

Formerly University of Missouri-Rolla

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.



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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.



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- 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.



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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.



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- 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.



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#### **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.

From: 573 341 4362 Page: 1/24 Date: 3/8/2013 6:01:23 PM

Effective Year: FS2013 Effective Term: Summer  Fall (Creating or modifying a degree program mu	DC #0454-2013-EE-
(Creating of Modifying a degree brogram me	13t be ellective for a fair 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:

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.

Date: 1/29/1
Date: <u>&amp;2_/19/1</u> 3
Date:
Date:

From: 573 341 4362 Page: 2/24 Date: 3/8/2013 6:01:24 PM

Effective Year: FS2013 Effective Term: Summer ☐ Fall ☒ Spring ☐ (Creating or modifying a degree program must be effective for a F	<b>DC #</b> 0455-2013-EE-000-00 Fall term)
Degree Change Fo	orm (DC)
This form is to be used for creating or modifying degree pr	ograms, emphasis areas, and minors.
Title of degree program, emphasis area, or minor: Electrical Engineering B.S. Program (General & all 7 Empha	sis Areas)
Department: Electrical & Computer Engineering	
Briefly describe action requested (Attach documentate Update the degree footnotes. The El Eng 217 and El Eng 217 These courses may be taken with just El Eng 153 and Mathand passing the El Eng Advancement Exam II. Approved at .	18 prerequisites have been changed. n 204 each with a grade of "C" or better
The El Eng footnote (9) from the the catalog will be modifie Students must earn a passing grade in the El Eng Advancer 153) before they enroll in El Eng 205, 207, 208, 209, 215, 3 other courses with El Eng 153 as a prerequisite.	nent Exam II (associated with El Eng
The recommended degree progression in the catalog should Eng 218. Also, El Eng 217 and El Eng 218 should appear in Eng 215 and El Eng 216 should appear in the Second Seme	the First Semester Junior year and El
Recommended by Department: Chair signatu	<u>l</u> Date: <u>\(\lambda\ellambda\</u>
Recommended by:  Discipline Specific Curricula Committee (Chair signatu	Date: <u>의거인</u> )
Approved by Curricula Committee:(Chair signatu	Date:
Approved by Faculty Senate:(Chair signatu	Date:

01/29/13

(Revised 1/31/2008)

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Effective Year: FS2013  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: 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. decree for free electives.
Recommended by Department: Chair signature)  Date: Leli3
Recommended by: Date: 02/19/13  Discipline Specific Curricula Committee (Chair signature)
Approved by Curricula Committee: Date:

(Revised 1/31/2008)

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

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Approved by Faculty Senate:

(Chair signature)

From: 573 341 4362 Page: 4/24 Date: 3/8/2013 6:01:24 PM

DC # 0466 - 2013 - MS&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:	Hull Date: 2/6/13
Recommended by DSCC: (Chair signature	Date: 62/19/2
Approved by Curricula Committee: (Chair signature	Date:
Approved by Faculty Senate:	Date:

From: 573 341 4362 Page: 5/24 Date: 3/8/2013 6:01:25 PM

Effective Year: 2013  Effective Term: Summer  Fall  Spring  (Creating or modifying a degree program must be effective for a Fall term)	7-2013-13ych- 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 appropri	ate):
The department is requesting that the following course be added to our list of the department degrees.	of Capstone courses for
Psych 377 – Psychology in Media	
Recommended by Department: Amy Some (Chair signature)	Date: <u>2/8/</u> /3
Recommended by:  Discipline Specific Curricula Committee (Chair signature)	Date: 2/19/20/3
Approved by Curricula Committee:(Chair signature)	Date:
Approved by Faculty Senate: (Chair signature)	Date:

(Revised 9/12/2011)

From: 573 341 4362 Page: 6/24 Date: 3/8/2013 6:01:25 PM

Effective Year: 2013  Effective Term: Summer  Fall  Spring  (Creating or modifying a degree program must be effective for a Fall to	<b>DC</b> # 04682013-63	syck- cco-cc
Degree Change For	m (DC)	

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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: Nource Structure)	Date: $\frac{2/8}{13}$
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:

(Revised 9/12/2011)

From: 573 341 4362 Page: 1/2 Date: 3/11/2013 2:58:45 PM

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: 3-/- /3 Recommended by DSCC:

(Chair signature)

(Chair signature)

Approved by Curricula Committee:

Approved by Faculty Senate: \_

Date:

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

From: 573 341 4362 Page: 2/2 Date: 3/11/2013 2:58:45 PM

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 elect faculty of the Civil Engineering Department. CE 320 CE 351 CE 356 CE 364 CE 374 CE 375 CE 384	tives (TE) by the
Recommended by Department:  (Chair signature)  (Chair signature)  (Chair signature)	Date: 3-/- 13
Approved by Curricula Committee:	Date:
Approved by Faculty Senate:(Chair signature)	Date:

From: 573 341 4362 Page: 7/24 Date: 3/8/2013 6:01:25 PM

Effective Year: 2013  Effective Term: Summer ☐ Fall ☑ 5 (Creating or modifying a degree program mus	Spring 🗌	71-2013-TST-000-00
Degree C	hange Form (DC	<b>:</b> )
This form is to be used for creating or	modifying degree programs, empha	sis areas, and minors.
<b>Title of degree program, emphasis ar</b> Information Science and Technology B.S.	<b>ea, or minor:</b> , Minor in Digital Supply Chain M	lanagement
Department: Business and Information The Minor in Digital Supply Chain Manage 1) One of the following courses: BUS 360 Business Operations ME 253 Manufacturing 2) ERP 347 Supply Chain Management S 3) One of the following courses: ERP 342 Customer Relationship Manamed 360 / AE 360 Probabilistic Enginee 4) Two of the following courses*: ERP 345 Use of Business Intelligence ERP 346 Enterprise Resource Planning ME 368 Rapid Product Design and Opt ME 356 Design for Manufacture ME 357 / EMgt 354 Integrated Product ME 363 Principles and Practice of Com	ement requires 15 hours of cours systems in an ERP Environment gement ering Design g Systems Design and Implement timization t and Process Design aputer Aided Design	tation
<ul> <li>Non Business &amp; Information Technology electives.</li> </ul>	r students must select ERF 340 a	s one of the two
Briefly describe action requested (At	tach documentation as appro	priate):
Approve creation of this Minor. See attac	thed document.	
Recommended by Department:	(Chair signature)	
Recommended by:  Discipline Specific Curricula Committee	(Chair signature)	
Approved by Curricula Committee:	(Chair signature)	Date:
Approved by Faculty Senate:	(Chair signature)	Date:

02/19/13 (Revised 9/12/2011)

From: 573 341 4362 Page: 8/24 Date: 3/8/2013 6:01:26 PM

Date: ユーンローマッ/3

Concurrence by Program: (Manufacturing Engineering)

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)

From: 573 341 4362 Page: 1/4 Date: 3/11/2013 3:00:44 PM

Effective Year: 2013 DC # 0472-2013-MfgE Effective Term: Summer  Fall x Spring (Creating or modifying a degree program must be effective for a Fall term)	ing-000 <b>-</b> 00
Degree Change Form (DC)	
This form is to be used for creating or modifying degree programs, emphasis a	areas, and minors.
Title of degree program, emphasis area, or minor: Master of SCIENCE in Manufacturing Engineering	
Department: Manufacturing Engineering Program	
For Manufacturing Engineering Master of SCIENCE: (to Change thesis credits for "6 to 9 credit hours")  Current: This MS MfgE program requires 30 credit hours with a 6-hour thesis: 12 credit Manufacturing Core Curriculum (3 credit-hour core course from each area); 6 credit hours manufacturing Core Curriculum (3 credit-hour core course from each area); 6 credit hours manufacturing courses in material that is a credit hours for thesis research, and 3 credit hours with a 6 to 9 credit hour thesis Manufacturing Core Curriculum (3 credit-hour core course from each area); 6 credit hours manufacturing**; 3 credit hours of any suggested manufacturing courses** OR approved Science**; 6 to 9 credit hours for thesis research, and 3 to 6 credit hours of graduate courses.	thours from the sof 400 level courses in Mathematics/Computer anufacturing.**  1: 12 credit hours from the sof 400 level courses in Mathematics/Computer
Recommended by Department: (Chair signature)	Date: <u>Feb.20, 2013</u>
Recommended by:	Date: <u>3-//-/</u> 3
Approved by Curricula Committee:(Chair signature)	Date:
Approved by Faculty Senate:(Chair signature)	Date:

02/22/13 (Revised 9/12/2011)

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.)

Date: 3/11/2013 3:00:44 PM

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Approved by Faculty Senate: \_\_

# Degree Change Form (DC)

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

(Chair signature)

Date:

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#### 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, <del>308,</del> 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
Mc Eng 279-Auto Control of Dynamic Systems3
Mc Eng 208-Machine Design I
Mc Eng 357 or Mc Eng 308
Mc Eng Technical Elective f
Manufacturing Technical Elective <sup>f</sup> 3
Manufacturing Technical Elective <sup>f</sup> 3
Elective Literature
17
Second Semester
Eng Mg 124-Principles of Engineering Management 3
Eng Mg 137-Economic Analysis of Engr Projects 2
Mc-Eng 358 - Integrated Product Dev
Mc Eng 261 – Engineering Design3
Mc Eng 280-Control System Lab1
Mc Eng Technical Elective
Manufacturing Technical Elective <sup>f</sup>
Electives-Hum or Soc Sci
13

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Date: 3/11/2013 3:00:45 PM

## 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

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Effective Year: F Effective Term: So		Ing 🗆	CC File # $\sqrt{3}$	370-2013-GE	202-31
	Course C	hange Fo	rm (C	C)	
	This form is for crea				
<u>Course Change</u>	(Check all changes.)				
New Course 🗌	Course Deletion 🗌	Credit Hou		Prerequisites (	×
Course Title 🔲	Catalog Description $oxtimes$	Course Nu	<del>-</del>	Co-listing 🗌	
<u>Course Informa</u>	<b>ation</b> (1-9 Must Be Complet	ed. Leave "Propose	d" items blank	if no change is b	eing made.)
1. Department:	Electrical & Computer Engir	neering			
2. Discipline and	Course Number: Prese	nt: Cp Eng 202	Propos	ed:	
3. Course Title:	Present: Cooperative Eng	ineering Training			
1	Proposed:				
Abbreviated C	Course Title: (24 Spaces or Less. Only notion (40 Words or Less)	eeded for New Co	urses or Title	Changes.)	
	the-job experience gained	through cooperati	ve education	with industry v	vith credit
arra	the-job experience gamed in enged through departmenta orts submitted and work su	il cooperative advi	sor. Grade re	eceived depends	on quality of
arra repo	the-job experience gained in Inged through departmenta Orts submitted and work su lied to the B.S. degree. Pas	il cooperative advi pervisor's evaluat	sor. Grade re ion. Not more	eceived depends	on quality of
5. If course requir	es field trip check box: 🗌				
6. Credit Hours:	Present:	Lecture: 0-6	Lab:	Total: 0-6	
7. Prerequisites: Present: <sub>N</sub>	Proposed: one listed	Lecture: 1	Lab: <i>O</i>	Total: 1	
Proposed: C	Consent of the ECE Departm	nent required.			
3. Required for Ma	ijors: 🗌 💢 Elective for Ma	ajors: 🛚			
	Note Credit is IND. Modification to Undergradu Revision of departmental r	uate Cp Eng Requi equirements for c	rements per oop credit. Ad	ECE Faculty 1/2 ccompanying DO	4/2013. C form.
-	eviously offered as an expe ed courses, initialed by Dep				
L)	2)		3)		
1)	5)		6)		
Recommended by	Department 24	Chair signature)	<u> </u>	Date	: 1/28/13
Recommended by	Discipline Specific Curricula	0.	nakapi	1 Date	: 62/19/13
Approved by Curri	cula Committee:	Chair signature)		Date	::
Approved by Facul	ty Senate:(	Chair signature)		Date	::

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					ing permanent		
<u>Course Cha</u>	inges (	Check all cha	nges.)		_		_
New Course [		ourse Delet	tion 🔲	•	tours 🛛	Prerequi	
Course Title [		atalog Desc	•		Number 🗌	Co-listing	- <del>-</del>
<u>Course Info</u>	<u>ormatio</u>	<b>n</b> (1-9 Must	: Be Complete	ed. Leave "Pro	posed" items bla	ink if no chan	ge is being made.)
ι. Departme	e <b>nt:</b> Elect	rical & Com	puter Engin	eering			
2. Discipline	and Cou	ırse Numb	er: Prese	nt : EE 202	Prop	osed:	
3. Course Title	e: Pres	ent: Coop	erative Engi	ineering Train	ing		
	Prop	osed:					
Abbreviat 4. Catalog De	(24 :	Spaces or Lo	ess. Only ne	eded for New	Courses or Tit	tle Changes.	)
r. Catalog De Present:				hrough coone	rative education	on with indu	stry, with credit
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	arrange	d through d	epartmenta	l cooperative pervisors eval	advisor. Grade	received de	pends on quality of
<b>Proposed:</b> 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 re	equires fi	eld trip che	ck box: 🗌	•			
5. Credit Hou	rs:	Present	t:	Lecture: 0-6	Lab:	Total: 0-	6
		Propos	ed:	Lecture: 1	Lab: O	Total: 1	
7. Prerequisit Present:		listed					
Proposed	d: Conse	ent of the E	CE Departm	ent required.			
8. Required fo	or Majors	: 🗋 Ele	ective for Ma	ajors: 🛚			
9. Justificatio	Mod	e Credit is I lification to epartmenta	Undergradu	ate EE Requir nts for coop c	rements per EC rredit. Accompa	CE Faculty 1/ anying DC fo	/24/2013. Revision orm.
	-				se (101, 201, 3 nature does no		ow.
1)			Z)	•	3)		
4)			5)		6)		
<del>-</del> ,			01.1	) C	0		1/20/12
Recommende			•	Chair signature)			Date: <u>\(\lambda \lambda \lamb</u>
Recommende	ed by Disc	ipline Speci	ific Curricula (	Committee : Chair signature)	-74 h / C C C C	1	•
Approved by	Curricula	Committee	:(	Chair signature)	<u> </u>		Date:
Approved by	Faculty S	enate:	(	Chair signature)	11. 12.1		Date:

From: 573 341 4362 Page: 11/24 Date: 3/8/2013 6:01:27 PM

Effective Yea Effective Term		] Fall⊠ Տլ	oring 🗆	CC File #	8372-2013- E	E 205-32
		Course	Change F	Form (C	CC)	
			ating or modifying	g permanent	courses.	
<u>Course Char</u>				_	_	-
New Course 🗌	-	se Deletion 🗀 🔃	Credit Ho		Prerequisites	
Course Title 🗌		og Description $\Box$	•	lumber 🗌	Co-listing 🗌	
<u>Course Info</u>	rmation (	1-9 Must Be Compl	eted. Leave "Propo	sed" items bla	nk if no change is	being made.)
1. Departme	<b>nt:</b> Electrica	l & Computer Eng	gineering			
2. Discipline a	and Course	Number: Pre	sent : El Eng 205	Propo	osed:	
3. Course Title	: Present:	Electromechan	ics			
	Propose	i:				
		es or Less. Only	needed for New (	Courses or Tit	le Changes.)	
4. Catalog Des	-			atatina maga	otic fields, stepp	ar motors DC
Present:	Magnetics at machines, ir	nd magnetically o iduction machine	oupled circuits, r s, synchronous n	nachines, and	brushless DC m	achines.
Proposed:						
5. If course re 6. Credit Hours	_	trip check box:	Lecture: 3	Lab: <i>O</i> Lab:	Total: 3 Total:	
7. Prerequisite	es:	Proposed:	Lecture:	Lau:	i Ocai.	
Present:	Physics 2	4 with a grade of rade on the El Er	"C" or better, El ng Advancement l	Eng 153 with Exam II. El En	a grade of "C" o g 208 is a corec	r better, <sub>l</sub> uisite.
Proposed			"C" or better; El ng Advancement I		a grade of "C" of	or better;
8. Required for	r Majors: 🔲	Elective for	Majors: 🖾 🕆			
9. Justification	i: The labo	oratory is no long	er a corequisite f	or the lecture		
	-		perimental course ept. Chair, if signa			
4)		5)		6) 1.		looks
Recommended	i by Departn	nent	(Chair signature)		Dat	te; <u>\le ((3</u>
Recommended	l by Disciplin	e Specific Curric	ula Committee (Chair signature)	SUNSP	Vife Da	te: <u>*2/19/13</u>
Approved by C	Curricula Con	nmittee:	(Chair signature)		Dat	te:
Approved by F	aculty Senat	e:	(Chair signature)	· · · · · · · · · · · · · · · · · · ·	Da	te:
						(Pavicad 1/31/0)

