23, 24 CE 50, 110 and Computer programming is required both for enrollment in ME 219, AE 213, AE 231, or AE 251 and for graduation.
- <sup>5)</sup> A grade of "C" or better in AE Eng 160 and ME 219 is required both for enrollment in any courses which require either AE Eng 160 or ME 219 as prerequisites and for graduation.
- <sup>6)</sup> Must be one of the following: Comp Sc 228, Math 203, Math 208, or any 300-level math or computer science course approved by the student's advisor.
- <sup>7)</sup> Electives must be approved by the student's advisor. Nine hours of technical electives must be in Mechanical and Aerospace Engineering. Three hours of departmental technical electives must be at the 300-level. Honors students have special requirements for technical electives.
- <sup>8)</sup> This course can be selected from English 60, 160, SP&MS 85, or the complete four-course sequence in Advanced ROTC (Mil Sc 105, 106, 207, and 208 or Aerospace Studies 350, 351, 380, and 381).
- <sup>9)</sup> All electives must be approved by the student's advisor. Students must comply with the requirements specified in the current catalog.
- <sup>10)</sup> Each student is required to take six hours of free electives in consultation with his/her academic advisor. Credits which do not count towards this requirement are deficiency courses (such as algebra and trigonometry), and extra credits in required courses. Any courses outside of engineering and science must be at least three credit hours.
- <sup>11)</sup> Computer Science requirement can be satisfied by taking CS 53 and CS 54.
- <sup>12)</sup> Must be a course on engineering ethics, business ethics, social ethics, or any ethics course approved by the student's advisor.

**NOTE:** All Aerospace Engineering students must take the departmental Exit Exam prior to graduation.

Insert footnote 13 here.

**Requirements for a Minor in Aerospace Engineering**

A student who receives a bachelor of science degree in an accredited engineering program from Missouri S&T may receive a minor in aerospace engineering by completing the 15 hours of courses listed below.

Effective Year: 2013

Term: Summer ☐ Fall ☒ Spring ☐CC File # 8307-2012-ExpEng-  
411-10**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☒Course Deletion ☐Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☒**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)1. **Department:** Mining and Nuclear Engineering2. **Discipline and Course Number:** Present :

Proposed: Exp Eng 411

3. **Course Title:** Present:

Proposed: Research Methods

**Abbreviated Course Title:**

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description** (300 Character Spaces or Less.)

Present: Mining 411

**Proposed:** Foundations, dimensions, and methods for designing and investigating research problems. Focus on fundamental and applied research, research methods, literature review, experimental design and experimentation, dissertation composition, concepts of originality and intellectual property.

5. If course requires field trip check box: ☐6. **Credit Hours:**

Present:

Lecture:

Lab:

Total:

Proposed:

Lecture: 3

Lab: 0

Total: 3

7. **Prerequisites:**

Present:

Proposed: Graduate Standing

8. **Required for Majors:** ☐**Elective for Majors:** ☒

9. **Justification:** We would like to co-list with Mining 411 research methods. It has become apparent that the masters of explosives engineering by research students need to take the class and we will be also including this for our PhD in explosives engineering in application as a required class. Dr. Baird (mining and explosives) has currently reworked min 411 and will teach onsite and distance.

10. **Semesters**

previously offered as an experimental course (101, 201, 301, 401):

11. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**1) Mining 411 *sf* 2)

3)

4)

5)

6)

Recommended by Department

(Chair signature)

Recommended by Discipline Specific Curricula Committee

(Chair signature)

Approved by Curricula Committee:

(Chair signature)

Approved by Faculty Senate:

(Chair signature)

Date:

10/22/12

Date:

10/29/12

Date:

Date:

## **Graduate Certificate and Master of Engineering in Mining Engineering**

Department of Mining and Nuclear Engineering  
Missouri University of Science and Technology (Missouri S&T)

**Main Purpose:** To provide basic and advanced knowledge in mining engineering to practicing engineers, geologists, geophysicists and other physical science specialists. Engineers who have completed the basic foundational courses in science, math and engineering may be admitted with fewer pre-requisite courses. Geologists, geophysicists and other physical scientists may take several pre-requisite requirements to provide the required fundamental knowledge for the graduate programs.

**Admissions Requirements:** The Master of Engineering (ME) program requires that a candidate possesses the bachelor's degree in engineering, geology, geophysics or physical science. To be considered as a regular graduate student, the student must earn a cumulative GPA  $\geq 3.00/4.00$  or a GPA  $\geq 3.00/4.00$  for the last 60 credit hours of the undergraduate course work. A student with a cumulative GPA  $\geq 2.75/4.00$  but less than  $3.00/4.00$  or a GPA  $\geq 2.75/4.00$  for the last 60 credit hours of the undergraduate course work may be admitted as a probationary graduate student. Admission requirements also include a GRE- Q score  $\geq 148$  (600 based on previous scale) and GRE-AW score  $\geq 3.5$ . Candidates may choose to enter through the Graduate Certificate (CT) Program first, which does not have GRE requirements. International applicants are required to complete the TOEFL Examination with a score of at least 550, in addition to the GRE requirements.

