Agenda
Campus Curricula Committee Meeting
December 8, 2010 Meeting
11 a.m. Room 117 Fulton Hall

Review of submitted CC forms:
CC 8031, Geology 434, Granite and Rhyolite Petrogenesis, effective Fall 2010.
CC 8032, Geology 420, Analytical Structural Geology, effective Spring 2011.
CC 8033, Geology 320, Advanced Structural Geology, effective Spring 2011
CC 8070, Mechanical Engineering 312, Introduction to Finite Element Analysis,
effective Spring 2011.
CC 8071, Metallurgical Engineering 318, Principles for Microstructural Design, effective
Spring 2012.
CC 8072, MSE 418, Principles for Advanced Microstructural Design, effective Spring
2011.
CC 8073, Ceramic Engineering 222, Applied Glass Forming, effective Spring 2011.
CC 8074, Explosives Engineering 491, Internship, effective Summer 2011.
CC 8075, Explosives Engineering 499, Practicum, effective Summer 2011.
CC 8080, Mechanical Engineering 330, Applied Computational Methods, effective
Spring 2011.
CC 8082, Business 490, Research, effective Fall 2011.
CC 8083, Marketing 490, Research, effective Fall 2011.
CC 8084, Business 496, Project Research, effective Fall 2011.
CC 8085, Mechanical Engineering 423, effective Spring 2011.
CC 8086, Mechanical Engineering 435, effective Spring 2011.
CC 8087, Mechanical Engineering 220, Engineering Design Methodology, effective Spring 2011.

CC 8090, Mining Engineering 270, Mining Industry Economics, effective Fall 2011.

CC 8091, Technical Communication 331, Technical Editing, effective Fall 2011.

CC 8092, Technical Communication 361, History of Technical Communication, effective Fall 2011.

CC 8093, Computer Science 253, Algorithms, effective Fall 2011.

CC 8094, Business 350, Customer Focus and Satisfaction, effective Fall 2011.


CC 8096, Marketing 450, Advanced New Product Development, effective Fall 2011.

CC 8097, Business 450, Advanced Customer Focus and Satisfaction, effective Fall 2011.

Review of submitted EC forms:
EC 2293, Geological Engineering 401, Surface Waves (MASW) & Ground Penetrating Radar (GPR), effective Spring 2011.


EC 2297, Economics 301, Economic Analysis of Natural Resources of South Africa, effective Spring 2011.

EC 2298, Economics 301, Field Investigation of the Economics of Natural Resources of South Africa, effective Spring 2011.

EC 2299, Geology 301, Geological Field Investigation of Natural Resources of South Africa, effective Spring 2011.

EC 2300, Geology 301, Geological Analysis of Natural Resources of South Africa, effective Spring 2011.
EC 2301, ERP 301, Enterprise Resource Planning systems in small and Medium size Enterprise, effective Fall 2011.

EC 2302, Mechanical Engineering 401, Advanced Digital Design and Manufacturing, effective Spring 2011.

EC 2303, Civil Engineering, Environmental Engineering 301, Phytoremediation and Natural Treatment Systems: Science and Design, effective Spring 2011.


EC 2305, Geology 401, Advanced Depositional Systems, effective Spring 2011.

EC 2306, Geology 401, Stratigraphy and Basin Evolution, effective Spring 2011.

**Tabled Items:**
CC 8004, Aerospace Engineering 319, Advanced Thermodynamics. **Tabled**
Course Change Form (CC)

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)
- New Course  
- Course Deletion
- Catalog Description
- Course Title
- Credit Hours
- Prerequisites
- Course Number
- Co-listing

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

1. **Department**: Geological Sciences and Engine
2. **Discipline and Course Number**: Present:  
   Proposed: Geo 434
3. **Course Title**: Present:  
   Proposed: Granite and Rhyolite Petrogenesis
   **Abbreviated Course Title**: Granite Petrogenesis
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. **Catalog Description** (40 Words or Less)  
   Present:  
   Proposed: The origin of granites and rhyolites with respect to extreme fractionation, crustal anatexis, magma mixing, and tectonic setting will be explored through critical reading of the literature and examination of hand samples and thin sections from classic geologic terranes. A research paper is required as well as a field trip at the student's expense.