From: 573 341 4362 Page: 12/24 Date: 3/8/2013 6:01:27 PM

Effective Yea	_	all 🛛 Spring 🛭	<u> </u>	CC File #83	73-2013-EE2 <b>0</b> 7-32
	This for	urse Cha m is for creating o			
New Course Course Title Course Info	Catalog Dec prmation (1-9 Mu	etion     scription     st Be Completed.   L		nber 🗔	Prerequisites 🛭 Co-listing 🔲 if no change is being made.)
•	nt: Electrical & Cor				
_	and Course Num			Propose -	eq:
3. Course Title	e: Present: Pow Proposed:	ver System Desigi	n and Analysis	5	
	ed Course Title: (24 Spaces or scription (40 Words				Changes.) e balanced power system
	theory, analysis ar	nd design includin	ng economic a	ind reliability (	considerations, and fault er flow program is included.
Proposed:					
5. If course re 6. Credit Hour		nt: Lect	:ure: 3.		Total: 3
7. Prerequisit Present:		a grade of "C" or			Total: on the El Eng Advancement
Proposed	El Eng 153 with Exam II.	a grade of "C" or	r better; pass	ing grade on t	the El Eng Advancement
8. Required fo 9. Justification	- ·	l <b>ective for Majors</b> / is no longer a co		the lecture.	
11. List all co-	s previously offere listed courses, init	ialed by Dept. Ch		re does not ap	
1)		2)		3)	
4)		5) O) ()	<i>C</i>	6)	- 1/20/13
Recommended	l by Department _	(Chair	signature)	-0	Date: 1/29/13
Recommended	by Discipline Spe	cific Curricula Cor (Chair	mmittee \\ signature)	~ grap	Date: <u>\$\sigma^2 \left(19\frac{1}{3}\)</u>
Approved by (	Curricula Committe	e:(Chair	signature)	<u></u>	Date:
Approved by F	aculty Senate:	(Chair	signature)		Date:

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Date: 3/8/2013 6:01:27 PM

Effective Ye Effective Terr		☐ Fall ⊠ S	pring 🗀	CC File #	8374-2013	-Œ208-32
	Т	Course		Form (Cifying permanent		
Course Cha		ck all changes.)	-			
New Course [	<u> </u>	se Deletion 🗌	Credi	t Hours 🗌	Prerequisi	tes 🛛
Course Title [	Cata	log Description 🛭	Cour	se Number 🗌	Co-listing	
Course Info	ormation (	(1-9 Must Be Comp	leted. Leave "P	roposed" items bla	nk if no change	e is being made.)
1. Departme	ent: Electrica	al & Computer En	gineering			
-		e Number: Pre		208 <b>Prop</b>	osed:	
3. Course Titl		: Electromechar				
	Propose	:d:				
	ed Course (24 Spa	ces or Less. Only	needed for No	ew Courses or Tit	le Changes.)	
		Words or Less)			sation by any of	ad circuita rotatina
Present:	magnetic fi	s with power mea elds, stepper mot ess DC machines.	isurement, tra ors, DC machi	insformers, magr ines, induction m	achines, sync	ed circuits, rotating hronous machines,
Proposed:	magnetic fie	s with power mea elds, stepper mot ess DC machines.	ors, DC machi	ines, induction m	achines, sync	ed circuits, rotating hronous machines, or 209.
5. If course re	equires field	trip check box:	]			
6. Credit Hou	-	Present:	Lecture: Ø	Lab: 1	Total: 1	
		Proposed:	Lecture:	Lab:	Total:	
7. Prerequisit Present:	El Eng 1	53 with a grade o El Eng 205 is a c		, passing grade (	on the El Eng	Advancement
Proposed	<b>d:</b> El Eng 1: Exam II.	53 with a grade o Preceded or acco	f "C" or better empanied by E	; passing grade ( il Eng 205.	on the El Eng	Advancement
8. Required fo	or Majors: 🗌	Elective for	Majors: 🛚			
9. Justificatio		ation to Undergra nents in El Eng 20			E Faculty 1/2	4/2013. Several
		offered as an ex es, initialed by De				w.
1)		2)		3)		
4)		5)	<i>n</i> c	<b>6</b> )		100/10
Recommende	d by Departi	ment	(Chair signatur	e) ()		Date: 1/29/0
Recommende	d by Discipli	ne Specific Curric	ula Committee (Chair signatun	e) Kup		Date: <u>62/19//3</u>
Approved by	Curricula Co	mmittee:	(Chair signatur	e)		Date:
Approved by	Faculty Sena	ite:	(Chair signatur	e)		Date:

	From: 573 341 4362	2 Page: 14/24	Date: 3/8/2013 6	:01:28 PM	
Effective Year: Effective Term:		pring 🗆	CC File #	8375-2013-EE 201	9-32
	Course This form is for cr	Change	Form (Cing permanent	C) courses.	
Course Chanc	ies (Check all changes.)				
New Course 🗆	Course Deletion 🗌	Credit I	lours 🗌	Prerequisites 🗵	
Course Title 🗌	Catalog Description		Number 🔲	Co-listing 🗌	
Course Infor	<b>nation</b> (1-9 Must Be Comp	oleted. Leave "Pro	oosed" items bla	nk if no change is beir	ig made.)
	:: Electrical & Computer En				
■	nd Course Number: Pre		9 <b>Prop</b> e	osed:	
3. Course Title:	Present: Power System			r <b>y</b>	
	Proposed:				
	Course Title: (24 Spaces or Less, Only intion (40 Words or Less)	needed for New	Courses or Tit	le Changes.)	
Present: Co	iption (40 Words or Less) omputer-aided analysis of	voltge regulation	, power flow, o	ompensation, and e	conomic
ar	nalysis. Individual projects	are required.			
Proposed: Co	omputer-aided analysis of	voltge regulation	, power flow, o	ompensation, and e	conomic
ar	nalysis. Individual projects	are required. Cr	edit will only gi	ven for one of El En	g 208 or 209.
5. If course requ	ires field trip check box: [				
6. Credit Hours:	Present:	Lecture: O	Lab: 1	Total: 1	
	Proposed:	Lecture: :	Lab:	Total:	
7. Prerequisites: Present:			seccione avada s	n the El Eng Advanc	romont
Present.	El Eng 153 with a grade of Exam II. El Eng 207 is a o		assing grade d	n the El Eng Advanc	zement.
Proposed:	El Eng 153 with a grade of Exam II. Preceded or according			on the El Eng Advand	cement
8. Required for I	Majors: 🗌 Elective for	Majors: 🛚			
9. Justification:	Modification to Undergra experiments in El Eng 2			E Faculty 1/24/2013	3. Several
-	previously offered as an ex				
	ted courses, initialed by D 2)	ept. Chair, if sigi	ature does not 3)	appear below.	
L)	-,		_		
<del>1</del> )	5)	<u>.</u> مم ۸	6)		, ,
Recommended b	by Department	n End	·	Date:	1/celis
		(Chair signature)		_	

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

(Revised 1/31/08)

(Chair signature)

Approved by Faculty Senate: \_\_

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Date: 3/8/2013 6:01:28 PM

Effective Yea Effective Term	r: F52013 : Summer □	Fall 🗵 Sprii	ng 🗀	CC File #1	5/6-2013	-EK215-5 X
		ourse C				
carran Char		orm is for creati	ng or moditying	g permanent o	ourses.	
	iges (Check all	eletion 🗔	Credit Ho	ure 🗇	Prerequisi	tes 🏿
New Course 🗌		eletion 🗀 Pescription 🔲	Course N		Co-listing	
Course Title 🗌	rmation (1-9 N	•				<del></del>
	nt: Electrical & C			200 (00(III) 210(III	· · · · · · · · · · · · · · · · · · ·	. ,= ==
■′	and Course Nu			Propos	ed:	
2. Discipline ( 3. Course Title		screte Linear S		,,,,,		
s. course rice	Proposed:	sciete finesi o	, 3.0			
	d Course Title: (24 Spaces o	r Less. Only ne	eded for New C	ourses or Title	Changes.)	
	cription (40 Word					
	Analysis method including signal introductory mal	models, and Fo	me signals and urier transform	systems in the s. Continuous-	e time and f time topics	requency domains are included as
Proposed:						
5. If course re 6. Credit Hours	quires field trip o		Lecture: 3	Lab: <i>O</i>	Total: 3	
		oosed:	Lecture:	Lab:	Total:	
7. Prerequisite Present:	Elec Eng 153	with a grade of hould enroll in	"C" or better; Elec Eng 215 a	passing the Ele and corequisite	ec Eng Adva of Elec Eng	ncement Exam 216.
Proposed	Elec Eng 153 II.	with a grade of	"C" or better;	passing the Ele	ec Eng Adva	ncement Exam
8. Required for	r Majors: 🗵	Elective for Ma	jors: 🗌			· ·
9. Justification	: Modification	to Undergradua	ate EE Requirer	nents per ECE	Faculty 1/2	4/2013.
			•			
	previously offe isted courses, in					N.
L)		2)		3)		
4)		5)	_	6)		
Recommended	by Department	Kel	Chair signature)	<u>2_</u>		Date: <u>((19/1)</u>
Recommended	by Discipline Sp	ecific Curricula (0	CommitteeChair signature)	ing hot afa		Date: <u>&amp;2//9/}</u>
Approved by C	urricula Commit	tee:(0	Chair signature)		<u>.</u>	Date:
Approved by F	aculty Senate:_	(0	Chair signature)	<u> </u>		Date:

From: 573 341 4362

Effective Year: FS2013

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CC File #1377-2013-EE2/6-32

Fall 🛛 Spring 🔲 Effective Term: Summer Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) New Course 🗌 Credit Hours Prerequisites 🗵 Course Deletion 🔲 Course Number Co-listing 🔲 Catalog Description Course Title 🗌 Course Information (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 216 Proposed: 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) Software tools for signal and system representation and for time and frequency-domain Present: systems analysis. Proposed: 5. If course requires field trip check box: 🔲 Total: 1 Lecture: D Lab: 1 6. Credit Hours: Present: Lecture: Lab: Total: Proposed: 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. Elective for Majors: 🛄 8. Required for Majors: 🛛 Modification to Undergraduate EE Requirements per ECE Faculty 1/24/2013. 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. 3) 2) 1) 6) 4) Recommended by Department (Chair signature) Recommended by Discipline Specific Curricula Committee 🗻 (Chair signature) Date: \_ Approved by Curricula Committee: , (Chair signature) Date: Approved by Faculty Senate: \_\_ (Chair signature)

From: 573 341 4362

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Date: 3/8/2013 6:01:29 PM

CC File #8378-2013-EE 218-32 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.) Prereguisites 🛛 Credit Hours 🛄 New Course 🔲 Course Deletion Course Number 🔲 Co-listing 🔲 Catalog Description Course Title Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.) Department: Electrical & Computer Engineering 2. Discipline and Course Number: Present: EE 218 Proposed: Present: Continuous Linear Systems Laboratory 3. Course Title: Proposed: Abbreviated Course Title: (24 Spaces or Less. Only needed for New Courses or Title Changes.) 4. Catalog Description (40 Words or Less) Laboratory and software tools for the analysis of linear and non-linear systems. Topics Present: include spectral analysis, transforms, and applications. . Proposed: 5. If course requires field trip check box:  $\Box$ Lab: 1 Total: 1 Present: Lecture: O 6. Credit Hours: Lecture: Lab: Total: Proposed: 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. Math 204 with a grade of "C" or better; Elec Eng 153 with a grade of "C" or better; Proposed: passing the Elec Eng Advancement Exam II. Preceded or accompanied by El Eng 217. 8. Required for Majors: 🛛 Elective for Majors: Modification to Undergraduate EE Requirements per ECE Faculty 1/24/2013. 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. 3) 2) 1) 6) 4) Recommended by Department (Chair signature) Recommended by Discipline Specific Curricula Committee (Chair signature) Date: \_ Approved by Curricula Committee: (Chair signature) Date: \_\_ Approved by Faculty Senate: \_\_\_ (Chair signature)

From: 573 341 4362 Page: 18/24 Date: 3/8/2013 6:01:29 PM

							CC File# .	8380 -A013-Ge 8	MG -554 -5M
Effective Year: 20	ング Effecti	ive Term: :	Summer	· 🔲	Fall	Spr	ing 🛛		
Course Change Form (CC)  This form is for creating or modifying permanent courses.									
Course Changes (C		nges.) ourse Delet	ian 🗂		Co	edit Hoı	ire 🗀	Prerequisites 🔀	
New Course [ Course Title [		italog Desc		$\neg$			mber 🗌	Co-listing	
_	<del>-</del>	-		_			_	k if no change is being made.)	
1. Department: 6						Toposca	1121113 1210		
2. Discipline and (	_		_			oposed:			
3. Course Title: P						•			
	roposed:		<del>"</del>	_		_			
Abbreviated (	Course Title	(24 Spaces o	or Less. C	nly n	eeded	for Nev	Courses or	Title Changes.):	
4. Catalog Descrip Present: Proposed:	otion (360 ch	aracter spa	ces or les	s.)					
5. If course requir	res field trip	check box	: 🖂						
6. Credit Hours:	Present:	Lecture	<i>3</i> 1	Lab	0	Total	3		
	Proposed:	Lecture		Lab		Total			
7. Prerequisites: Present: <b>Sen</b> i	or standing	, Instructo	r approv	/al					
Proposed: <b>Se</b>	nior standir	ng, Instruct	tor appr	oval,	GE31	11, GE34	17		
8. Required for M	lajors: 🔲	Elect	tive for I	Vlajo	rs: 🗀	]			
9. Justification: G	E311/GE347	are the lab	/lecture	called	d "Intr	oduction	n to Internat	tional Engineering & Design".	
10. Semesters pro	eviously offe	ered as an o	experim	enta!	cour	se (101,	201, 301, 4	101):	
11. List all co-liste 1) CerE35	2 10	nitialed by 3)	Dept. C	hair,	if sigr	nature d 5)	oes not app	pear below.	
2) MetE3	52 H8	4	4)				6)		
Recommended by D	epartment	- 4/4	14 1	<u> M</u>	4_				Date: kn 30/13

Date:\_

Date:\_\_

Recommended by DSCC

Approved by Curricula Committee:

Approved by Faculty Senate:\_

(Chair signature)

(Chair signature)

Date: 3/8/2013 6:01:30 PM From: 573 341 4362 Page: 19/24 CC File # 838/-2013 - Min Eng-Effective Year: 2013 Fall 🖾 Spring 🔲 Term: Summer 🗌 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Prerequisites 🗔 Course Deletion Credit Hours Course Number Co-listing 🛛 Catalog Description Proposed: Present: Research Methods Proposed: (24 Spaces or Less. Only needed for New Courses or Title Changes.)

New Course 🗌 Course Title 🗌 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 3. Course Title: Abbreviated Course Title: 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, disertation composition, concepts of originality and interlectual 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, disortation composition, concepts of originality and interlectual property. dissertation 5. If course requires field trip check box: Lab: O Total: 3 Lecture: 3 6. Credit Hours: Present: Total: Proposed: Lecture: Lab: 7. Prerequisites: Present: Graduate Standing. Proposed: 8. Required for Majors: Elective for Majors: We would like to co-list with Exp Eng 411 research methods (new). Above catalog 9. Justification: description changed to remove redundency and match 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) 4) Date: 2-7-2013 Recommended by Department (Chair signature) Recommended by Discipline Specific Curricula Committee . (Chair signature) Approved by Curricula Committee: \_ Date:\_\_\_\_\_ (Chair signature) Approved by Faculty Senate: \_\_\_\_ Date: (Chair signature)

111/2010 2.0.1 CC File # 8382 +2013 - Archeng 204-32 Effective Year: 2013 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: Civil, Architectural and Envir 2. Discipline and Course Number: Proposed: 3. Course Titie: 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 with detail development, principles of acoustic design and building construction as a form determinant. Proposed: 5. If course requires field trip check box: 🔲 Total: 3 6. Credit Hours: Present: Lecture: Proposed: Total: Lecture: Lah: 7. Prerequisites: Present: ArchE 203 Proposed: Art 203 8. Required for Majors: 🛛 Elective for Majors: 🔲 9. Justification: 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) 4) 5) Recommended by Department Date: \_3 - | 1- 1 Recommended by Discipline Specific Curricula Committee (Chair sighature) Approved by Curricula Committee: \_ Date: (Chair signature) Approved by Faculty Senate: \_\_\_ Date:

Date: 3/11/2013 2:57:11 PM

From: 573 341 4362

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(Chair signature)

Date: 3/11/2013 2:57:11 PM From: 573 341 4362 Page: 2/2 CC File # 8383-2013- ArchEng -Effective Year: 2013 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.) Arch Eng Proposed: Department: Civil, Architectural and Envir 2. Discipline and Course Number: 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: Total: Present: Lecture: Lab: Proposed: Lecture: Lab: Total: 7. Prerequisites: Present: Sophmore Standing Proposed: All mentions of "ArchE203" . the rendergraduate catalog need to be seplaced with "Art 203". 8. Required for Majors: 🛛 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) 5) 4) Recommended by Department

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

(Chair signature)

(Chair signature)

(Chair signature)

(Chair signature)