### **Graduate Certificate (CT) In Mining Engineering**

The CT program consists of 15 credit hours (equivalent to 5 core courses).

**Core Courses:** Candidates with B.S. Degrees in Mining Engineering will complete the following 5 core courses as part of the program:

- Mi Eng 418 Mine Atmosphere Control II
- Mi Eng 424 Underground Mine Design
- Mi Eng 426 Surface Mine Design
- Mi Eng 432 Rock Mechanics II
- Mi Eng 476 Sustainability In Mining

**Core Courses:** Candidates with B.S. degrees in fields other than Mining Engineering will complete the following 5 core courses as part of the program.

- Mi Eng 318 Mine Atmosphere Control
- Mi Eng 324 Underground Mining Methods and Equipment
- Mi Eng 326 Surface Mining Methods and Equipment
- Mi Eng 331 Rock Mechanics
- Mi Eng 376 Environmental Aspects of Mining

**Transfer of CT Graduates into ME Program:** Graduate students who complete the certificate program with a grade of B or better in all core courses may be accepted into the ME degree program without the GRE requirements.

## **Master of Engineering (ME) in Mining Engineering**

**Core Courses:** The ME program consists of 30 credit hours (equivalent to 5 core courses, 4 technical electives, and 1 design project).

**Core Courses:** Candidates with B.S. Degrees in Mining Engineering will complete the following 5 core courses as part of the program.

- Mi Eng 418 Mine Atmosphere Control II
- Mi Eng 424 Underground Mine Design
- Mi Eng 426 Surface Mine Design
- Mi Eng 432 Rock Mechanics II
- Mi Eng 476 Sustainability In Mining

**Core Courses:** Candidates with B.S. degrees in fields other than Mining Engineering will complete the following 5 core courses as part of the program.

- Mi Eng 318 Mine Atmosphere Control
- Mi Eng 324 Underground Mining Methods and Equipment
- Mi Eng 326 Surface Mining Methods and Equipment
- Mi Eng 331 Rock Mechanics
- Mi Eng 376 Environmental Aspects of Mining

**Technical Electives:** The 4 technical electives for the ME program may be selected from the courses listed below based on availability:

- Mi Eng 301 DPM Control
- Mi Eng 301 Money Engineering
- Mi Eng 304 Advanced Aggregate & Quarrying
- Mi Eng 307 Principles of Explosives Engineering
- Mi Eng 311 Mine Plant Management
- Mi Eng 315 Mine Health and Safety Design
- Mi Eng 317 Mine Power and Drainage
- Mi Eng 343 Coal Mine Development and Production
- Mi Eng 350 Blasting Design and Technology
- Mi Eng 383 Tunneling and Underground Construction
- Mi Eng 402 Environmental Control for Blasting
- Mi Eng 403 Optimization Applications in Mining
- Mi Eng 407 Theory of High Explosives
- Mi Eng 408 Belt Conveying in Mines and Quarries (Pending Approval)
- Mi Eng 409 Mining Property Feasibility Studies and Evaluation
- Mi Eng 412 Mine Management II
- Mi Eng 415 Advanced Mine Health and Safety Design
- Mi Eng 420 Truck Haulage Engineering and Haul Road Efficiency (Pending Approval)

A student from a discipline other than mining engineering may have to complete deficiency courses. These deficiency courses include structural geology, statics and dynamics, fluid mechanics, general chemistry, engineering mathematics and physics depending on the

academic background of the candidate. These courses may apply on a case by case basis upon thorough evaluation of academic transcripts. These deficiency courses can be completed at any community college or university and transferred to Missouri S&T upon completion.

***Program Duration:*** The graduate programs have period limitations of up to 6 years for the ME program and 3 years for the CT program. Students can take the program courses at their own pace as their work schedules may allow but the courses expire after exceeding the limiting periods.

***Program Delivery:*** The normal delivery mechanism for these programs is through the distance channel. However, students can complete these programs on a full-time basis to experience the face-to-face delivery process on campus.