5. **If course requires field trip check box**:  
6. **Credit Hours**:  
   Present:  
   Proposed: Lecture: 3  
   Lab: 1  
   Total: 4
7. **Prerequisites**:  
   Present: Geology 130  
   Proposed:  

8. **Required for Majors**:  
   Elective for Majors:  
9. **Justification**: Please approve the CC from directly as this course will meet concurrently with the current undergraduate class (Geo 330). Graduate students will complete additional assignments (research papers, oral presentations, additional exercises), in addition to all other assignments.

10. **Semesters previously offered as an experimental course (101, 201, 301, 401)**:
11. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below**.
   1)  
   2)  
   3)  
   4)  
   5)  
   6)  

   **Recommended by Department**  
   (Chair signature)  
   **Date**:  

   **Recommended by Discipline Specific Curricula Committee**  
   (Chair signature)  
   **Date**:  

   **Approved by Curricula Committee**:  
   (Chair signature)  
   **Date**:  

   **Approved by Faculty Senate**:  
   (Chair signature)  
   **Date**:  

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Effective Year: 2011
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 □
Course Title □ Catalog Description □
Credit Hours □ Prerequisites □
Course Number □ Co-listing □

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)
1. Department: Geological Sciences and Engineering
2. Discipline and Course Number: Present: G20 Proposed: 420 422 Geo 420
3. Course Title: Present: Proposed: Analytical Structural Geology
Abbreviated Course Title: Analyt Structural Geo
(24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (40 Words or Less)
Present:

Proposed: The course provides theoretical background, analytical techniques, and hands-on experience, for quantifying processes that lead to the formation and evolution of rocks and structures produced as a result of deformation at a variety of scales - hand sample to global. Poster- and oral- presentations, and a research paper required.

5. If course requires field trip check box: □
6. Credit Hours:
   Present: Lecture:
   Proposed: Lecture: 2
   Lab: 1
   Total: 3
7. Prerequisites:
   Present: Geology 220, Geophysics 381
   Proposed:
8. Required for Majors: □ Elective for Majors □
9. Justification: This course is needed for the graduate program and will meet at the same time as the undergraduate class (320). Graduate students will complete a research paper and present the topic to the class, in addition to other assignments.
11. List all co-listed courses, initiated by Dept. Chair, if signature does not appear below.
   1) 2) 3)
   4) 5) 6)
   Recommended by Department
   Recommended by Discipline Specific Curricula Committee
   Approved by Curricula Committee:
   Approved by Faculty Senate:

Date: 9/15/10
Date: 10/22/2010
Date:
Date:

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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: Geological Sciences and Engineering
Proposed: 320-322 Geo 320
2. Discipline and Course Number: Present: 320-322 Geo 320
Proposed: 320-322 Geo 320
3. Course Title: Present:
Proposed: Advanced Structural Geology
Abbreviated Course Title: Adv Structural Geology
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)
Present:
Proposed: The course provides theoretical background, analytical techniques, and hands-on experience, for analyzing geologic structures at a variety of scales - hand sample to global.

5. If course requires field trip check box: □

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

7. Prerequisites:
Present: Geology 220, Geophysics 381
Proposed: Geology 220, Geophysics 381

8. Required for Majors: □ Elective for Majors: □

9. Justification:
Considerable interest from undergraduate students to have an advanced course in structural geology. This course will meet with the graduate class (420), but with different expectations for assignments and assessment for both groups.

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
1) 2) 3) 4) 5) 6)

Approved by Department ____________________________ Date: 9-15-10
(Chair signature)

Approved by Discipline Specific Curricula Committee ____________________________ Date: 10-22-10
(Chair signature)

Approved by Curricula Committee: ____________________________ Date: ______________
(Chair signature)

Approved by Faculty Senate: ____________________________ Date: ______________
(Chair signature)

This fax was received by GFI FAXmaker fax server. For more information, visit: http://www.gfi.com
Dear colleagues,

Please find the attached revised CC forms requesting approval for a graduate level course in Geological Sciences "Granite and Rhyolite Petrogenesis" as well as for Advanced Structural Geology and Analytical Structural Geology. I believe I have made all the changes requested. I apologize for wasting the committee's time correcting my grammatical errors as well as technical errors (placing information in section 11 rather than section 10).