Recommended by Discipline Specific Curricula Committee

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

Approved by Faculty Senate: \_

From: 573 341 4362 Page: 20/24 Date: 3/8/2013 6:01:30 PM

Effective Yea Effective Term	ir: FS2013 n: Summer 🗌	Fall 🗵 Sp	oring 🗌	CC File #	<b>3387</b> -2013-	EE317-33
	This	Course (	Change ating or modify	Form (Cing permanent	courses.	
Course Cha	<b>nges</b> (Check a	all changes.)				_
New Course 🗆	Course	Deletion $\square$	Credit	Hours 🗔	Prerequisite	s 🛛
Course Title 🗀		g Description 🗌		Number 🗌	Co-listing 🗌	
<u>Course Info</u>	<u>rmation</u> (1-9	9 Must Be Compl	eted. Leave "Pro	posed" items bla	nk if no change i	s being made.)
. Departme	nt: Electrical 8	k Computer Eng	jineering			
2. Discipline	and Course N	lumber: Pres	sent : EE 217	Ргоре	osed:	
3. Course Title	e: Present:	Continuous Lin	ear Systems			
	Proposed:					
	ed Course Tit (24 Space: scription (40 W	s or Less. Only	needed for Nev	Courses or Tit	le Changes.)	
Present:	Analysis meth	ods for continu	ier transforms,	s and systems i and Laplace tra	in the time and insforms. Exam	frequency domains aples of control and
Proposed:						
5. If course re 5. Credit Hour 7. Prerequisite Present:	rs: P P es:	ip check box: resent: roposed:	Lecture: 3 Lecture:	Lab: O Lab:	Total: 3 Total:	petter. Students
·	should enro	oll in Elec Eng 2	17 and corequi	site of Elec Eng	218.	
Proposed		vith a grade of ' Elec Eng Adva			n a grade or "C	or better;
3. Required fo	r Majors: 🛮	Elective for	Majors: 🔲			
). Justification		on to Undergrad				2013.
l1. List all co-		fered as an exp , initialed by De		nature does no		
1)		2)		3)		
<del>!</del> )		5)	0 · C	<b>(</b> 6)		1/10/15
	d by Departme		(Chair signature)	OL Ran	Da	ate: <u>L(1%/(3</u>
Recommended	d by Discipline	Specific Curricu	la Committee (Chair signature)	_20~ 1\9~	<u>`</u> D:	ate: <u>^2//9//3</u>
Approved by 0	Curricula Comn	nittee:	(Chair signature)		Da	ate:
Approved by F	Faculty Senate	·	(Chair signature)		Da	ate:

From: 573 341 4362

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Date: 3/11/2013 3:08:02 PM

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

Effective Year: 2013 Effective Term	: Summer 🔲	Fall 🛛 Spring 🗌	
This		Change Form (CC	<del>T</del>
<u> </u>		Credit Hours	Prerequisites 🔯
	scription 🔲	Course Number	Co-listing
Course Information (Sections 1-9 must be		ve "Proposed" items blank if no	change is being made.)
1. Department: Materials Science & E	6-6		
2. Discipline and Course Number: Pres		Proposed:	
3. Course Title: Present: Materials Se	nior Design I		
Proposed:			
Abbreviated Course Title (24 Spaces		eded for New Courses or Title C	hanges.):
4. Catalog Description (360 character sp Present: Students working in groutechnology. This course will focus standing. (Co-listed with Met Eng Proposed:	ıps will be assig on project plar		ct related to a specific materials nd process design. Prerequisite: Senio
5. If course requires field trip check bo	x: 🔲		
6. Credit Hours: Present: Lecture	O Lab 1	Total 1	
Proposed: Lecture	O Lab 3	Total 3	
7. Prerequisites: Present:			
Proposed:			
8. Required for Majors: 🔀 💢 Elec	ctive for Majors	;; 🔲	
9. Justification: Increased hours	needed re	expand course cont	ant a expectations.
10. Semesters previously offered as an			•
11. List all co-listed courses, Initialed by 1) Met 261 3)	y Dept. Chair, if	signature does not appear be 5)	elow.
2) Eng 4)	1 /	<b>/</b> 6)	
Recommended by Department (Chair sign	Reyne Ale	ely	Date: 2/22/1
Recommended by DSCC(Chair sign:	John John Marie Land	you or Repen	Date: 3-1(- )
Approved by Curricula Committee:			Date:
(Chair signi	ature)		
Approved by Faculty Senate: (Chair signs	ntues!		Date:
(Chair sign:	erate)		

From: 573 341 4362

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Date: 3/11/2013 3:08:03 PM

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 Prerequi	sites 🔀
Course Title Catalog Description Course Number Co-listing	
Course Information (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is b	
1. Department: Materials Science & Engineering	
2. Discipline and Course Number: Present: Cer 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 project including process and product simulation and/or fabrication, safety aspects, en and operating economics. Prerequisite: Cer Eng 261 or Met Eng 261. (Co-listed with Me Proposed:	vironmental impact and capital
5. If course requires field trip check box:	
6. Credit Hours: Present: Lecture O Lab 2 Total 2 Proposed: Lecture O Lab 3 Total 3	
7. Prerequisites: Present: Cer 261 or Met 261	
Proposed: Pass prerequisite course with "C" or better	
8. Required for Majors: Elective for Majors:	LA LANGE paraled
<ul> <li>8. Required for Majors:  Elective for Majors:</li></ul>	cheated course content :
10. Semesters previously offered as an experimental course (101, 201, 301, 401):	spectations.
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.  1) Met 262  3)  5)	•
2) 4) ( 6)	
ecommended by Department(Chair signature)	Date: 422/13
ecommended by DSCC Shape (Chair signature)	Date: 3 -//- / 3
pproved by Curricula Committee:	Date:
(Chair signature)	
pproved by Faculty Senate:(Chair signature)	Date:
(minut allingthic)	

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Date: 3/11/2013 3:08:03 PM

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 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: Gr Eng. 102. Proposed: 5. If course requires field trip check box: 6. Credit Hours: Present: Lecture Lab Total Proposed: Lecture Lab Total 7. Prerequisites: FNG 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) 6) Recommended by Department (Chair signature Recommended by DSCC Approved by Curricula Committee:

(Chair signature)

(Chair signature)

Approved by Faculty Senate:

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Date: 3/11/2013 3:08:03 PM

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: 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: 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 (Chair signature) Recommended by DSCC (Chair signature) Approved by Curricula Committee: (Chair signature) Approved by Faculty Senate:\_ Date: (Chair signature)

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Date: 3/11/2013 3:08:04 PM

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

Effective Term: Summer | Fall | Spring | Effective Year: 2013 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) New Course Credit Hours Course Deletion 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. Recequialte: Cer Eng 104 or Met Eng 125; freshmen, 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: 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 \_ (Chair signature) Recommended by DSCC (Chair signature) Approved by Curricula Committee: (Chair signature) Approved by Faculty Senate:... (Chair signature)

From: 573 341 4362 Page: 6/22 Date: 3/11/2013 3:08:04 PM

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

Effective Year: 2013 Effective	e Term: Summe	r 🗌 Fall 🛭	Spring      □		
			ange Form (CC) or modifying permanent		
<u></u>	ges.) urse Deletion 🔲 valog Description	_	<del></del>	Prerequisites 🔀 Co-listing 🔲	
Course Information (Sections 1-	•		roposed" items blank if no o	change is being made.)	
1. Department: Materials Scie	ence & Engineeri	ng			
2. Discipline and Course Numb	er: Present: <b>Ce</b> r	231	Proposed:		
3. Course Title: Present: Cera	mic Processing L	ab I			
Proposed:					
Abbreviated Course Title (2	24 Spaces or Less. 0	Only needed	for New Courses or Title Ch	anges.):	
4. Catalog Description (360 cha Present: The first half of techniques used in the fat Proposed:	a two-semester	sequence t	that gives students pract <del>juisite: Cr Eng 12</del> 2.	ical knowledge of the	e methods and
5. If course requires field trip of	:heck box: 🔲				
6. Credit Hours: Present:	Lecture	Lab	Total		
Proposed:	Lecture	Lab	Total		
7. Prerequisites: WG- Present: Cer 122					
Proposed: Pass prerequisi	te course with "	C" or better	7		
8. Required for Majors: 🔀	Elective for	Majors: 🔲			
9. Justification: Encourage stud	ent success throu	gh a better u	inderstanding of core mate	rial	
10. Semesters previously offer	ed as an experim	ental cours	e (101, 201, 301, 401):		
11. List all co-listed courses, in	- •	hair, if sign		elow.	
1)	3)		5)		
2)	4)	d	6) //		( )
Recommended by Department	(Chair_signature)	e Hul	lle		Date: 2/20/0
Recommended by DSCC	(Chair signature)	a Key	<u>u</u>	<u> </u>	Date: 3 - / 1 - 13
Approved by Curricula Committee:	(Chair signature)		,		Date:
Approved by Faculty Senate:	(Chair signature)				Date:

From: 573 341 4362 Page: 7/22 Date: 3/11/2013 3:08:04 PM

CC File # 8391-2013-CFR FNG-242-32

Effective Year: 2013 Effective 1	ferm: Summer 🗌 F		-2013-CEN ENG-242-32	
		Change Form (CC)		
<u></u>	e Deletion 🔲	·	Prerequisites 🖂	
Course Title Catalo	—	<del></del> -	<b></b>	
Course Information (Sections 1-9 m	•	e Proposed items blank if no t	mange is being made.)	
<ol> <li>Department: Materials Science</li> <li>Discipline and Course Number:</li> </ol>	ENG	Proposed:		
3. Course Title: Present: Ceramic		ггорозец.		
Proposed:				
Abbreviated Course Title (24 S	paces or Less. Only nee	eded for New Courses or Title Ch	anges.):	
4. Catalog Description (360 charact Present: The second half of a techniques used in the fabric Proposed:	two-semester seque	-	tical knowledge of the methods and	
5. If course requires field trip chee	ck box: 🔲			
6. Credit Hours: Present: Le	cture 😊 Lab 🤈	2 Total 2-		
Proposed: Le	cture Lab	Total		
7. Prerequisites: ENG- Present: <b>Cer 231</b>				
Proposed: Pass prerequisite o	course with "C" or be	etter		
8. Required for Majors: 🔀	Elective for Majors:			
9. Justification: Encourage student	success through a bett	ter understanding of core mate	rial	
10. Semesters previously offered		,		
11. List all co-listed courses, initial		_	low.	
1)	3) 4) , ,	5)		
2) Recommended by Department	Wayne He	uluu		<b>,</b>
Recommended by DSCC	air signature)	Laper	Date: 3 - /1 - 13	
Approved by Curricula Committee:	air signature) ` air signature)		Date:	
Approved by Faculty Senate:	· · · · · · · · · · · · · · · · · · ·		Date:	

(Chair signature)

From: 573 341 4362 Page: 8/22 Date: 3/11/2013 3:08:05 PM

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

Effective Year: 2013 Effe	ctive Term: Summer 🗌	Fall 🔀 Spr	ing 🔲		
	Course This form is for cre	-	Form (CC	•	
Course Changes (Check all ch New Course		Credit Hou	ırs 🔲	Prerequisites 🔀	
Course Title 🔲	Catalog Description 🔲	Course Nu	mber 🔲	Co-listing 🔲	
Course Information (Sections	s 1-9 must be completed. Le	ave "Proposed	" items blank if no	change is being made.	)
1. Department: Materials 5		,			
2. Discipline and Course Nu	mber: Present: Cer 251	حي Propo	sed:		
3. Course Title: Present: Pl	hase Equilibria				
Proposed:					
Abbreviated Course Titl	e (24 Spaces or Less. Only i	needed for New	Courses or Title C	Changes.):	
<del>=</del>	character spaces or less.) f unary, binary and terna roblems. P <del>rerequisite: C</del>		phase equilibriu	ım systems with exar	mples for solving
5. If course requires field tri	ip check box: 🔲				
6. Credit Hours: Present:	Lecture 3 Lab	O Total	3		
Propose	d: Lecture Lab	Total			
7. Prerequisites: Present: <b>Chem 3</b>					
Proposed: Pass prerequ	uisite course with "C" or	better			
8. Required for Majors: 🔯	Elective for Majo	ors: 🔲			
9. Justification: Encourage st	tudent success through a t	etter understa	nding of core mat	erial	
10. Semesters previously of	fered as an experimenta	l course (101,	201, 301, 401):		
11. List all co-listed courses,			oes not appear b	pelow.	
1)	3)	5)			
2) Recommended by Department	Wayne Ha	elle			Date: 2/20/13
Recommended by DSCC	(Chair signature)	apr	***		Date: 3 -//- 13
Approved by Curricula Committ	ee:(Chair signature)				_ Date:
Approved by Faculty Senate:					Date:

(Chair signature)

From: 573 341 4362 Page: 9/22 Date: 3/11/2013 3:08:05 PM

CC File # 8393-2013-CER ENG-369-32 Effective Term: Summer | Fall | Spring | Effective Year: 2013 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Course Deletion Credit Hours Prerequisites 🔀 New Course Course Number Co-listing Course Title Catalog Description 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 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: Lab 6. Credit Hours: Present: Lecture Total Proposed: Lecture Lab Total 7. Prerequisites: 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) 5) 2) Recommended by Department Recommended by DSCC (Chair signature)

Approved by Curricula Committee:

Approved by Faculty Senate:\_

(Chair signature)

(Chair signature)

From: 573 341 4362 Page: 10/22 Date: 3/11/2013 3:08:05 PM

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

Effective Year: 2013 Effe	ctive Term: Summer 🔲	Fall Spring 🗌		-
		Change Form (CC	<b>4</b>	
Course Changes (Check all ch	nanges.) Course Deletion	Credit Hours 🗌	Prerequisites 🔀	
Course Title 🔲	Catalog Description [	Course Number	Co-listing	
Course Information (Sections	s 1-9 must be completed. Lea	ve "Proposed" items blank if no	change is being made.)	
1. Department: Materials :	Science & Engineering		·	
2. Discipline and Course Nu	mber: Present: Cer 284	Proposed:		
3. Course Title: Present: El	lectrical Properties of Cera	ımics		
Proposed:				
Abbreviated Course Titl	e (24 Spaces or Less. Only ne	eded for New Courses or Title C	:hanges.):	
magnetic, and optical p	on of ceramic chemistry an properties. Emphasis is pla	ed physics to the developme ced on the relationships bet are. <del>Prerequisite: Physics 10</del>	ween properties and cryst	•
5. If course requires field tri	ip check box: 🔲			
6. Credit Hours: Present:	Lecture 3 Lab	○ Total ろ		
Propose	d: Lecture Lab	Total		
7. Prerequisites: Present: Physics 107				
Proposed: Pass prerequ	uisite course with "C" or b	etter		
8. Required for Majors: 🔀	Elective for Majors	::		
9. Justification: Encourage s	tudent success through a bet	tter understanding of core mat	erial	
10. Semesters previously of	fered as an experimental c	course (101, 201, 301, 401):		
11. List all co-listed courses, 1)	, initialed by Dept. Chair, if 3)	signature does not appear b 5)	elow.	
2)	4)	/ 6)		
Recommended by Department	(Chair signature)	alu	Date	2/20/13
Recommended by DSCC	(Chair signature)	a Ropen	Date	3-11-13
Approved by Curricula Committ			Date:	•
•	(Chair signature)			·
Approved by Faculty Senate:	(Chair signature)	<u> </u>	Date:	<u> </u>
	/Bindedi-l			

From: 573 341 4362 Page: 11/22 Date: 3/11/2013 3:08:06 PM

CC File # 8395-2013-CFR FNG-306-32

Effective Year: 201	l3 Effecti	ve Term: Su	ımmer 🔲	Fall 🔀 Sp	ring 🔲	0333-20	+2-6FW F	-140-20	•
				Chang		(CC) manent cou	rses.		
Course Changes (C		ges.) urse Deletio	ın [T]	Credit Ho	urs 🗆	Pre	requisites l	<b>⊠</b>	
Course Title							•		
– Course Information			<b>-</b>		_			/ ahem	
1. Department: N	<u>n</u> (cesi,e,s ∓ ∕laterials Sci	ence & Engi	neering	ave 1.00000	4 1.C1113 piu	//K // 110 C(101)	Se is being in	unaer)	
2. Discipline and C	Course Num	ber: Present	t: Cer 306	رمکا Prope	osed:				
3. Course Title: Pr				•					
	roposed:								
Abbreviated C	ourse Title (	24 Spaces or	Less. Only n	eeded for Ne	w Courses or	r Title Change	es.):		
4. Catalog Descrip Present: Thi ceramics. The properties of of or proposed:	is course wil course also	ll treat the t includes a l	heory and a aboratory (	consisting o		_		he mechanica ation of the n	
5. If course require	es field trip (	check box:							
6. Credit Hours:	-	Lecture .		/ Total	4				
	Proposed:	Lecture	Lab	Total					
7. Prerequisites: Present: <b>Civ</b> E	ng 110								
Proposed: Pas	ss prerequis	ite course w	/ith "C" or l	better					
8. Required for Ma	ajors: 🔀	Elective	e for Major	's: 🔲					
9. Justification: En	icoura <b>ge</b> stud	ient success t	hrough a be	tter underst	anding of co	re material			
10. Semesters pre	viously offer	red as an exp	perimental	course (101	, 201, 301, 4	401):			
11. List all co-lister 1)	d courses, in	itialed by De 3)	ept. Chair, i	f signature o		pear below	,		
2)		4)		/ 6	<b>)</b>				
Recommended by De	partment	(Chair signature	ryur of	Julia				Date:	2/20/13 3-11-13
Recommended by DS	.cc	(Chair signature	ine (	Kapor				Date:	3-17-3
Approved by Curricula	a Committee:							Date:	
		(Chair signature	<u></u>						
Approved by Faculty!	Senate:	(Chair signature	<u>.</u>		* * * * * * * * * * * * * * * * * * *			Date:	