***Distance Programs Contacts:*** Further information on distance programming activities can be obtained from the following contacts:

Dr. Nassib Aouad  
Assistant Teaching Professor of Mining Engineering  
Director of Distance Programs  
336 McNutt Hall  
Missouri University of Science and Technology  
Phone: (573) 341-6986  
Fax: (573) 341-6934  
Email: [narzfi@mst.edu](mailto:narzfi@mst.edu)

Ms. Judy Russell  
Administrative Assistant  
230 McNutt Hall  
Missouri University of Science and Technology  
Rolla, MO 65409-0450  
Phone: (573) 341-7652  
Fax: (573) 341-6934  
Email: [jrussell@mst.edu](mailto:jrussell@mst.edu)

(Reference 2012-2014 Online Graduate Catalog)

Effective Year: 2013

Term: Summer ☐ Fall ☒ Spring ☐CC File # 8425-2012-Min Eng  
476-10**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☒Course Deletion ☐Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)1. **Department:** Mining and Nuclear Engineering2. **Discipline and Course Number:** Present :

Proposed: Mi Eng 476

3. **Course Title:** Present:

Proposed: Sustainability In Mining

Abbreviated Course Title: Sustainability In Mining

(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description** (300 Character Spaces or Less.)

Present:

Proposed: Sustainability defined: social, economic &amp; environmental impacts. Mining as sustainable development interventions. Mine planning for sustainability, sustainability assessment &amp; reporting, sustainable mine closure &amp; post-mining land use. Case studies.

5. If course requires field trip check box: ☐6. **Credit Hours:**

Present:

Lecture:

Lab:

Total:

Proposed:

Lecture: 3

Lab: 0

Total: 3

7. **Prerequisites:**

Present:

Proposed: Mi Eng 376 or instructor consent.

8. **Required for Majors:** ☒**Elective for Majors:** ☐9. **Justification:** This course is a core requirement of the Master of Engineering degree program in Mining Engineering.10. **Semesters previously offered as an experimental course (101, 201, 301, 401):**11. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**

1)

2)

3)

4)

5)

6)

Recommended by Department

(Chair signature)

Date: 11-14-12

Recommended by Discipline Specific Curricula Committee

(Chair signature)

Date: 12-19-12

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_

Effective Year: 2013

Term: Summer ☐ Fall ☒ Spring ☐CC File # 8426-2012-Min Eng  
424-10**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☒Course Deletion ☐Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Mining and Nuclear Engineering

2. Discipline and Course Number: Present :

Proposed: Mi Eng 424

3. Course Title: Present:

Proposed: Underground Mine Design

Abbreviated Course Title: ~~Und-Mine Des~~ *Underground Mine Design*  
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (300 Character Spaces or Less.)

Present:

Proposed: This course will focus on the determinants of underground mine design, geomechanical mine design for underground mining; mine optimization; mine environmental systems; and underground mine design and optimization.

5. If course requires field trip check box: ☐

6. Credit Hours:	Present:	Lecture:	Lab:	Total:
	Proposed:	Lecture: 3	Lab: 0	Total: 3

7. Prerequisites:

Present:

Proposed: Mi Eng 324 or Equivalent

8. Required for Majors: ☒ Elective for Majors: ☐

9. Justification: This course is a core requirement of the Master of Engineering degree program in Mining Engineering.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1) 2) 3)

4) 5)

Recommended by Department

(Chair signature)

Date: 11-14-12

Recommended by Discipline Specific Curricula Committee

(Chair signature)

Date: 12-19-12

Approved by Curricula Committee:

(Chair signature)

Date: \_\_\_\_\_

Approved by Faculty Senate:

(Chair signature)

Date: \_\_\_\_\_



Effective Year: 2013

Term: Summer ☐ Fall ☒ Spring ☐CC File # 8427-2012-Min Eng  
426-10**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)New Course ☒Course Deletion ☐Credit Hours ☐Prerequisites ☐Course Title ☐Catalog Description ☐Course Number ☐Co-listing ☐**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Mining and Nuclear Engineering

2. Discipline and Course Number: Present :

Proposed: Mi Eng 426

3. Course Title: Present:

Proposed: Surface Mine Design

Abbreviated Course Title: ~~Surf Mine Des~~ *Surface Mine Design*  
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (300 Character Spaces or Less.)

Present:

Proposed: This course will focus on the determinants of surface mine design, geomechanical and geometrical mine design for open pit and strip mining; mine layouts optimization; mine environmental systems; and research directions in surface mine design and optimization.

5. If course requires field trip check box: ☐

6. Credit Hours:

Present:

Lecture:

Lab:

Total:

Proposed:

Lecture: 3

Lab: 0

Total: 3

7. Prerequisites:

Present:

Proposed: Mi Eng 326 or Equivalent

8. Required for Majors: ☒ Elective for Majors: ☐

9. Justification: This course is a core requirement of the Master of Engineering degree program in Mining Engineering.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

1)

2)

3)

4)

5)

6)

Recommended by Department

(Chair signature)

Recommended by Discipline Specific Curricula Committee

(Chair signature)

Approved by Curricula Committee:

(Chair signature)

Approved by Faculty Senate:

(Chair signature)

Date: 11-14-12

Date: 12-14-12

Date: \_\_\_\_\_

Date: \_\_\_\_\_

(Revised 1/29/09)