"Granites and Rhyolites"

To clarify my request, this course will meet concurrently with the current undergraduate elective course Geology 330 "Granites & Rhyolites. This is standard practice across campus- it is essential for programs with a limited number of faculty to make this adjustment if they are to be able to offer the courses necessary to maintain a graduate program. I am requesting that the EC requirement for the graduate course be waived because there is a similar permanent course already on the books. In addition, I would like to have this course approved for the Fall semester, so that two graduate students that are currently taking this course may drop Geology 330 and add Geology 434. These two students need this 400 level course to meet the requirement for their graduate degree. They are both funded by their government and are on a strict timetable to complete their degree requirements. I thought I had taken care of submitting this form the last time I taught the course several semesters ago. It became clear to me late last spring that this was not the case. Because this request involves a very small number of students and will impact them in a very positive way, I hope you will see fit to agree to this request.

In addition, there is a possibility that a student with a BS in Geology and Geophysics from Missouri S&T will have taken Geology 330. This student may subsequently enroll in the graduate program in Geology and Geophysics at Missouri S&T and then request to take Geology 434 as part of their graduate degree program. The decision as to whether or not to accept this course as part of the student's graduate program will be subject to the approval of the student's graduate committee. I would not have a problem with this or a similar request. Many geoscientists have established impressive scientific careers researching the origin of granites and rhyolites. If a Missouri S&T student wished to pursue a similar career path as a result of having taken Geology 330 as an undergraduate and then at a later date wanted to take Geology 434 I know I could honor that student's request by continuing to provide a challenging and stimulating learning environment rather than just duplicating previous course material.

Advanced Structural Geology and Analytical Structural Geology

I know in the past there were problems with the EC forms for this class. However, a variation of these courses was taught in 2008, 2009, and 2010 with good enrollment. This information was inadvertently placed in section 11 rather than section 10. Therefore I am requesting they be made permanent course. It is important to have these courses listed in the catalog to recruit high quality graduate students to the program.

Thank you for your consideration.

[Signature]

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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 Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)
2. Discipline and Course Number: Present: Mc Eng 312 Proposed:
3. Course Title: Present: Introduction to Finite Element Analysis Proposed:
   Abbreviated Course Title: (24 Spaces or Less. Only needed for New Courses or Title Changes.)
   Present: Proposed:
4. Catalog Description (300 Character Spaces or Less.)

5. If course requires field trip check box: □

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

7. Prerequisites:
   - Present: Math 204
   - Proposed: Mc Eng 208 or Ae Eng 253; or consent of instructor for majors that do not require either of these courses.

8. Required for Majors: □ Elective for Majors: □

9. Justification: Separate prerequisites are required to maintain the course background for various 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) AE 352 2) 3)
   4) 5) 6)

Recommended by Department: [Signature] Date: 09/10/10
Recommended by Discipline Specific Curricula Committee: [Signature] Date: 10/15/10
Approved by Curricula Committee: [Signature] Date: 
Approved by Faculty Senate: [Signature] Date: 

(Revised 1/29/04)
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: Materials Science & Engineering
2. Discipline and Course Number: Present: Proposed: Met 318
3. Course Title: Present: Proposed: Principles for Microstructural Design
   Abbreviated Course Title: Microstructural 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 introduce the basics of microstructural principles that can be used to design advanced materials. It will help students learn about the basic principles and microstructural design approaches.

5. If course requires field trip check box: ☐
6. Credit Hours:
   Present: Lecture: Lab: Total:
   Proposed: Lecture: 2.0 Lab: 0.0 Total: 2.0

7. Prerequisites:
   Present:
   Proposed: At least junior standing, and Met 215 and Met 217 or equivalent.

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

9. Justification: This course is need for students to acquire the latest in Integrated Computational Materials Engineering (ICME) approach. ICME is being promoted by NAE, NSF and other federal agencies.

10. Semesters previously offered as an experimental course (101, 201, 301, 401): FS2004; SP2006
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1) 2) 3)
   4) 5) 6)

Recommended by Department ________________________________ Date: 9/4/10
Recommended by Discipline Specific Curricula Committee ________________________________ Date: 10/4/10
Approved by Curricula Committee: ________________________________ Date: __________________
Approved by Faculty Senate: ________________________________ Date: __________________

(Revised 1/29/09)
Course Change Form (CC)
This form is for creating or modifying permanent courses.