Effective Year: 2013

Effective Term: Summer 🔲 Fall 🔀 Spring 🗍

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Date: 3/11/2013 3:08:06 PM

8396-2013-CER ENG-396-32

Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Prerequisites 🔀 Course Deletion Credit Hours New Course Course Number Co-listing Course Title Catalog Description 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 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. Prerequisiter Cr Eng 103. Proposed: 5. If course requires field trip check box: Total 3 Lecture 3 6. Credit Hours: Present: Lab 📿 Total Proposed: Lecture Lab 7. Prerequisites: 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) 2) Recommended by Department (Chair signature) Recommended by DSCC (Chair signature) Approved by Curricula Committee: (Chair signature) Date:\_\_ Approved by Faculty Senate:\_\_\_ (Chair signature)

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Date: 3/11/2013 3:08:06 PM

		CC File # 8397	7-2013-CER ENG-37	1-32
Effective Year: 2013 Effec	tive Term: Summer 🔲 🖟	fall 🔯 Spring 🔲		
		Change Form (CC	•	
Course Changes (Check all cha		_	_	
			Prerequisites 🔀	
Course Title 🗌 💢 C	Catalog Description	Course Number	Co-listing 🗌	
Course Information (Sections )	1-9 must be completed. Leav	e "Proposed" items blank if no	change is being made.)	
1. Department: Materials So	cience & Engineering LEK EA	Kr.		
2. Discipline and Course Nun	nber: Present: ser 371	Proposed:		
3. Course Title: Present: Die	electric & Electrical Prope	rties of Oxides		
Proposed:				
Abbreviated Course Title	(24 Spaces or Less. Only nee	eded for New Courses or Title C	hanges.):	
	s occurring in inorganic m	naterials under the influence n to real systems. <del>Prerequici</del>		considered from
5. If course requires field trip	check box: 🔲			
6. Credit Hours: Present:	Lecture 3 Lab	ン Total <sup>多</sup>		
Proposed	: Lecture Lab	Total		
7. Prerequisites: Present: Cer 284				
Proposed: Pass prerequi	isite course with "C" or be	etter		
8. Required for Majors: 🔀	Elective for Majors:	: 🗖		
9. Justification: Encourage stu	udent success through a beti	ter understanding of core mate	erial	
10. Semesters previously offer	ered as an experimental co	ourse (101, 201, 301, 401):		
11. List all co-listed courses, i 1)	initialed by Dept. Chair, if: 3)	signature does not appear b 5)	elow.	
2)	4)	/ 6)	•	
Recommended by Department _	(Chair signature)	ali	Da	nte: 3/30/13
Recommended by DSCC	(Chair signature)	Kope	Da	ite: 3 - 1/- / 3
Approved by Curricula Committed			Da	ıte:
	(Chair signature)		· · ·	•
opproved by Faculty Senate:	(Chair signature)		Da	te:

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Date: 3/11/2013 3:08:07 PM

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

Effective Year: 2013 Effec	tive Term: <b>Summ</b> e	r 🗌 🛮 Fall 🛭	Spring 🗌		
			ange Form (Cormodifying perman	_	
<del></del> -	Course Deletion 🔯		dit Hours 🔲	Prerequisites	
Course Information (Sections			· ·		1
1. Department: Materials So			oposed itomo ominan	tio citatibe is perily mount	ı
Discipline and Course Nun	nhar: Present: Me	10 2125-	Proposed:		
3. Course Title: Present: Me	etaBuroical Process	Nesian Prir	•		
Proposed:	crandi Birat Frocess	Designition	iorpico		
Abbreviated Course Title	124 Spaces or Less (	aniv needed t	for New Courses or Titi	le Changes I·	
4. Catalog Description (360 d	·		101 11011 00011101 01 1111	,,-,,	
Present: Application of engineering economic a be prepared for the sele Proposed:	of mass, componen nalysis will be exar	t and energ nined and e	xperimental design		oduced. Students will
5. If course requires field trip	o check box: 🗌				
6. Credit Hours: Present:	Lecture	Lab	Total		
Proposed	d: Lecture	Lab	Total		
7. Prerequisites: Present:					
Proposed:					
8. Required for Majors: 🔀	Elective for	Majors: 🔲	416		
9. Justification: Course no los	nger offered - replace	ed by Met 26	1/262		
10. Semesters previously off	fered as an experim	ental cours	e (101, 201, 301, 401	L):	
11. List all co-listed courses,		hair, if signa		ar below.	
1)	3)	,	5)		
2)	4) 1/10	1	b) 1		
Recommended by Department _	(Chair signature)	e & W	ely		Date: 2/22/13
Recommended by DSCC	(Chair signature)	2 Ka	Per	D - 400 D	_ Date: 3 -//- 13
Approved by Curricula Committe	ee; (Chair signature)				_ Date:
Approved by Faculty Senate:	(Chair signature)			<u>.                                    </u>	_ Date:

From: 573 341 4362 Page: 15/22 Date: 3/11/2013 3:08:07 PM

CC File # 8399-2013-MFT FNG-316-20

Effective Year: 2013 Effective Te	rm: Summer 🔲 F		9-2013-MET ENG-310-20
T		Change Form (CC	•
<u></u>		Credit Hours	Prerequisites
Course Title Catalog	Description 🔲	Course Number 🗌	Co-listing
Course Information (Sections 1-9 must			change is being made.)
Department: Materials Science     Discipline and Course Number: 1	& Engineering Present: Met 316	Ç Proposed:	
3. Course Title: Present: Metallun	gical Design Project		
Proposed:			
Abbreviated Course Title (24 Sp.	aces or Less. Only nee	ded for New Courses or Title C	hanges.):
	undertake selected from previous coun	ses. The faculty supervised	ent a capstone design experience utilizing open-ended design projects will involve a ng 915.
5. If course requires field trip check	box: 📋		
6. Credit Hours: Present: Lect	cure 2 Lab 4	5 Total <sup>7_</sup>	
Proposed: Lect	ure Lab	Total	
7. Prerequisites: Present:			
Proposed:			
8. Required for Majors: 🔀	Elective for Majors:		
9. Justification: Course no longer offe	ered - replaced by Me	ENES et 261/262	
10. Semesters previously offered as	an experimental co	ourse (101, 201, 301, 401):	
11. List all co-listed courses, initialed	d by Dept. Chair, if s 3)	signature does not appear b	elow.
2)	4) //	, / 6)	
Recommended by Department(Chair	Signature)	kulu	Date: 2/2/13
Recommended by DSCC	signature)	Soper	Date: 3 - /( - / 3
Approved by Curricula Committee:			Date:
	signature)	0.1027.0040	- 17 00 0
Approved by Faculty Senate:(Chair	signature)		Date:

From: 573 341 4362 Page: 16/22 Date: 3/11/2013 3:08:07 PM

CC File # 8400-2013-MFT FNG-318-20

Effective Year: 2013 Effect	tive Term: Summer 🔲		
		Change Form (CC	
Course Changes (Check all char New Course Co	nges.) ourse Deletion 🔀	Cradit Hours [7]	Prerequisites
	atalog Description		Co-listing [ ]
		<del></del>	<del></del>
Course Information (Sections 1			change is being made.)
<ol> <li>Department: Materials Sci</li> <li>Discipline and Course Num</li> </ol>		- <del>-</del>	
•		Proposed:	
3. Course Title: Present: Prin	iciples for Microstructur	ai Design	
Proposed:	Ina number of the first		
4. Catalog Description (360 ch		eded for New Courses or Title Ch	nanges.):
Present: This course wi	ill introduce the basics of dents learn about the ba	sic principles and microstruc	hat can be used to design advanced tural design approaches. <del>Prorequisites: <u>A</u></del>
5. If course requires field trip	check box:		
6. Credit Hours: Present:	Lecture 2- Lab	Total 2	
Proposed:	Lecture Lab	Total	
7. Prerequisites: Present:			
Proposed:			
8. Required for Majors: 🔀	Elective for Majors:	: 🔲	
9. Justification: Course no long	ger offered		
10. Semesters previously offer	red as an experimental co	ourse (101, 201, 301, 401):	
11. List all co-listed courses, in	nitialed by Dept. Chair, if:	signature does not appear be	low.
1)	3)	5)	
2)	4)	/ 6)	
Recommended by Department	(Chair signature)	Hapu	Date: 3 - // - /3
Recommended by DSCC	(Chair signature)	Kaft	Date: 3 - // - /3
Approved by Curricula Committee:	:(Chair signature)		Date:
approved by Faculty Senate:	(Chair signature)		Date:

Page: 17/22

Date: 3/11/2013 3:08:08 PM

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

Effective Year: 2013	Effective Term: Summer	Fall 🔀 Spring 🗌		
		e Change Form (Grating or modifying perman	•	
Course Changes (Check			<u>_</u>	
New Course 🔲	· · ·	Credit Hours 🔲	· —	
Course Title 🗌	Catalog Description	Course Number 🔲	Co-listing 🔲	
	ctions 1-9 must be completed. Le	•	f no change is being made.)	
1. Department: Mater	rials Science & Engineering	'MG-		
	e Number: Present: Met 337			
3. Course Title: Preser	nt: Metals Treatment Laborat	tory		
Propos	sed:			
Abbreviated Cours	e Title (24 Spaces or Less. Only r	needed for New Courses or Tit	le Changes.):	
Present: The stude	(360 character spaces or less.) ents plan and perform experi ucture of commercial alloys. I		treating processes and their effects or Lor proceded by Mt Eng 331.	ı the
5. If course requires fie	eld trip check box: 🔲			
6. Credit Hours: Pre	sent: Lecture $ \wp $ Lab	· i Total		
Pro	posed: Lecture Lab	Total		
7. Prerequisites: Present:				
Proposed:				
8. Required for Majors	: 🔀 Elective for Majo	rs: 🔲		
9. Justification: Course	no longer offered			
10. Semesters previous	sly offered as an experimental	l course (101, 201, 301, 401	.):	
11. List all co-listed cou 1)	urses, initialed by Dept. Chair, 3)	if signature does not appea 5)	ar below.	
2)	4)	( 6)		
Recommended by Departr	ment(Chair signature)	Hulle	Date: 2/23	13
Recommended by DSCC		woha Kapan	Date: 2-/	1 - 13
	(Chair signature)			
Approved by Curricula Con	nmittee:(Chair signature)		Date:	<del></del>
Approved by Faculty Senat			Date:	
THE TOTAL PROPERTY WELLEN	(Chair signature)		P. € \$ 1	

From: 573 341 4362 Page: 18/22 Date: 3/11/2013 3:08:08 PM

CC File # 8402-2013-MFT FNG-354-20

Effective Year: 2013 Eff	ective Term: Summer		402-2015-WET ENG	33., 23
		e Change Form (	•	
Course Changes (Check all o		Credit Hours 🔲	Prerequisites 🗌	
<del></del>		Course Number	Co-listing	
Course Information (Section	• • •	_	- <del></del>	
1. Department: Materials			it the stiffings in British transfer,	
2. Discipline and Course N				
3. Course Title: Present: 1		•		
Proposed		itiois for materials		
·		needed for New Courses or Ti	itle Changes \.	
4. Catalog Description (360	,	liceded for New Codises of th	the Changes.j.	
industry. Current, vol	tage, and power relations	ernating and direct curren hips in single and three-pl ng programmable logic con	hase electrical power syst	ems. Introduction to
5. If course requires field t	trip check box: 🔲			
6. Credit Hours: Presen	t: Lecture 3 Lab	1 Total 3		
Propos	ed: Lecture Lab	Total		
7. Prerequisites: Present:				
Proposed:				
8. Required for Majors:	Elective for Majo	ors: 🔲		
9. Justification: Course no	longer offered			
10. Semesters previously o	offered as an experimenta	al course (101, 201, 301, 40	01):	
11. List all co-listed course	s, initialed by Dept. Chair,	, if signature does not appo	ear below.	
1)	3)	5)		
2)	4) //mma 0	Suche 6)		2/rs/13
Recommended by Departmen	(Chair signature)		- 1100- 110- 110- 110- 110- 110- 110- 1	Date: 2/23/13
Recommended by DSCC	(Chair signature)	the Kaper		Date: 3 - //- /3
Approved by Curricula Commi			11-10-10-10-1	Date:
	(Chair signature)			_
Approved by Faculty Senate:_	(Chair signature)			Date:

From: 573 341 4362 Page: 19/22 Date: 3/11/2013 3:08:08 PM

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

Effective Year: 2013 Effective Term: Summer Fall Spring	EDEC MICH CITY COS ES
Course Change Form (CC)  This form is for creating or modifying permanent of	ourses.
Course Changes (Check all changes.)  New Course ☐ Course Deletion ☑ Credit Hours ☐ P	rerequisites 🗌
Course Title Catalog Description Course Number C	o-listing []
Course Information (Sections 1-9 must be completed. Leave "Proposed" items blank if no ch	ange is being made.)
1. Department: Materials Science & Engineering	
2. Discipline and Course Number: Present: Met 365 Proposed:	
3. Course Title: Present: Microfabrication Materials and Processes	
Proposed:	
Abbreviated Course Title (24 Spaces or Less. Only needed for New Courses or Title Chair	nges.):
4. Catalog Description (360 character spaces or less.) Present: An overview course on the materials and processes used to fabricate microelectromechanical systems (MEMS), interconnect substrates and other microelectromechanical systems (MEMS), interconnect substrates and other microelectromechanical product. The emphasis will be on the influence of structure and mechanical, thermal, and optical proper Proposed:	croelectronic components from starting
5. If course requires field trip check box:	
6. Credit Hours: Present: Lecture 3 Lab Ø 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 belo	w.
1) 3) 5)	
<sup>2)</sup> // <sub>a</sub> // <sup>6)</sup>	
Recommended by Department (Chair signature)	Date: 2/22/13
Recommended by DSCC Step Sapa (Chair signature)	Date: 3 - // - 13
Approved by Curricula Committee: (Chair signature)	Date:
Approved by Faculty Senate: (Chair signature)	Date:

From: 573 341 4362 Page: 20/22 Date: 3/11/2013 3:08:09 PM

cc file # 8404-2013-MET ENG-385-20

Effective Year: 2013 Effectiv	re Term: Summer 🔲 🕞	all 🔀 Spring 🗌		
		Change Form (CC) Ing or modifying permanent		
Course Changes (Check all change) New Course Course	ges.) urse Deletion 🔀	Credit Hours	Prerequisites	
<u> </u>	alog Description	Course Number	Co-listing	
· · · · · · · · · · · · · · · · · · ·	- ,	<del></del>	<del></del>	
Course Information (Sections 1-			thange is being made.)	
1. Department: Materials Science	- · · · · · · · · · · · · · · · · · · ·			
2. Discipline and Course Numb		Proposed:		
3. Course Title: Present: Med	hanical Metallurgy			
Proposed:			_	
Abbreviated Course Title (2	24 Spaces or Less. Only nee	ded for New Courses or Title Ch	nanges.):	
•	stic behavior of metallic	single crystals and polycryst re applications to metal fabi		
5. If course requires field trip of	:heck box: 🔲			
6. Credit Hours: Present:	Lecture 3 Lab			
Proposed:	Lecture Lab	Total		
7. Prerequisites: Present:				
Proposed:				·
8. Required for Majors: 🔀	Elective for Majors:	: 🔲		
9. Justification: Course no long	er offered			
10. Semesters previously offer	ed as an experimental c	ourse (101, 201, 301, 401):		
11. List all co-listed courses, in 1)	itialed by Dept. Chair, if. 3)	signature does not appear b 5)	elow.	
2)	4)	/ 6)		
Recommended by Department	(Chair signature)	Hules		Date: 2/22/13
Recommended by DSCC	(Chair signature)	lephs Gaper		Date: 3-(/-/3
Approved by Curricula Committee:				Date:
. 1 to	(Chair signature)			
Approved by Faculty Senate:	Jet do			Date:
	(Chair signature)			

From: 573 341 4362 Page: 21/22 Date: 3/11/2013 3:08:09 PM

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

Effective Year: 2013 Effective Term:	Summer 🔲 🗆	Fall 🔀 Sprir	g 🗀		
This fo		_	Form (CC ying permaner	•	
Course Changes (Check all changes.)		from alik Uman	- ["]	Bronomiteitos 🗔	
<u> </u>		Course Nun	s 🗍	Prerequisites  Co-listing	
— -					<b>.</b>
Course Information (Sections 1-9 must be			items blank if no	o change is being made.	1
1. Department: Materials Science & Er	igineering	G-	c.al.		
2. Discipline and Course Number: Press		Propos			
3. Course Title: Present: High Tempera	ature and Corr	rosion Resista	nt Alloys		
Proposed:				_, ,	
Abbreviated Course Title (24 Spaces	•	eded for New	Courses or Title (	Changes.):	
4. Catalog Description (360 character spa Present: Fabrication and use of nic chemically corrosive environments temperature oxidation and corrosi Proposed:	kel, titanium, . Properties a	nd strengther	ning mechanism	ns of these alloys. Th	eory of high
5. If course requires field trip check box	:: 🔲				
6. Credit Hours: Present: Lecture	3 Lab	O Total	3		
Proposed: Lecture	Lab	Total			
7. Prerequisites: Present:					
Proposed:					
8. Required for Majors: 🖂 Elec	tive for Majors	s: 🔲			
9. Justification: Course no longer offered					
10. Semesters previously offered as an	experimental (	course (101, 2	01, 301, 401):		
11. List all co-listed courses, initialed by 1) 3)	Dept. Chair, if	f signature do 5)	es not appear l	pelow.	
2) 4)	. 11	/ 6)			
Recommended by Department(Chair signal	Weyne.	Hudin		·	Date: 2/22/13
Recommended by DSCC(Chair signs	Deto,	7 Kipes			_ Date: <u>3 -// 3</u>
Approved by Curricula Committee: (Chair signa	ture)				Date:
Approved by Faculty Senate:	0-0-0	12.0			_ Date:
(Chair signa	ture)				

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Date: 3/11/2013 3:08:10 PM

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

ffective Year: <b>201</b> 3	B Effective Term: Summer	Fall Spring		
		se Change Form creating or modifying perm		
Course Changes (Ch New Course	Course Deletion 🗌	Credit Hours 🔀		
	Catalog Description		Co-listing []	
	(Sections 1-9 must be completed		k If no change is being made.)	
1. Department: M	laterials Science & Engineering	ENG		
2. Discipline and Co	ourse Number: Present: <b>Met</b> 2	216 Proposed:		
3. Course Title: Pro	esent: Mechanical Testing of I	Materials		
	oposed:			
Abbreviated Co	ourse Title (24 Spaces or Less. On	ly needed for New Courses or	Title Changes.):	
Present: Deformechanics and	tion (360 character spaces or less, rmation of materials and mech I fatigue. P <del>rerequisites: Met El</del> formation of materials and me I fatigue. P <del>rerequisites: Met E</del> l	nanical testing of materials; ing 121, accompanied by Mic chanical testing of materia	e <del>r Eng 215.</del> ls; tensile testing, creep; in	npact testing; fracture
	es field trip check box: 🔲			
6. Credit Hours:	_	ab 1 Total 1		
	Proposed: Lecture 1 Lab 1	Total 2		
7. Prerequisites: Present: <b>Met</b>	121, and preceded or accomp	panied by Met 215	ENG	
Proposed: Me	t 121 with "C" or petter, and p	Maceagad of accombanies	by Mef 215	
8. Required for Ma	ajors: 🔀 💮 Elective for M	lajors: 🔛		•
9. Justification: Pr	erequisite grade "C" - new depar	tment standard to improve st	udent success; increased cred due to adding	nthours lecture section
10. Semesters pre	viously offered as an experime	ntal course (101, 201, 301, 4	+41.	,
11. List all co-listed	d courses, initialed by Dept. Ch	air, if signature does not ap	pear below.	
1)	3)	5) 4 / 5)		
2)	4) //	Mund land		-1 m
Recommended by De	partment	the Activity		Date: 2/22//3
Recommended by DS	(Chair signature) (Chair signature)	pha Rapa		Date: 2/22/13  Date: 3 - //- // 3
Approved by Curricul		<u> </u>		Date:
The card of control	(Chair signature)			
Approved by Faculty	Senate:		<u></u>	Date:
	(Chair signature)			

Page: 1/25 Date: 3/11/2013 3:16:06 PM

CC File # 8407-2013-MET ENG-218-31 Effective Term: Summer Fall Spring Effective Year: 2013 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Prerequisites 🖂 Credit Hours X Course Deletion 🔲 New Course Co-listing Course Number Catalog Description Course Title Course Information (Sections 1-9 must be completed. Leave "Proposed" items blank if no change is being made.) 1. Department: Materials Science & Engineering Proposed: 2. Discipline and Course Number: Present: Met 218 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: Mot-Eng 121, accompanied by Met Eng Z17. 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: Lab 1 Total 1 Lecture Ø 6. Credit Hours: Present: Proposed: Lecture 1 Lab 1 Total 2 7. Prerequisites: Present: Met 121; accompanied or preceded by Met 217 Proposed: Accompanied or preceded by Met 217 Elective for Majors: 8. Required 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. 5) 3) 1) 2) Recommended by Department, Recommended by DSCC

Date:

(Chair signature)

(Chair signature)

(Chair signature)

Approved by Curricula Committee;

Approved by Faculty Senate:\_\_

From: 573 341 4362 Page: 2/25 Date: 3/11/2013 3:16:07 PM

	\	CC File # 840	8-2013-MET ENG-:	125-32
Effective Year: 2013 Effective	re Term: Summer 🔲 🛭	Fall 🛛 Spring 🔲		
	Course	Change Form (CC	<b>:</b> )	
	This form is for creat	ting or modifying permaner	it courses.	
Course Changes (Check all changes New Course Changes Course Changes (Check all changes Course Changes Course Changes Chang	ges.) urse Deletion []	Credit Hours	Prerequisites 🔀	
Course Title 🗌 Cat	alog Description 🗌	Course Number 🔲	Co-listing 🔲	
Course Information (Sections 1-9	9 must be completed. Lear	ve "Proposed" items blank if no	change is being made.)	
1. Department: Materials Scie	ence & Engineering	<u>د</u>		
2. Discipline and Course Numb	er: Present: Met 125	Proposed:		
3. Course Title: Present: Cher	nistry of Materials			
Proposed:				
Abbreviated Course Title (2	24 Spaces or Less. Only ne	eded for New Courses or Title (	Changes.):	
solids, energy, enthalpy, e	hemistry of Materials. intropy, thermochemist	Topics will include chemical try, kinetics and rate proces ctor design, materials/meta	ses. Application of che	mistry principles to
solids, energy, enthalpy, e	ntropy, thermochemis ough flowsheeting, read	s. Topics will include chemic try, kinetics and rate proces ctor design, materials/meta	ses. Application of che	mistry principles to
5. If course requires field trip of				
6. Credit Hours: Present:		o Total 3		
Proposed:	Lecture Lab	Total		
7. Prerequisites: Present: Chem1				
Proposed: Chem 1 with "C	or better			
8. Required for Majors: 🔀	Elective for Majors	s: 🔲		
9. Justification: New departme				
10. Semesters previously offer				
11. List all co-listed courses, in	_ •		below.	
1)	3)	5)		
2)	4)	1		-//
Recommended by Department	Wayne 9	Juliu		Date: 4723/13
Recommended by DSCC	(Chair signature)	na Hapen		Date: 3 - // - /3
Annound by Coming Committees	•			Date:
Approved by Curricula Committee:	(Chair signature)		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Approved by Faculty Senate:	(Chair signature)			Date:
	ICOME SIKUALIJASI			

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Date: 3/11/2013 3:16:07 PM

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

Effective Year: 2013 Effe	ective Term: Summer 🔲 🛭 F	all 🛛 Spring 🔲	
		Change Form (CC	•
Course Changes (Check all o			- · · · •
New Course	Course Deletion	<u> </u>	Prerequisites 🖾
	Catalog Description	Course Number 🗌	Co-listing
	•	e "Proposed" items blank if no	change is being made.)
	Science & Engineering		
2. Discipline and Course N		Proposed:	
3. Course Title: Present: E	<del>-</del> -		
Proposed:			
	• •	eded for New Courses or Title C	nanges.):
	boratory experiments desig	·	les of pyrometallurgy, hydrometallurgy, <del>3, or an equivalent training pro</del> gram
approved by S&T.			
•		signed to illustrate the princi racco <del>mpanied by Mt Eng 2</del> 0	ples of pyrometallurgy, hydrometallurgy, 3.
5. If course requires field t	rip check box: 🔲		
6. Credit Hours: Present	:: Lecture ン Lab	1 Total 1	
Proposi	ed: Lecture Lab	Total	
7. Prerequisites: Present: Met203 prior Proposed: Met 203 pr	or concurrent, Chem 4 pric	or or concurrent	
8. Required for Majors:	-	. 🗖	
· -	tment standard to improve st	<del></del>	
•	iffered as an experimental co		
	,	signature does not appear be	elow.
1)	3)	5)	
2)	4)	( 6)	
Recommended by Department	(Chair signature)	Luches	
Recommended by DSCC	(Chair signature)	igns Kapan	Date: 3 - / 1- 13
Approved by Curricula Commit	tee:(Chair signature)		Date:
Approved by Faculty Senate:	(Chair signature)		Date:

From: 573 341 4362 Page: 4/25 Date: 3/11/2013 3:16:07 PM

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

Effective Year: 20	<b>13</b> Effecti	ve Term: Sur	mmer 🔲	Fall [	<b>⊠</b> Spr	ing 🔲					-
			Course		_		-	•			
Course Changes (								_			
New Course [		urse Deletior						· _			
Course Title [						•••	<b>-</b>	- <del>-</del>			
Course Informatio	n (Sections 1-	9 must be con	npleted. Lea	ive "Pr	oposed	" items b	lank if no	change is bei	ng made.)		
1. Department: I	Materials Sci	ence & Engin	eering	<i>G</i> -							
2. Discipline and	Course Numl	ber: Present:	Met 203		Propo	sed:					
3. Course Title: P	resent: Intro	oduction to E	xtractive l	Metal	lurgy						
P	roposed:										
Abbreviated (	Course Title (	24 Spaces or L	ess. Only ne	eded	for New	/ Courses	or Title C	hanges.):			
4. Catalog Descrip Present: Proc heat and mas combustion, Proposed: Pr heat and mas combustion,	duction and its balance ca heat utilizati oduction and is balance ca	refining of m Iculations for on and recoved refining of I Iculations for	etals by py r the unit p very. P <del>rere</del> metals by r the unit p	proces <del>quisit</del> pyron proces	ses of e: Mt i netalluses of	metals ( <del>ng 125</del> . rgy, hyd metals (	extractio rometall extractio	n. Introduct urgy, and el n. Introduct	ion to the ectromet	e principl	es of imphasis o
5. If course requi	res field trip (	check box:	]								
6. Credit Hours:	Present:	Lecture	3 Lab	0	Total	3					
	Proposed:		Lab		Total						
7. Prerequisites: Present: Met Proposed: M	281, or Cer										
8. Required for M	lajors: 🔀	Elective	for Major	s: 🔲							
9. Justification: N	lew departme	nt standard to	Improve s	tudent	t succes	\$					
10. Semesters pre	eviously offer	red as an exp	erimental (	course	e (101,	201, 30	1, 401):				
11. List all co-liste 1)	ed courses, in	itialed by De 3)	pt. Chair, i	fsigna	iture d 5)	oes not	appear b	elow.			
2)		4)		./	6)						
Recommended by D	epartment	(Chair signature)	yu C	Ju	lu			· · · · · · · -		Date:	pels
tecommended by D	scc	(Chair signature)	<u>~~</u>	( <u>, /</u> ,	Pez				······································	Date: 3	-11-13
approved by Curricu	la Committee:	(Chair signature)								Date:	
approved by Faculty	Senate:	(Chair signature)	<u> </u>					<del></del>	<u> </u>	Date:	<u> </u>

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Date: 3/11/2013 3:16:08 PM

		CC File # 8411	L-2013-MET ENG-	204-32
Effective Year: 2013 Effect	ctive Term: Summer 🔲 🛚	Fall 🔯 Spring 🗌		
		Change Form (CC	•	
	This form is for creat	ting or modifying permanen	t courses.	
Course Changes (Check all ch			_	
		Credit Hours 🗌		
Course Title [	Catalog Description 🗌	Course Number 🔛	Co-listing []	
Course Information (Sections	1-9 must be completed. Leav	ve "Proposed" items blank if no	change is being made.)	
1. Department: Materials S	ENG	£		
2. Discipline and Course Nur		Proposed:		
3. Course Title: Present: Tr	ansport Phenomena in Me	etallurgy		
Proposed:				
	•	eded for New Courses or Title C	hanges.):	
4. Catalog Description (360 c Present: The application	•	flow and heat transfer to th	e solution of practical	problems in
	ng. <del>Proroquisite: Civ Eng.</del> 5			
•	•	id flow and heat transfer to	the solution of practic	al problems in
	ng. P <del>rerequisite: Civ Eng 5</del>	<del>u with "C" or pette</del> r.		
5. If course requires field trip		o Total 3		
6. Credit Hours: Present:	Lecture 3 Lab	- lotal		
•	d: Lecture Lab	Total		
7. Prerequisites: Present: Civ Eng 50				
Proposed: Civ Eng 50 wi				
8. Required for Majors: 🔀	Elective for Majors	: 🗀		
9. Justification: New department	-			
10. Semesters previously off	•	• • • • • • •		
11. List all co-listed courses, 1)	initialed by Dept. Chair, if 3)	signature does not appear be 5)	elow.	
2)	4)	/ 6)		
Recommended by Department _	Wayne	Lucher		Date: 422/13
	(Chair signature)	200		
Recommended by DSCC	(Chair signature)	91 400		Date: <u> </u>
Approved by Curricula Committe	ee:		1	Date:
.,,	(Chair signature)			<del>-</del>
Approved by Faculty Senate:	(Chair signature)			Date:
	f-man addingsagat			

Page: 6/25

Date: 3/11/2013 3:16:08 PM

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 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: Total 6. Credit Hours: Present: Lab Lecture Proposed: Lecture Lab Total 7. Prerequisites: Fresent: Met 121 and Civ Eng 110 Proposed: Met 121 and CivE 110 with "C" or better Elective for Majors: 8. Required 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) 2) 4) Recommended by Department (Chair signature) Recommended by DSCC \_\_ (Chair signature) Approved by Curricula Committee: (Chair signature) Approved by Faculty Senate:\_ Date: (Chair signature)

From: 573 341 4362 Page: 7/25 Date: 3/11/2013 3:16:08 PM

					CC File# 84:	13-2013-MET E	NG-217-32
Effective Year: 20:	13 Effectiv	ve Term: Sun	nmer 🔲 (	Fall 🔀 Spr	ing 🗌		
				_	Form (C	•	
Course Changes (C		-					
New Course		urse Deletion		Credit Ho	ırs 🗀	Prerequisites 🔀	
Course Title [	Cat	talog Descript	ion 🔲	Course Nu	mber 🔲	Co-listing 🔲	
					" items blank if r	no change is being ma	de.)
1. Department: N	∕laterials Sci	ence & Engine	eering	<u>.</u>			
2. Discipline and C				Propo	sed:		
3. Course Title: P	resent: Met	als Microstru	ctural Dev	elopment			
P	roposed:						
Abbreviated C	Course Title (:	24 Spaces or Le	ess. Only ne	eded for New	Courses or Title	Changes.):	
transformatio Proposed: Fu	damentals of ons; phase di ndamentals ons; phase di	microstructu agrams; case of microstruc agrams; case	iral develo studies. P tural deve	<del>rerequisite:</del> ·lopments a	Met Eng 131. s relating to so	d solutions, solidific lid solutions, solidi vith a "C" or better	fication and
5. If course requir	es field trip o	heck box: 🔲					
6. Credit Hours:	Present:	Lecture _3	Lab	⊘ Total	3		
	Proposed:	Lecture	Lab	Total			
7. Prerequisites: Present: <b>Met</b> Proposed: <b>Me</b>	ENG- 121 ENG- et 121 with "	C" or better;	accompan	ied or prece	eded by Cer E	<i>√/ó</i> – <b>259</b>	
8. Required for Ma							
9. Justification: No	ew departme	nt standard to	Improve st	udent succes	s		
10. Semesters pre	viously offer	ed as an expe	rimental c	ourse (101,	201, 301, 401):		
11. List all co-liste	d courses, in	itialed by Dep	t. Chair, if	signature d	oes not appear	below.	
1)		3)		5)			
2)		4)	1	/ 6)			
Recommended by De	epartment	(Chair signature)	yue (	Hulu			Date:
Recommended by DS	scc <u>&amp;</u>	(Chair signature)	Sife	<u>در</u>		0 - 10 mm	Date: <u>_ 3 - / ト パ</u>
Approved by Curricul	a Committee:	(Chair signature)					Date:
Approved by Faculty	Senate:					,	Date:
		(Chair signature)					

Page: 8/25

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

Date: 3/11/2013 3:16:09 PM

Effective Term: Summer T Fall Spring Effective Year: 2013 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Prerequisites 🖂 Course Deletion Credit Hours New Course Course Number Co-listing Course Title Catalog Description 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: Lab Total 6. Credit Hours: Present: Lecture Lab Total Proposed: Lecture 7. Prerequisites: 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. 3) 1) 2) 4) Recommended by Department (Chair signature) Recommended by DSCC Date: Approved by Curricula Committee: (Chair signature) Date: Approved by Faculty Senate:\_ (Chair signature)