Course Changes
(Choose 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: Materials Science & Engineering
2. Discipline and Course Number: Present: Proposed: MSE 418
3. Course Title: Present:
   Proposed: Principles for Advanced Microstructural Design
   Abbreviated Course Title: Adv Microstructural
   (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 introduce the microstructural principles that can be used to design advanced materials. It will help students learn about the principles and microstructural design approaches. In addition, they will design a theoretical microstructure for high efficiency structure.
5. If course requires field trip check box: ☐
6. Credit Hours:
   Present: Lecture: 3.0 Lab: 0.0 Total: 3.0
   Proposed: Lecture: 3.0 Lab: 0.0 Total: 3.0
7. Prerequisites:
   Present:
   Proposed: Graduate level
8. Required for Majors: ☐ Elective for Majors: ☒
9. Justification:
   This course is need for students to acquire the latest developments in Integrated Computational Materials Engineering (ICME) approach. ICME is being promoted by NAE, NSF and other federal agencies.
10. Semesters previously offered as an experimental course (101, 201, 301, 401): FS2004; SP2006
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1) 2) 3) 4) 5) 6)
   Recommended by Department: [Signature]
   Recommended by Discipline Specific Curricula Committee: [Signature]
   Approved by Curricula Committee: [Signature]
   Approved by Faculty Senate: [Signature]

Date: 9/9/10
Date: 10/18/10

(Revised 1/29/09)
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: Materials Science & Engineering
2. Discipline and Course Number: Present: Cer 222
3. Course Title: Present:
   Proposed: Applied Glass Forming
   Abbreviated Course Title: Applied Glass Forming
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (300 Character Spaces or Less.)
   Present:
   Proposed: Examines the properties and behavior of molten glass along with basic forming techniques, including off-hand shaping, molding and casting.

5. If course requires field trip check box: ☐

6. Credit Hours:
   Present: Lecture: 1.0 Lab: 1.0 Total: 2.0
   Proposed: Lecture: 1.0 Lab: 1.0 Total: 2.0

7. Prerequisites:
   Present:
   Proposed: Cer 104 or Met 125; freshmen, sophomore, or junior only or by instructor permission

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

9. Justification: To allow students to gain experience with traditional industrial techniques with larger quantities of glass.

10. Semesters previously offered as an experimental course (101, 201, 301, 401): SP2010; FS2010

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

1) 2) 3)

4) 5) 6)

Recommended by Department: ________________________________
(Chair signature)
Recommended by Discipline Specific Curricula Committee: ________________________________
(Chair signature)
Approved by Curricula Committee: ________________________________
(Chair signature)
Approved by Faculty Senate: ________________________________
(Chair signature)

Date: 9/9/10
Date: 10/13/10
Date: 
Date:

(Revised 1/29/09)
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)
New Course ☑ Course Deletion ☐ Credit Hours ☐ Prerequisites ☐
Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" Items blank if no change is being made.)
1. Department: Mining & Nuclear Engineering
2. Discipline and Course Number: Present: Proposed: ExpEng 491
3. Course Title: Present:
   Proposed: Internship
   Abbreviated Course Title: Internship
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (300 Character Spaces or Less.)
   Present:
   Proposed:
   Students apply critical thinking skills and discipline specific knowledge in a work setting based on a project designed by the advisor and employer. Activities will vary depending on the student’s background and the setting. Requires major report and formal presentation to sponsoring organization.
5. If course requires field trip check box: ☐
6. Credit Hours:
   Present:
   Proposed:
   Lecture: Lab: Total:
   Lecture: 0-6 Lab: Lab: Total: 0-6
7. Prerequisites:
   Present:
   Proposed:
   12hrs of ExpEng courses including ExpEng307.
8. Required for Majors: ☐ Elective for Majors: ☐
9. Justification: See attached Justification

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
1) 2) 3)
4) 5)
6)

Recommended by Department (Chair signature)
Recommended by Discipline Specific Curricula Committee (Chair signature)
Approved by Curricula Committee: (Chair signature)
Approved by Faculty Senate: (Chair signature)

(Revised 1/29/09)
Explosives Engineering

Proposed courses:

491 Internship (IND 0.0-6.0) Students apply critical thinking skills and discipline specific knowledge in a work setting based on a project designed by the advisor and employer. Activities will vary depending on the student’s background and the setting. Requires major report and formal presentation to sponsoring organization. 12 hrs of ExpEng courses including ExpEng307.

499 Practicum (IND 0.0-6.0) This course is similar to the ExpEng 491 Internship course. The difference is that this course is intended for students who are already employed by an organization for whom they wish to continue working. Prerequisite: Prerequisite: 12 hrs of ExpEng courses including ExpEng307.

Justification.

On 22 April 2010 the Coordinating Board of Higher Education (CBHE) approved (at state level) the new Master of Science in Explosives Engineering at the Missouri University of Science and Technology. The degree has been put in place and is listed in the new 2010-2012 graduate catalog with the first 11 classes/courses listed with the new ExpEng designation. We are very proud of this accomplishment.

The approved proposal package includes a 491 internship which is intended for students to gain practical experience in the explosives industry. The internship is modeled on the S&T Business program graduate internship. It is our intent to require the MS student in Explosives Engineering to acquire practical experience related to explosives in industry or government before graduating. We feel this is very important.

For persons already employed in industry or government the graduate “practicum” as offered by the S&T Business program, Business 499, makes sense over the 491 designation. The difference is the practicum is for students already employed. For the explosives engineering program it will be in explosives related employment. In addition we have currently submitted a Master of Science of Explosives Engineering non thesis degree option to cater for nontraditional students, such as those who are unable to stay on campus for 6 months to do a research project due to work, military commitments, or financial considerations due to loss of salary and having to support a family. For these persons whom the explosives engineering masters is a means of job advancement in their field we are opting for the practicum over the internship. The MS in explosives engineering without thesis will be reserved for those who are not able to complete a full research project and will be reserved for those in an explosives related industry or government position.

The above is explains the background of our submission of a request for approval of ExpEng 491 Internship and ExpEng 499 practicum. We are still in the process of applying for new courses as we try to get everything up and running with the new program and we hope to have everything fully in place by fall 2011. Enrollment is already 13 MS students, 2 of which have already completed their thesis defense and will be graduating at Christmas. We also have 19 in the graduate certificate 6 of which have voiced the intent to join the masters when they have completed their certificates and a host of other applications anticipated to be processed before Christmas.
Course Change Form (CC)

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)
- New Course ☑
- Course Deletion ☐
- Credit Hours ☐
- Prerequisites ☐
- Course Title ☐
- Catalog Description ☐
- Course Number ☐
- Co-listing ☐

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

1. **Department:** Mining & Nuclear Engineering
2. **Discipline and Course Number:**
   - Present: Propose: ExpEng 499
3. **Course Title:**
   - Present: Practicum
   - Proposed: Practicum
4. **Abbreviated Course Title:**
   - Practicum
   - (24 Spaces or Less. Only needed for New Courses or Title Changes.)
5. **Catalog Description:**
   - (300 Character Spaces or Less.)
   - Present:

   *Proposed: This course is similar to the ExpEng 491 Internship course. The difference is that this course is intended for students who are already employed by an organization for whom they wish to continue working.*

6. **If course requires field trip check box:** ☐
7. **Credit Hours:**
   - Present: Lecture: Lab: Total:
   - Proposed: Lecture: 0-6 Lab: Total: 0-6
8. **Prerequisites:**
   - Present:
   - Proposed: Prerequisite: 12hrs of ExpEng courses including ExpEng307.
9. **Required for Majors:** ☐
   **Elective for Majors:** ☐
10. **Justification:** See attached justification

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

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

   1) 2) 3) 4) 5)

   **Recommended by Department:**
   (Chair signature)
   Date: 9/7/10

   **Recommended by Discipline Specific Curricula Committee:**
   (Chair signature)
   Date: 10/15/10

   **Approved by Curricula Committee:**
   (Chair signature)
   Date: 

   **Approved by Faculty Senate:**
   (Chair signature)
   Date: 

(Revised 1/28/09)
Explosives Engineering

Proposed courses:

491 Internship (IND 0.0-6.0) Students apply critical thinking skills and discipline specific knowledge in a work setting based on a project designed by the advisor and employer. Activities will vary depending on the student’s background and the setting. Requires major report and formal presentation to sponsoring organization. 12hrs of ExpEng courses including ExpEng307.