Page: 9/25

Date: 3/11/2013 3:16:09 PM

CC File # 8444-2013-CER ENG-259-32 Effective Term: Summer Fall Spring Effective Year: 2013 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) New Course Credit Hours Course Deletion 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 Matierals 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 equilibira are presented. Prerequisite: Met Eng 125 or Chem 3. Proposed: Basic thermodynamic concepts are applied to materials. Calculations involving enthalpy, entropy, and Glbbs free energy are studied. Inter-relationships among properties are emphasized. Fundamental concepts of phase equilibira 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: Lab Lecture 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) 6) Recommended by Department Recommended by DSCC\_ Approved by Curricula Committee:

Date:

(Chair signature)

(Chair signature)

Approved by Faculty Senate:\_

From: 573 341 4362 Page: 10/25 Date: 3/11/2013 3:16:09 PM

CC File # 8445-2013-MET ENG-261-31

Effective Year: 2013 Eff	fective Term: Summer 🔲	Fall 🔀 Spring 🗀	
		Change Form (CC ating or modifying permaner	•
Course Title 🔲	Course Deletion [] Catalog Description [X]	Credit Hours 🔀 Course Number 🗌	Co-listing 🗌
		ave "Proposed" items blank if no	o change is being made.)
1. Department: Material	s Science & Engineering	<u> </u>	
2. Discipline and Course N	lumber: Present: Met 261	Proposed:	
3. Course Title: Present:	Materials Senior Design I		
Proposed			
Abbreviated Course T	itle (24 Spaces or Less. Only n	eeded for New Courses or Title (	Changes.):
technology. This coul standing. (Co-listed v Proposed: Overview senior design project topics, and comprehe design process. Prem	orking in groups will be assing will focus on project plate with Cer Eng 261) of the methods, approaches. Formation of teams, assensive project management equisite:	in and all aspects of product es, and techniques required t ignment of projects, review	ect related to a specific materials and process design. Prerequisite: Senior to execute materials related capstone of department curriculum concepts and projects will be used as means to learn the
5. If course requires field			
	nt: Lecture 🔑 Lab 1		
Propo	sed: Lecture 3 Lab O	Total 3	
7. Prerequisites: Present: Senior Standard Proposed: Met 216 a 8. Required for Majors:	and Met 218, or Cer 231 wit		
8. Required for Majors. 2			requisite grade of "C" new dept. standard
		course (101, 201, 301, 401):	
		if signature does not appear 5)	
2)	4)	· ( 6)	,
Recommended by Departme	int(Chair signature)	Haber_	Date: 2/22/12
Recommended by DSCC	(Chair signature)	~ s my	Date:
Approved by Curricula Comn	nittee:		Date:
	(Chair signature)		Date:
Approved by Faculty Senate:	(Chair signature)		

From: 573 341 4362 Page: 11/25 Date: 3/11/2013 3:16:10 PM

CC File# 8446-2013-MET ENG-262-31

Effective Year: 201	3 Effectiv	/e Term: <b>Sum</b> r	ner 🗌 f	ali 🗵 Sprii	ng 🗌				
				_	Form (C	•			
Course Changes (C New Course Course Title	] Co	urse Deletion [	<u> </u>	Credit Hou		Prerequi Co-listing			
Course Information	<u>ı</u> (Sections 1-	9 must be comp	eted. Leav	/e "Proposed"	items blank if	no change is t	eing made.)		
Department: M     Discipline and C	laterials Sci	ence & Engine	ering	Propos					
3. Course Title: Pr	esent: Mat	erials Senior D	esign II						
Pr	oposed:								
Abbreviated C	ourse Title (	24 Spaces or Les	s. Only ne	eded for New	Courses or Title	e Changes.):			
project including and operating Proposed: A concluding	ntinuation o ing process economics ontinuation ing process	iracter spaces or if the Materials and product si . <del>Prerequisites</del> of the Materia and product si . P <del>rerequisites</del>	s Senior E mulation <del>Cer Eng 3</del> als Senior mulation	and/or fabri 61 or Met Er Design I. St and/or fabri	ication, safeti n <del>g 261. (Co-li</del> udents worki ication, safet	y aspects, en <del>sted with Ce</del> ing in groups y aspects, er	vironmental <del>r Eng 362)</del> will complet vironmental	impact e a cap: impact	and capital stone design and capital
5. If course require	es field trip	check box: 🔲							
6. Credit Hours:	Present:	Lecture O	Lab 2	Total 2					
	Proposed:	Lecture O	Lab 3	Total 3					
7. Prerequisites: 2 Present: Cer 2 Proposed: Cer	261 or Met 7	261 261 261 with "C"	or better						
8. Required for Ma		Elective f							
9. Justification: In 10. Semesters pre 11. List all co-liste	viously offe d courses, ir	red as an exper nitialed by Dept	imental o	ourse (101,	201, 301, 401	);	standard t student s	to imp	rove
1) Cer 262		3) 4)		/ 6)					
2) Recommended by De	epartment	Ua	ne \$	habra			(	Date:	1/22/13
Recommended by DS	scc	(Chair signature) (Chair signature)	27-6 jr	97 Rg	Ran		[	Date:	<u>3 - 11- 13</u>
Approved by Curricul	a Committee	<u> </u>	<u>-</u>				[	Date:	
Approved by Faculty	Senate:	(Chair signature) (Chair signature)	· · · · · ·				[	Date:	
		fatigit as Grinner of						•	

From: 573 341 4362 Page: 12/25 Date: 3/11/2013 3:16:10 PM

CC File # 8447-2013-CER ENG-262-31

Effective Year: 2013	Effective Term: Summer	Fall 🛛 Spring 🔲		
		e Change Form ( eating or modifying perma	<del>-</del>	
	II changes.) Course Deletion [] Catalog Description [X]			
Course Information (Sect	ions 1-9 must be completed. L	eave "Proposed" items blank	if no change is being made.)	
	als Science & Engineering			
2. Discipline and Course	Number: Present: <b>Cer 262</b>	Proposed:		
3. Course Title: Present	: Materials Senior Design II			
· Propose	ed:			
Abbreviated Course	Title (24 Spaces or Less. Only	needed for New Courses or T	itle Changes.):	
Present: A continuous project including project and operating economics overview senior design projectopics, and comprese	ocess and product simulation omics. P <del>rerequisite: Cer Eng</del> or of the methods, approach cts. Formation of teams, as	on and/or fabrication, safe <del>; 261 or Met Eng 261. (Cor</del> les, and techniques requir signment of projects, revi nt skills needed to comple	ed to execute materials related ca ew of department curriculum conc te projects will be used as means t	and capital pstone epts and
5. If course requires field	d trip check box: 🔲			
6. Credit Hours: Prese	ent: Lecture 🥏 Lab			
Prop	osed: Lecture O Lab	3 Total 3		
7. Prerequisites: Present: Cer 261 or Proposed: Cer 261 c  8. Required for Majors:	Met 261 or Met 261 with "C" or bett —			
•	·	•	ve student success; increased credit h	ours
	y offered as an experimenta		$_{ m D1)_{:}}$ needed to expand cour	se content
11. List all co-listed cour 1) Met 262	rses, initialed by Dept. Chair, 3)		a expectations.	
عربيء 2)	4)	( 6)		
Recommended by Departm	ent (Chair signature)	Huber	Date:	2/21/13
Recommended by DSCC		upha Kapor	Date:	1.1/-13
Approved by Curricula Com			Date:	
	(Chair sìgnature)		B-4	
Approved by Faculty Senate	(Chair signature)	, , <u>, , , , , , , , , , , , , , , , , </u>	pate:	

From: 573 341 4362 Page: 13/25 Date: 3/11/2013 3:16:10 PM

CC File # 8448-2013-CFR FNG-291-32

Effective Year: 2013 Effecti	ve Term: Summer	☐ Fall 🔀	· .	-2013-CEN ENG-2	.51-32
			nge Form (CC) modifying permanent	•	
Course Changes (Check all changes New Course Course Course Ca	urse Deletion 🗌		Hours		
<del>,      </del>					
Course Information (Sections 1			osed" items plank if no	change is being made.)	
1. Department: Materials Sci	er	~~			
2. Discipline and Course Num			roposed:		
3. Course Title: Present: Cha	racterization of Inor	rganic Solid			
Proposed:					
Abbreviated Course Title	•		New Courses or Title C	hangés.):	
4. Catalog Description (360 ch Present: X-ray diffraction quantitative analysis met techniques including elec	analysis is emphasi hods, and sources o	ized includi of error. In a	ddition, the basic pri	nciples of other comm	non characterization
Prerequisite: Cr Eng 102 of Proposed: X-ray diffraction quantitative analysis met techniques including elections of Prerequisite: Cr Eng 102 o	or Mt on analysis is empha hods, and sources o tron microscopy, th	asized inclu of error. In a permal analy	ding lattice paramete iddition, the basic pri sis, and energy dispe	r determination, qua nciples of other comr	litative and non characterization
5. If course requires field trip	· · · · · · ·	, , ,	75 0001 7		
6. Credit Hours: Present:	Lecture La	h T	otal		
			otal		
Proposed: 7. Prerequisites: Present: Cer 102 or Met	121, or a similar intr	roductory c	ourse on structure of		
Proposed: Cer 102 or Me	-		course on structure o	of solids, with "C" or	better
8. Required for Majors: 🔀	Elective for Ma	-			
9. Justification: New department					
10. Semesters previously offe	_				
11. List all co-listed courses, i 1)	nitialed by Dept. Cha 3)	air, if signati	re does not appear b 5)	elow.	
2)	4) 1	, /	, 6)		_
Recommended by Department	(Chair signature)	Hul	4		Date: 2/22/13
Recommended by DSCC	(Chair signature)	c Kap	1		Date: 3-//-)3
Approved by Curricula Committee	(Chair signature)	38403			Date:
Approved by Faculty Senate:	(Chair signature)				Date:

From: 573 341 4362 Page: 14/25 Date: 3/11/2013 3:16:11 PM

CC File # 8449-2013-MET FNG-307-32

Effective Year: 201	3 Effecti	ve Term: S	ummer 🔲	Fali	⊠ Sp	ring 🗌		3 2013 WILT E	NG 507-52
		This for	Course m is for cre		_		7	#	
Course Changes (Ci New Course Course Course Title	] Co	urse Deletio						Prerequisites	
Course Information									a. X
1. Department: M				eave r	- roposei	a items bia	ink it no	change is being mai	de.)
2. Discipline and Co			GA	16-	Propo	sed:			
3. Course Title: Pro					,,-p-				
	oposed:	<b></b>							
Abbreviated Co	•	24 Spaces or	Less. Only r	needed	for Nev	v Courses o	r Title Cl	hanges.):	
metallurgical p casting process Proposed: An a metallurgical p	advanced c rinciples to simulation advanced c rinciples to	ourse in the the casting software. ourse in the the casting	e materials g of metals P <del>rerequisi</del> e materials g of metals	. Desi te: Ma and a . Desi	gn of ca et Eng 2 method gn of ca	istings and <del>21 or Med</del> Is used in r istings and	i metal: <del>:h Eng 1</del> nodern i metal:	s casting mold fea 53. metals casting pr	rocesses. Application of atures using commercial cocesses. Application of atures using commercial
5. If course require		_					_		_
6. Credit Hours:	Present:	Lecture		O	Total	3			
	Proposed:	Lecture	Lab		Total				
7. Prerequisites: Present: <b>Met 2</b>	21 or Mecr								
Proposed: Met					-				
8. Required for Maj			e for Majo						
9. Justification: Nev			·						
10. Semesters prev	·	•	-		•		-		
11. List all co-listed 1)	courses, in	itialed by Di 3)	ept. Chair,	if sign	ature d (5	-	pear be	elow.	
2)		4)	4.4		, 6)				
Recommended by Dep	artment	(Chair signatur	Wayu	A	rufu	<u>k_</u>			Date:
Recommended by DSC	c	(Chair signatur	<u> </u>	<u> </u>	g Kry	کد	<del></del> ,		Date: <u>3 - 7/                                  </u>
Approved by Curricula	Committee:	(Chair signature	P)						Date:
Approved by Faculty So	enate:	(Chair signature	e)		*** **********************************				Date:

From: 573 341 4362 Page: 15/25 Date: 3/11/2013 3:16:11 PM

CC File # 8450-2013-MET ENG-329-32

Effective Year: 20	13 Effect	ive Term: S	ummer 🔲	Fall 🛛 S	pring 🗀				
		This for	Course rm is for crea		···	n (CC) rmanent cours	es.		
Course Changes (	Check all char	iges.)							
New Course [	Co	urse Deleti	on 🗌	Credit H	ours 🔲	Prere	quisites 🔀		
Course Title [	Ca	talog Descr	iption 🔲	Course	Number 🔲	Co-lis	ting 🔲		
<u>Course Informatio</u>	<u>n</u> (Sections 1	-9 must be co	ompleted. Lea	ave "Propos	ed" items bla	ank if no change	is being made	e.)	
1. Department: N			·						
2. Discipline and	Course Num	ber: Preser	nt: <b>Met 329</b>	- Pro;	oosed:				
3. Course Title: P					ure				
Р	roposed:								
Abbreviated C	ourse Title (	24 Spaces or	r Less. Only ne	eeded for N	ew Courses o	or Title Changes.	):		
and other asp problems. Pr Proposed: Fac	ors governing ects in the perequisites: ctors governed other asp	ng the selectoroduction  Met 217, 2  ling the selects in the	ction of mate of a satisface <del>118, 22</del> 1 ection of ma production o	tory comp iterials for of a satisfa	onent. Fail specific nec ctory comp	ure analysis a eds, fabricalto onent. Fallur	nd remedies. n, heat treat	ent, surface treatme Lecture plus assign ment, surface d remedles. Lecture	ec
5. If course requir	es field trip	check box: l							
6. Credit Hours:	Present:	Lecture	3 Lab	O Tota	<sub>1</sub> 3				
	Proposed:	Lecture	Lab	Tota	t				
7. Prerequisites: Present: Met Proposed: M	217, Met 2 et 217, Met	18, and Me 218, and M	EA/G- t 221 EA/G- Net 221 with	"C" or bei	ter				
8. Required for M									
9. Justification: N			-		:ess				
10. Semesters pre	viously offe	red as an ex	cperimental	course (10	1, 201, 301,	, 401):			
11. List all co-liste	d courses, ir	nitialed by D	ept. Chair, i	f signature	does not a	ppear below.			
1)		3)		;	5)				
2)		4)	1/2	dlank	6) 1			/ /.	
Recommended by De	epartment	(Chair sjgnatu	NULTU	Ynu	W.			Date: <u>3/23//3</u>	-
Recommended by DS	scc	(Chair signatu	angue	r Ra	f.			Date:3 -// /3	_
Approved by Curricul	la Committee	-						Date:	
· · · · · · · · · · · · · · · · · · ·		(Chair signatu	re)	n -					_
Approved by Faculty	Senate:	(Chair signatu	re)					Date:	-

From: 573 341 4362 Page: 16/25 Date: 3/11/2013 3:16:11 PM

CC File # 8451-2013-MFT FNG-331-32

Effective Year: 201	L3 Effecti	ve Term: Sur	nmer 🔲	Fail 🔀 S	pring [	· · · · · · · · · · · · · · · · · · ·	1 2013 (VIE) C		
			ourse is for crea		_	-	C) nt courses.		
Course Changes (C New Course		ges.) urse Deletion			lours 🔲 _	_	Prerequisites 🔀	3	
Course Title	Ca	talog Descrip	tion 🔲	Course	Number [		Co-listing 🔲		
Course Informatio	<u>n</u> (Sections 1-	9 must be com	ipleted. Lea	ive "Propos	ed" items t	blank if no	change is being ma	ade.)	
1. Department: N	∕laterials Sci	ence & Engin	eering	6					
2. Discipline and 0					posed:				
3. Course Title: P	resent: <b>Stee</b>	is and Their 1	[reatment	:					
P	roposed:								
Abbreviated C	Course Title (	24 Spaces or Lo	ess. Only ne	eeded for N	ew Course:	s or Title (	Changes.):		
	istrially impo ication and t	ortant ferrous to yield requi	s alloys are red servic				he selection of projection of projection in the selection of projections applied the selection of the select	<del>-</del>	
•			_	are descril	ed and cl	assified.	The selection of p	proper heat trea	tments to
facilitate fabr	ication and 1	to yield requi	red servic	e properti	es in steel	is suitabl	e for various app	lications is consi	idered.
Prerequisites:	: Met Eng 21	<del>7 and Met Er</del>	<del>ig 218 wit</del>	<del>h "C" or b</del>	ettor-				
5. If course requir	es field trip (	check box: 🗀	]						
6. Credit Hours:	Present:	Lecture	3 Lab	O Tot	al 3				
	Proposed:	Lecture	Lab	Tot	ai				
7. Prerequisites: Present: <b>Met</b>	217 and Me	ENG- t 218 Galle-		,					
Proposed: Me	et 217 and N	let 218 with	"C" or bet	ter					
8. Required for M	ajors: 🔀	Elective	for Major	s: 🔲					
9. Justification: N	ew departme	nt standard to	improve s	tudent suc	cess				
10. Semesters pre	viously offer	red as an exp	erimental	course (10	1, 201, 30	1, 401):			
11. List all co-liste	d courses, in		pt. Chair, i	f signature	_	appear b	oelow.		
1)		3)			5)				
2)		4)	11	1	6)			_	
Recommended by De	epartment	(Chair signature)	Vayue	Jul	<u>u</u>			Date: 2/2	2/13
Recommended by DS	SCC	(Chair signature)	17-12-V	9 Jay	24			Date:3 ~	11-13
Approved by Curricul	la Committee:				<del> </del>	<b>1</b> 00.1		Date:	
		(Chair signature)							
Approved by Faculty	Senate:	(Chair signature)				·		Date:	
		(							