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Justification.

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For persons already employed in industry or government the graduate “practicum” as offered by the S&T Business program, Business 499, makes sense over the 491 designation. The difference is the practicum is for students already employed. For the explosives engineering program it will be in explosives related employment. In addition we have currently submitted a Master of Science of Explosives Engineering non thesis degree option to cater for nontraditional students, such as those who are unable to stay on campus for 6 months to do a research project due to work, military commitments, or financial considerations due to loss of salary and having to support a family. For these persons whom the explosives engineering masters is a means of job advancement in their field we are opting for the practicum over the internship. The MS in explosives engineering without thesis will be reserved for those who are not able to complete a full research project and will be reserved for those in an explosives related industry or government position.

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Course Change Form (CC)
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**Course Changes** (Check all changes.)
- New Course  
- Course Deletion  
- Credit Hours  
- Prerequisites  

**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)
1. Department: MAE
3. Course Title: Present: Proposed: Applied Computational Methods
   **Abbreviated Course Title:** Computational Methods
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (300 Character Spaces or Less.)
   Present: Proposed: Detailed study of computational methods for efficient solution of selected fluids, structures, thermodynamics, and controls problems in aerospace and mechanical engineering. Besides basic numerical techniques, topics covered include gradient-based optimization and uncertainty quantification.
5. If course requires field trip check box: □
6. Credit Hours:
   Present: Lecture: Lab: Total: Proposed: Lecture: 3 Lab: Total: 3
7. Prerequisites:
   Present: Proposed: Cmp Sc 53 or 73 or 78; Math 204
8. Required for Majors: □ Elective for Majors: □
9. Justification: The course was offered in Spring 2009 (24 students) and Spring 2010 (33 students) with experimental status. The enrollment numbers and positive feedback received from students/faculty encouraged the instructor to continue teaching it with a permanent course number. There is no change in the course structure, format, or catalog description.
10. Semesters previously offered as an experimental course (101, 201, 301, 401): Sp 2009, Sp 2010
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1) Ae Eng 330  2)  3)
   4)  5)  6)
   Recommended by Department ____________________________ Date: 19/10/10
   (Chair signature)
   Recommended by Discipline Specific Curricula Committee ____________________________ Date: 11/5/10
   (Chair signature)
   Approved by Curricula Committee: ____________________________ Date: __________
   (Chair signature)
   Approved by Faculty Senate: ____________________________ Date: __________
   (Chair signature)

(Revised 1/29/09)
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:** Business and Information Techn

2. **Discipline and Course Number:**  **Present:** BUS 490  **Proposed:**

3. **Course Title:**  **Present:** Research  
   **Proposed:**
   **Abbreviated Course Title:**  
   **Catalog Description:**  
   **Present:** The research project will involve students applying research techniques and discipline specific knowledge working on a project designed by the advisor, often working with a business organization. Requires major report and formal presentation to sponsoring organization.
   **Proposed:** Research investigation of an advanced nature leading to a major report suitable for publication in a journal or in a conference proceedings.

4. **Credit Hours:**  
   **Present:** Lecture: 0-6  **Lab:**  **Total:** 0-6  
   **Proposed:** Lecture: 0-9  **Lab:**  **Total:** 0-9

5. **Prerequisites:**  
   **Present:** BUS 420  
   **Proposed:** Permission of the instructor.

6. **Required for Majors:**  
   **Elective for Majors:**

7. **Justification:** Provide consistency with 490 designations for other programs without Thesis.

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

9. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**
   1)  
   2)  
   3)  
   4)  
   5)  
   6)  

   **Recommended by Department:** [Signature]
   **Date:** 12/19/10
   **Recommended by Discipline Specific Curricula Committee:** [Signature]
   **Date:** 12/20/10
   **Approved by Curricula Committee:** [Signature]
   **Date:**
   **Approved by Faculty Senate:** [Signature]
   **Date:**

(Revised 1/29/09)
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:** Business and Information Techn

2. **Discipline and Course Number:**
   - Present: MKT 490
   - Proposed:

3. **Course Title:**
   - Present: Research
   - Proposed:
   - Abbreviated Course Title: Research
     (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description**
   - Present: Investigations of an advanced nature.
   - Proposed: Research investigation of an advanced nature leading to a major report suitable for publication in a journal or in a conference proceedings.