From: 573 341 4362

Page: 17/25

Date: 3/11/2013 3:16:12 PM

					CC File#	8452-2013-MET EN	G-355-32
Effective Year: 20	13 Effect	tive Term: S	ummer 🔲	Fall 🔀 Sp			
					e Form (		
		This for	m is for crea	ating or mod	lifying perma	anent courses.	
Course Changes (Course Dew Course Dev Course Dew Course			on 🗆	Credit Ho	urs 🦳	Prerequisites 🔀	
·-						Co-listing [	
Course informatio	<u>n</u> (Sections 1	9 must be co	mpleted. Lea	ave "Proposed	l" items blank	if no change is being made	2.)
1. Department: N				_			•
2. Discipline and (	Course Num	ber: Presen	t: Met 355	چـ Propo	sed:		
3. Course Title: P	resent: <b>Pro</b>	cess Metaliu	ırgy Applica	tions			
P	roposed:						
Abbreviated C	Course Title	(24 Spaces or	Less. Only ne	eded for Nev	Courses or T	itle Changes.):	
4. Catalog Descrip Present: <b>App</b> l	*	•	•	ess metallu	gv. Equilibri	ium calculations with sto	ichiometry and heat
			_		·	ics. Use of thermodynan	•
complex equi	libria in me	tallurgical ap	oplications.	Prerequisite	Cer Eng 25	9.	
			=			orium calculations with s	•
	·-		-		•	ics. Use of thermodynan	nic software to solve
•		_	_	<del>Prerequisite</del>	:: Cer Eng 25	9 with "C" or better.	
5. If course requir	-	_		O	<b>7</b> .		
6. Credit Hours:	Present: Proposed:	Lecture	3 Lab		2		
7 Destinación	•	recture	Lab	Total			
7. Prerequisites: Present: <b>Cer</b>	259						
Proposed: Ce	r 259 with "						
8. Required for M	ajors: 🔀	Electiv	e for Major:	s: 🔲			
9. Justification: No	ew departm	ent standard	to improve s	tudent succe:	s		
10. Semesters pre	viously offe	red as an ex	perimental (	course (101,	201, 301, 40	) <b>1</b> ):	
11. List all co-listed	d courses, i		ept. Chair, it		oes not appe	ear below.	
1) 2)		3) 4)		5) / 6)			
<del>/</del> )			1L _ /	/ , "			
Recommended by De	epartment	1/4	yue /	upy			_ Date: 2/22/13
		(Chair signatus	5) ~ CA	D. N.			Date: 3-11-13
Recommended by DS	SCC	(Chair signatur	e)	1 July			Date: <u></u>
Approved by Curricul	a Committee						Date:
• •		(Chair signatur	re)				
Approved by Faculty	Senate:	(Chair signatur	el				Date:
		/milan signatur	-1				

From: 573 341 4362 Page: 18/25 Date: 3/11/2013 3:16:12 PM

Effective Year: 2013 Effe	ctive Term: Summer 🔲	CC File # S→	153-2013-METENG	38/
			-1	
	This form is for crea	Change Form (Claiming or modifying permane	L) nt courses.	
<u></u>	anges.) Course Deletion   Catalog Description	Credit Hours  Course Number	Prerequisites 🔀	
Course Information (Sections	- , —	—	Co-listing	
1. Department: Materials S	cience & Engineering	AR LIODOSEO ITRIUS DIBUKILUI	o change is being made.)	
2. Discipline and Course Nur	mber: Present: Met 381	; Proposed:		
3. Course Title: Present: Co	24.00	•		
Proposed:				
Abbreviated Course Title	(24 Spaces or Less. Only ne	eded for New Courses or Title (	Changes.):	
4. Catalog Description (350 c	haracter spaces or less.) theories of corrosion and		and its prevention. P <del>rerequisite: Chem</del> .	243
5. If course requires field trip	o check box: 🔲			
6. Credit Hours: Present:	Lecture 🗦 Lab o	フ Total <i>3</i>		
Proposed	: Lecture Lab	Total		
7. Prerequisites; Present: Chem 243 or Co	er 259 Eng			
Proposed: Pass Chem 24	13 or Cer 259 with "C" or I	etter		
8. Required for Majors: 🔀	Elective for Majors:			
9. Justification: Encourage stu	ident success through a bot	ter understanding of core mate	eriai	
10. Semesters previously offe	ered as an experimental c	ourse (101, 201, 301, 401):		
<ol> <li>List all co-listed courses, i</li> <li>ChemE 381</li> </ol>	nitialed by Dept. Chair, if : 3)	signature does not appear bo 5)	elow.	
2)	4)	6)		
Recommended by Department	(Chair Sentrice)	- Muthera Don	Oalle Date: 2/28/13	-
Recommended by DSCC	Chair signature)	<u> </u>	Date: 3-11-13	-
Approved by Curricula Committee			Date:	
Administration to the second transfer transfer to the second transfer t	(Chair signature)			
Approved by Faculty Senate:	(Chair signature)		Date:	

(Revised December 2012)

From: 573 341 4362 Page: 19/25 Date: 3/11/2013 3:16:13 PM

CC File # 8454-2013-Eng Mg+-257-34

Effective Term: Summer Fail Spring Effective Year: 2013 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Credit Hours Course Deletion Prerequisites New Course \_\_\_ Catalog Description 🛛 🔾 Course Number 🔲 Course Title 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) Recommended by Department Recommended by DSCC Approved by Curricula Committee: (Chair signature) Approved by Faculty Senate:\_ Date: (Chair signature)

From: 573 341 4362 Page: 20/25

Page: 20/25 Date: 3/11/2013 3:16:13 PM

CC File # 8455-2013- Mech Eng-256-20

ffective Year: 20:	.3 Effective	Term: Summe	er 🗌 🛮 Fall 🗵	] Spring 🗌
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# Course Change Form (CC)

Course Changes (Ch			_		. 🗖			
New Course	Coi	urse Deletior	שי		dit Hours 🗌		Prerequisites	
Course Title 🗌	Cat	alog Descrip	tion 🛄	Cou	rse Number 🔃		Co-listing []	
Course Information	(Sections 1-	9 must be con	npleted. Le	ave "Pr	oposed" items blar	nk if no e	change is being made.)	
1. Department: Me	ech & Aero	Engineering	1					
2. Discipline and Co	ourse Numb	er: Present:	: McEng 2	256	Proposed:			
3. Course Title: Pre	esent: <b>Mat</b>	erials Handli	ing and Pl	ant Lay	out			
Pro	oposed:							
Abbreviated Co	ourse Title (	24 Spaces or L	ess. Only r	eeded i	for New Courses or	r Title Ci	nanges.):	
4. Catalog Descript Present: The d the viewpoint Proposed:	lesign and d	objectives of	materials	s handl als and	ing equipment in products from th	ncludin; he rece	g dviversity of applic iving areas to the sh	ation in industry fron Ipping areas
5. If course require	es field trip	check box: [						
6. Credit Hours:	Present:	Lecture 2	Lab 1	Fotal 3				
	Proposed:	Lectur <del>e</del>	Lab		Total			
7. Prerequisites: Present: <b>None</b>	è							
Proposed:								
8. Required for Ma	ajors: 🔲	Electiv	e for Majo	ors: 🔀				
9. Justification: Th	nis course ha	s been co-list	ed with En	g Mg 25	7. We are deleting	ig only t	he McEng course.	
10. Semesters pre								
11. List all co-listed	d courses, ii	nitialed by D	ept. Chair	, if sign	ature does not ap	ppear b	elow.	
1)		/ 4)	Al		5) =\			
2)			//		6)			Z/20/2013
Recommended by De	epartment	(Chair signatur	( )	<u> </u>	<u> </u>			
Recommended by DS	scc	(Chair signatur	<u> </u>		zpu			_ Date:_ 3 -//- 13
Approved by Curricul	a Committee				103-10			
Approved by Faculty	Senate:	(Chair signatur	re)					_ Date:
, , , , , , , , , , , , , , , , , , ,	11 <u>11 1</u>	(Chair signatur	re)					

From: 573 341 4362

Effective Year: 2013

Effective Term: Summer Fall Spring

Page: 21/25

Date: 3/11/2013 3:16:13 PM

CC File # 8456-2013-Mech Eng -316-20

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 (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 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. AeEng 316 6) Recommended by Department (Ehair signature) Recommended by DSCC (Chair signature) Approved by Curricula Committee: Date: (Chair signature) Approved by Faculty Senate:\_ Date:\_ (Chair signature)

From: 573 341 4362 Page: 22/25 Date: 3/11/2013 3:16:14 PM

CC File # 8457-2013- Mech Eng-315-33

Effective Year: 2103 Effective Term: Summer Fall Spring

# **Course Change Form (CC)**

Course Changes (Che New Course		Creative Haves	B 122	
		Credit Hours 🔲		
	Catalog Description 🗌		Co-listing	
<u>Course Information</u> (	Sections 1-9 must be completed. Le	eave "Proposed" items blank	f no change is being made.)	
1. Department: Med	th & Aero Engineering	u		
2. Discipline and Cou	ırse Number: Present: McEng 3	315 Proposed:		
3. Course Title: Pres	ent: Concurrent Engineering l			
Prop	oosed: Concurrent Engineering			
Abbreviated Cou	irse Title (24 Spaces or Less. Only n	needed for New Courses or Ti	tle Changes.): Concurrent Engineerir	ıg
Present: Studen to set up quantit	tative requirements and then us	se a quantitative rating pr	each to product development. They ocess to identify the critical require cturing, assembly, cost, and suppor	ments
5. If course requires	field trip check box: 🔲			
6. Credit Hours: P	resent: Lecture 3 Lab 0 T	Total 3		
P	roposed: Lecture Lab	Total		
7. Prerequisites: Present: Mc Eng	CIV 213 or AeEng 231, and EvEng 1	110		
Proposed:				
8. Required for Majo	rs: Elective for Majo	rs: 🔀		
9. Justification: With	the deletion of the second course	In the sequence, this one do	es not need to be identified as the first	t.
10. Semesters previo	ously offered as an experimental	course (101, 201, 301, 40	1):	
11. List all co-listed c 1) Ac Eng 31! 2)	ourses, initialed by Dept. Chair,  5 3)  4	if signature does not appe 5) 6)		,
tecommended by Depa	rtment // Chair signature)		Date:	<u>20/2013</u> -11-12
ecommended by DSCC	(Chair signature)	~ Tape	Date: 3	-//~/2
pproved by Curricula C	ommittee:(Chair signature)		Date:	
pproved by Faculty Ser	nate:(Chair signature)		Date:	<u> </u>

From: 573 341 4362 Page: 23/25 Date: 3/11/2013 3:16:14 PM

CC 510# 8458-2012 N

		CC File # 8730	DOIS-MULL ENG_381-37
Effective Year: 2013	Effective Term: Summer 🗌 Fall 🔀 Sp	oring 🗌	J 221 32

# Course Change Form (CC)

Course Changes (	Chack all chan	ane l					
New Course [	····	urse Deletio:	n 🔲	Credit Hours	П	Prerequisites 🔀	
Course Title [	Ca	talog Descrip	otion 🔲	Course Numl	oer 🗌	Co-listing	
Course Informatio	n (Sections 1-	9 must he cor	mnleted Les			change is being made.	<b>.</b>
1. Department: N				ve rioposed it	ems biank ii no (	change is being made.	}
			mech	.4 6	•		
2. Discipline and C			•	•			
3. Course Title: P		hanical and	Aerospace	Control System	15		
	roposed:						
Abbreviated C	Course Title (	24 Spaces or L	ess. Only ne	eded for New Co	urses or Title Ch	nanges.):	
	hesis of med	hanical and	aerospace			control functions. R ted with Ae Eng 38:	esponse and stability 1)
5. If course requir	es field trip o	check box: [					
6. Credit Hours:	Present:	Lecture 3	Lab 0 To	tal 3			
	Proposed:	Lecture	Lab	Total			
7. Prerequisites:	<i>1162.H</i> Eng 279 or <del>A</del>	16.60 e Eng 361					
Proposed: Mr	Eng 279 or	Ae Eng 261					
8. Required for M		Elective	for Majors	:: 🔀			
9. Justification: Lo	ower level pre	erequisite is su	ufficient for t	the current mate	erial covered.		
10. Semesters pre	viously offer	red as an exp	erimental c	ourse (101, 20	1, 301, 401):		
11. List all co-liste  1) Ae Eng 2)		nitialed by De 3) 4)	ept. Chair, if	signature doe: 5 6)		elaw.	
? Recommended by De	epartment	(Chair signature	<u></u>				Date: 120/2013
Recommended by DS	SCC	(Chair signature	<u>, St</u>	make	Pan		Date: 3-/(- 13
Approved by Curricul	la Committee	(Chair signature	*}				_ Date:
Approved by Faculty	Senate:	(Chair signature					Date:
		renan aknature	.1				

From: 573 341 4362 Page: 24/25 Date: 3/11/2013 3:16:14 PM

cc file # 8459 - 2013 - Mech Eng -363-32

Effective Year: 2013 Effective Term: Summer Fall Spring

## Course Change Form (CC)

Course Changes (Check	all changes.)			
New Course 🔲	Course Deletion 🔲	Credit Hours 🗌	Prerequisites 🔀	
Course Title 🔲	Catalog Description 🔀	Course Number 🗌	Co-listing	
Course Information (Sec	tions 1-9 must be completed. Le	eave "Proposed" items blan	k if no change is being made.)	
1. Department: Mech	& Aero Engineering	14-		
2. Discipline and Cours	e Number: Present: McEng 3	663 Proposed:		
3. Course Title: Presen	t: Principles and Practice of	Computer Aided Design		
Propos	sed:			
Abbreviated Course	e Title (24 Spaces or Less. Only r	needed for New Courses or	Title Changes.):	
Present: This course representations of commercial CAD/C Proposed: Lecture surfaces and solids	(360 character spaces or less.) se introduces the fundament curves and surfaces, modelit AM packages to gain experie s cover the fundamentals of ( c, CAD/CAM data exchange, a AM systems including NX and	ng of solids, and graphic ences and to help grasp f computer-aided design v and computer graphics. I	displays. Students will also undamentals vith emphasis on geometric In the lab session, students	practice with modeling of curves
5. If course requires fie				
•		otal 3		
	posed: Lecture Lab	Total		
7. Prerequisites: Compose 53	<i>PSCI</i> 3 or 73 or 74, <del>Mc Eng</del> 161, at	- least Junior standing		
Proposed: Cmp Sc 8. Required for Majors:	53 or 73 or 74, Me Eng 161, N Elective for Majo	<b>⁄lath 22, at least junior s</b> - rs: ⊠	tanding	
9. Justification: The des	scription is reworded to reflect o	urrent coverage. The addi	tional math prereq is needed.	
10. Semesters previous	sly offered as an experimental	course (101, 201, 301, 4	01):	
11. List all co-listed cou 1) 2)	rses, initialed by Dept. Chair,  3)  4)	if signature does not app 5) 6)	pear below.	
Recommended by Departn	nent (Chair signature)			Date: 7/20/2013
Recommended by DSCC	(Chair signature)	phat Sepy		Date: 3 - / 1- /3
Approved by Curricula Con				Date:
	(Chair signature)			
Approved by Faculty Senat	e:(Chair signature)		1 10 100 1 10 10 10	Date:

From: 573 341 4362

Effective Year: 2013

Effective Term: Summer Fall Spring

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Date: 3/11/2013 3:16:15 PM

CC File # 8460-2013-Aero Eng-213-32

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 (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: 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 gyrodynamics. 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: mec# 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) 6) Recommended by Department (Chair signature) Recommended by DSCC (Chair signature) Approved by Curricula Committee: Date: (Chair signature) Approved by Faculty Senate:\_ Date: (Chair signature)

CC File # 8461-2013-ALP-397-10 Effective Year: みの/3 Term: Summer 🔲 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Prerequisites Credit Hours New Course 🗹 Course Deletion 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 Proposed: 397 2. Discipline and Course Number: 3. Course Title: Present: Proposed: Multidisciplinary Studies Capstone **Abbrevlated 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:  $\square$ Total: Lab: 6. Credit Hours: Present: Lecture: Total: 3 Proposed: Lab: Lecture: 3 7. Prerequisites: Present: Proposed: Senior status 8. Required for Malors: 2 Elective for Majors: This is the final course in the Bachelor of Multidisciplinary Studies degree 9. Justification: program. 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) Recommended by Discipline Specific Curricula Committee (Chair\signature) Approved by Curricula Committee: \_ Date: \_\_ (Chair signature) Date: \_\_\_\_\_ Approved by Faculty Senate: \_\_ (Chair signature)

From: 573 341 4362

Page: 21/24

Date: 3/8/2013 6:01:30 PM

From: 573 341 4362 Page: 22/24 Date: 3/8/2013 6:01:31 PM

	CC File #	8462-2013-Physics -382-10
Effective Year: 2013 Effective Term: Summ	ner 🗌 Fall 🗵 Spring 🗌	
	urse Change Form for creating or modifying perr	
Course Changes (Check all changes.)  New Course Course Deletion	_	Prerequisites
Course Title Catalog Description		Co-listing []
Course Information (Sections 1-9 must be comple	eted. Leave "Proposed" items bla	nk if no change is being made.)
1. Department: Physics	PHYSICS	
2. Discipline and Course Number: Present:	Proposed: 382	
3. Course Title: Present: Transport in Nanos	tructures: An Introduction	
Proposed:	- <del>-</del>	•
Appreviated Course Title (24 Spaces or Less	. Only needed for New Courses o	r Title Changes.): Nanostructures
4. Catalog Description (360 character spaces or Present: The course overviews how wave wave (electron and light) transport in mo wells, quantum wires, and photonic crys Proposed:	e inteference, energy quantiz odern nanostructured materia	ation and tunneling phenomens influence the als and devices such as quantum dots, quantum
5. If course requires field trip check box:		
6. Credit Hours: Present: Lecture 3 La Proposed: Lecture 4 La		
7. Prerequisites: Present: Physics 107 or 207 Proposed:		
	or Majors: 🏻	
9. Justification: This was an experimental cour		311
10. Semesters previously offered as an exper	rimental course (101, 201, 301	, 401): FS <b>09</b> and <b>FS11</b>
11. List all co-listed courses, initialed by Dept	t. Chair, if signature does not a	ppear below.
1) 3)	5)	•
2) 4)	6)	
Recommended by Department (Chair signature)		pate: 2 -24-13
Recommended by DSCC Tarus (Chair signature)	<u>k                                      </u>	pate: 3/8/90/3
Approved by Curricula Committee: (Chair signature)		Date:
Approved by Faculty Senate: (Chair signature)		Date:

(Revised December 2012)

Page: 1/1 Date: 3/11/2013 2:55:24 PM From: 573 341 4362 CC File # 8463-2013-ELECEN6-339-10 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 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

4. Catalog Description (360 character spaces or less.) 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) 2) 4) 6) Recommended by Department (Chair signature) Recommended by DSCC (Chair signature) Date: Approved by Curricula Committee: (Chair signature) Date: Approved by Faculty Senate:\_

(Chair signature)

From: 573 341 4362 Page: 23/24 Date: 3/8/2013 6:01:31 PM

			EC# 25/	159 - FS 20	713-PULENG-301
Effective Year: 2013	Effective Term:	Summer Fall			
	Exper	imental Cou	ırse Forr	n (EC)	
An EC form must be so or later allow the cou experimental course number.	irse to be offered	twice at any time di	uring the follo	wing three yea	
A new course that is a CC form to receive			minor, or gra	iduate certifica	te may be submitted on
Co-listed offerings sh	ould be submitted	d on one form, origi	nating from th	ne primary disci	ipline.
Department: <b>Mining</b> Discipline and Course	NUC 8	ENG			
Course Title: Applied	d Mathematics in	Nuclear Engineerin	B.≸		
Abbreviated Title (24	spaces or less): A	applied Math in NE	帳		
Instructor(s): Dr. Ga	ry E. Mueller				
Credit Hours: Lectur	e 3.0 Lab 🗷	Total 3			
Prerequisites: <b>NE 30</b>	3				
Semester(s) previous	ly taught: FS2008	}			
Brief Course Descript	tion (360 characte	r spaces or less): Ap	pplication of c	ordinary and pa	rtial differential
equations in the solu	ition of nuclear ei	ngineering problem	s, particularly	with the neut	ron kinetics equations.
Bessel's equation an	d special function	s, eigenvalue probl	ems, Green's	function, integ	ral methods and
transformations.					
List all co-listed cours	ses: Include initials 3)	of Department Cha 5)	air, if signatur	e is not already	included below.
2)	4)	6)			
Recommended by Dep Recommended by DSC	c: Store	vud Keu gnature) Quantural	Law		Date: <u>2012-01</u> -17
Approved by Curricula	Committee:	ignature) \ [			Date:

From: 573 341 4362

Page: 1/3

Date: 3/11/2013 2:54:00 PM

Effective Term: FS13

EC File # 2461- Fall 2013 - Arch Eng -

# **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

William Collection Col							
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: Eng	ineering						
Department: CArEE							
Discipline and Course	Number: ArchE 3	01					
Course Title: Passive S	olar Engineering						
Abbreviated Title (24	spaces or less):	Solar Engineer	ing				
Instructor(s): Baur							
Credit Hours: Lec	ture: 2	Lab: 1	Total: 3				
Prerequisites: ME 37	71 or instructors co	onsent					
Semester(s) previous	ly taught: New						
This course will treat top passive space heating a the use of both computer	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 cours	ses: Include initial	s of Dept. Chai		s) if signa	tures are not already		
1.			4.				
2.	. /	•	5.				
3. 6.  Department Chair:							
رم د د د Coll <b>ège/School De</b> an:	Chair	Signature	Zafr	Date:	3-11-13		
	Dear	۔ ۔ Signature ام کر کر	tne	<del></del>			
UMR Curricula Comm		·		Date:			

(Revised 2/14/2002)

Chair Signature

From: 573 341 4362 Page: 2/3 Date: 3/11/2013 2:54:00 PM

## 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

<u>Text:</u> Principles of Solar Engineering, F. Kreith, J. Kreider, D.Y., Goswami

Heating, Cooling and Lighting

N. Lechner

<u>Catalog Description</u>: 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.

<u>Catalog Materials</u>: 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.

<u>Course Objectives</u>: 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.

<u>Project:</u> 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:

- o abstract
- o introduction and problem statement
- o results to date and project status
- o problems encountered and their solutions
- o conclusions
- o bibliography
- o 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%

<u>Grade</u> 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

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#### **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 <u>Solar Design</u>, 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.

From: 573 341 4362

Page: 24/24

Date: 3/8/2013 6:01:31 PM EC# 2462-552013 - MK+ 301

Effective Year: 2013 Effective Term: Summer 

Fall 

Spring 

T

# **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 tab 0 Total 3

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.

5)

	*	
2) 4)	6)	
Recommended by Departmen		Date: 3/6/2013
Recommended by DSCC:	(Chair signature)	Date: 3/7/20/3
Approved by Curricula Commit	/	Date:

11/2/2012

1)

From: 573 341 4362 Page: 1/12 Date: 3/8/2013 6:06:15 PM

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: i) 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) Recommended by DSCC:

Approved by Curricula Committee: \_

Approved by Faculty Senate:

Date:

(Chair signature)

(Chair signature)

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 Chem 1-General Chemistry	
Chem 2-General Chemistry Lab	
Engl 20-Exposition and Argumentation 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. Physics 23-Engineering Physics I*	
Econ-121 or 122	
Elective-Hum or Soc Sci <sup>r</sup>	<u>.3</u> 17

CANHAMANT VIAN
First Semester Credit Programming Elective***
Second Semester  Mc Eng 161-Intro to Design
First Semester Credit Mc Eng 213-Machine Dynamics 3 Mc Eng 221-Applied Thermodynamics 3 El Eng 281-Electrical Circuits 3 CE 110-Mechanics of Materials 3 CE 120-Material Lab 1 Elective-Advanced Math/Stat or Cmp Sc 3 16
Second Semester  Mc Eng 211-Modeling and Analysis of Dyn Sys>3  Mc Eng 208-Machine Design I 3  Mc Eng 225-Heat Transfer 3  Mc Eng 231-Thermofluid Mechanics I 3  Mc Eng 240-Mechanical Instrumentation 3  Elective-Communications 3  17
First Semester Credit Mc Eng 242-Mech Engineering Systems
Second Semester Eng Mg 124-Practical Concepts for Tech Managers 1 Eng Mg 137-Economic Analysis of Engr Projects
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  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, better as presentially for follow up sources.

the curriculum and for graduation.

211, both as prerequisite for follow-up courses in

<sup>b)</sup> Math 8 and 21 may be substituted for Math 14 and

### 193 — Mechanical Engineering

- 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.
- 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.)
- 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.
- 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.
- 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.
- 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.
- 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.

## 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.
- 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.
- 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.
- 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

	Crean
chine Dynamics	3
	16
er	
deling and Analysis of Dyn Sys* .	3
ermofluid Mechanics	
chanical Instrumentation	
nufacturing	3
	1.7
	Credit
ch Eng Systems	2
	chine Dynamics

Mc Eng 279-Auto Control of Dynamic Systems . . . . . 3

Mc Eng 357-Integrated Prod & Proc Design .......3

or Mc Eng 308-Rapid Product Design

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DC # 0/5/- 2013 - Aero Eng - 000 - 000 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 scie	nce degree
programs.	/ n // .	:/ /
Recommended by Department:	(Ongir signature)	Date: 1/12/2013
Recommended by DSCC:	(Chair signature)	Date: 1/22/204
Approved by Curricula Committee: _	(Chair signature)	Date:
Approved by Faculty Senate:	(Chair signature)	Date:

### Aerospace Engineering — 55

English 20	4	Ł
Second Semester           IDE 20	4 4	} } }
SOPHOMORE YEAR  First Semester  Cmp Sc 73 or 74-Basic Sci Prog¹¹  Cmp Sc 77 or 78-Comp Prog Lab¹¹  CE 50 or 51-Statics⁴  Math 22-Calc/Analy Geom III⁴  Physics 24-Eng Physics II⁴  Ae Eng 161-Aero Vehicle Performance	3 4 4	<u>}</u>
Second Semester  Ae Eng 180-Intro to Aerospace Design  Ae Eng 160-Eng Mech-Dyn <sup>5</sup> Mc Eng 219-Thermodynamics <sup>4,5</sup> Math 204-Elem Diff Equations <sup>4</sup> CE 110-Mech of Materials <sup>4</sup> Elective/Literature		3
JUNIOR YEAR First Semester Ae Eng 213-Aerospace Mech 14,13 Ae Eng 231-Aerodynamics 14,5,13		3
Second Semester		
Second Semester  Ae Eng 251-Aerospace Structures I <sup>1</sup> , Ae Eng 261-Flight Dynamics and Control Ae Eng 271-Aerodynamics II Ae Eng 282-Exp Methods in Ae Eng I Aerodynamics II Ae		3
Elective/Communications <sup>a</sup>	Credit	37 t332233

#### List of Notes:

- Ohemistry 1,2 and 4 or an equivalent training program approved by Missouri S&T
- Must be one of the following: Political Science 90, History 112, History 175, or History 176.
- 3) Must be one of the following: Economics 121 or Economics 122.
- 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.
- 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.
- 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.
- Descrives 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.
- 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).
- 9) All electives must be approved by the student's advisor. Students must comply with the requirements specified in the current catalog.
- 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>13</sup> Computer Science requirement can be satisfied by taking CS 53 and CS 54.
- Must be a course on engineering ethics, business ethics, social ethics, or any ethics course approved by the student's advisor.

▶ 13) 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.

Page: 6/12 From: 573 341 4362 Date: 3/8/2013 6:06:17 PM CC File # 8307-2012 - ExpEng -Effective Year: 2013 Spring 🔲 Fall 🖂 Term: Summer 🔲 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Prerequisites 🔲 New Course 🛛 Course Deletion 🗌 Credit Hours 🔲 Co-listing Course Title 🔲 Catalog Description Course Number 🗌 Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.) 1. Department: Mining and Nuclear Engineering Proposed: Exp Eng 411 2. Discipline and Course Number: 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 fundamentaly and applied research, research methods, literature review, experimental design and experimentation, disertation composition, concepts of originality and interlectual property. 5. If course requires field trip check box: Total: 6. Credit Hours: Lab: Present: Lecture: Total: 3 Lecture: 3 Lab: 0 Proposed: 7. Prerequisites: Present: Proposed: Graduate Standing Elective for Majors: 🛛 8. Required for Majors: 🔲 We would like to co-list with Mining 411 research methods. It has become apparent 9. Justification: 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 54 3) 4) 5) Recommended by Department (Chair signature) Recommended by Discipline Specific Curricula Committee (Chair signature)

(Revised 1/29/09)

Date: \_

Date:

(Chair signature)

(Chair signature)

Approved by Curricula Committee: \_

Approved by Faculty Senate:

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## 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 ≥ 3.00/4.00 or a GPA ≥ 3.00/4.00 for the last 60 credit hours of the undergraduate course work. A student with a cumulative GPA ≥ 2.75/4.00 but less than 3.00/4.00 or a GPA ≥ 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 ≥ 148 (600 based on previous scale) and GRE-AW score ≥ 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.

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### 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

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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: narzf@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

(Reference 2012-2014 Online Graduate Catalog)

Date: 3/8/2013 6:06:18 PM : 3/8/2013 0.00... CC File # 8425-2012 - Min Eng 476-10 From: 573 341 4362 Page: 10/12 Effective Year: 2013 Fall 🕅 Spring 🔲 Term: Summer □ Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Prerequisites 🔲 New Course 🛛 Course Deletion Credit Hours Catalog Description Course Number 🔲 Co-listing 🔲 Course Title 🗌 Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.) 1. Department: Mining and Nuclear Engineering Proposed: Mi Eng 476 2. Discipline and Course Number: Present: 3. Course Title: Present: Proposed: Sustainability in Mining Sustainability In Mining Appreviated Course Title: Sus 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 & environmental impacts. Mining as sustainable development interventions. Mine planning for sustainability, sustainability assessment & reporting, sustainable mine closure & post-mining land use. Case studies. 5. If course requires field trip check box: 🔲 Total: 6. Credit Hours: Present: Lecture: Lab: Total: 3 Proposed: Lecture: 3 Lab: 0 7. Prerequisites: Present: Proposed: Mi Eng 376 or instructor concent... Elective for Majors: 🔲 8. Required for Majors: 🛛 This course is a core requirement of the Master of Engineering degree program in 9. Justification: Mining Engineering. 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. 2) 1) 4) 5) Date: 11-14-12 Recommended by Department (Chair signature) Date: <u>/</u>ス-/タ-/\* Recommended by Discipline Specific Curricyla Committee (Chair signature) Date: \_\_\_\_ Approved by Curricula Committee: \_ (Chair signature)

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

(Chair signature)

Approved by Faculty Senate: \_

Date: 3/8/2013 6:06:18 PM 9: 3/8/2013 0.00... CC File # 8426-2012 - Min Eng 424-10 From: 573 341 4362 Page: 11/12 Effective Year: 2013 Fall 🖾 Spring 🗀 Term: Summer 🔲 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Credit Hours Prerequisites 🔲 Course Deletion .... New Course 🗵 Course Number 🔲 Co-listing 🔲 Catalog Description Course Title 🗌 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:  $\Box$ Total: Present: Lecture: Lab: 6. Credit Hours: Lab: 0 Total: 3 Lecture: 3 Proposed: 7. Prerequisites: Present: Proposed: Mi Eng 324 or Equivalent Elective for Majors: 🗌 8. Required for Majors: 🛛 This course is a core requirement of the Master of Engineering degree program in 9. Justification: 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)

4) 5)

Recommended by Department (Chair signature)

Recommended by Discipline Specific Curricula Committee (Chair signature)

Approved by Curricula Committee: (Chair signature)

Approved by Faculty Senate:

Date: <u>//-/4-12</u>

Date: 12-14-12

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

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

(Chair signature)

Date: 3/8/2013 6:06:19 PM From: 573 341 4362 Page: 12/12 cc file # 8427-2012 - Min Eng 426-10 Effective Year: 2013 Spring 🗌 Term: Summer 🗌 Fall 🖾 Course Change Form (CC) This form is for creating or modifying permanent courses. Course Changes (Check all changes.) Credit Hours Prerequisites 🔲 Course Deletion  $\square$ New Course Course Number 🗌 Co-listing 🔲 Catalog Description 🗌 Course Title 🛄 Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.) 1. Department: Mining and Nuclear Engineering Proposed: Mi Eng 426 2. Discipline and Course Number: Present: Present: 3. Course Title: 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:  $\Box$ Total: Lab: 6. Credit Hours: Present: Lecture: Total: 3 Lab: 0 Proposed: Lecture: 3 7. Prerequisites: Present: Proposed: Mi Eng 326 or Equivalent Elective for Majors: 8. Required for Majors: 🛛 This course is a core requirement of the Master of Engineering degree program in 9. Justification: 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. 2) 3) 1) 4) Date: 11-14-12-Recommended by Department-(Chair signature) Date: 12/9-,7 Recommended by Discipline Specific Curificula Committee (Chair signature) Date: \_\_\_\_\_ Approved by Curricula Committee: \_\_

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

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Approved by Faculty Senate: \_\_