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

6. **Credit Hours:**
   - Present: Lecture: 0-15 Lab: Total: 0-15
   - Proposed: Lecture: 0-9 Lab: Total: 0-9

7. **Prerequisites:**
   - Present:
   - Proposed:

8. **Required for Majors:** □
   - Elective for Majors: □

9. **Justification:** Provide consistency with 490 designations for other programs without Thesis.

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

11. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**
   1) 2) 3) 4) 5) 6)

   **Recommended by Department**
   [Signature]
   Date: 10/19/10

   **Recommended by Discipline Specific Curricula Committee**
   [Signature]
   Date: 10/20/10

   **Approved by Curricula Committee:**
   [Signature]
   Date: 

   **Approved by Faculty Senate:**
   [Signature]
   Date: 

(Revised 1/29/09)
**Course Change Form (CC)**

This form is for creating or modifying permanent courses.

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

- New Course [x]
- Course Deletion [x]
- Credit Hours [x]
- Prerequisites [x]
- Course Title [ ]
- Catalog Description [x]
- Course Number [x]
- Co-listing [x]

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

1. **Department:** Business and Information Techn

2. **Discipline and Course Number:**
   - Present: BUS 496
   - Proposed:

3. **Course Title:**
   - Present:
     - Proposed: Project Research
   - **Abbreviated Course Title:** Project Research
     - (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description**
   - **Present:**
   - **Proposed:**
     - The research project will involve students applying research techniques and discipline specific knowledge working on a project designed by the advisor, often working with a business organization. Requires major report and formal presentation to sponsoring organization.

5. **If course requires field trip check box:** [ ]

6. **Credit Hours:**
   - **Present:**
   - **Proposed:** Lecture: 0-9, Lab: 0-9

7. **Prerequisites:**
   - **Present:**
   - **Proposed:** Permission of the instructor.

8. **Required for Majors:** [ ]
   - **Elective for Majors:** [x]

9. **Justification:**
   - This is BUS 490 today, in essence. BUS 490 is being changed to be consistent with other 490 courses for non-thesis granting programs. But BUS needs this course to continue to be an option for MBA students. It needs to be approved concurrently with the change to BUS 490.

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

11. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**
   - 1) 2) 3) 4) 5) 6)

   **Recommended by Department** [Signature]  
   **Date:** 10/19/10

   **Recommended by Discipline Specific Curricula Committee** [Signature]  
   **Date:** 10/20/10

   **Approved by Curricula Committee:** [Signature]  
   **Date:**

   **Approved by Faculty Senate:** [Signature]  
   **Date:**

   (Revised 1/29/09)
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:** MAE
2. **Discipline and Course Number:** Present: Mc Eng 423 Proposed:
3. **Course Title:** Present: Viscous Fluid Flow Proposed:
   - **Abbreviated Course Title:**
   - **Catalog Description (300 Character Spaces or Less.):**
     Present: Fundamentals of viscous fluids for incompressible and compressible flows governed by Navier-Stokes equations; exact, approximate, and numerical solutions for steady and unsteady laminar flows; stability, transition, and turbulence, CFD simulations of internal and external flows.
     Proposed: Fundamentals of viscous fluids for incompressible and compressible flows governed by Navier-Stokes equations; exact, approximate, and numerical solutions for steady and unsteady laminar flows; boundary layer theory for incompressible and compressible flows; stability and transition.

4. **If course requires field trip check box:** [ ]
5. **Credit Hours:**
   - Present: Lecture: 3 Lab: Total: 3
   - Proposed: Lecture: Lab: Total:
6. **Prerequisites:**
   - Present: ME/AE 331
   - Proposed: ME/AE 331 or ME/AE 339 or equivalent.
7. **Required for Majors:** [x] **Elective for Majors:** [ ]
8. **Justification:** The course was last taught in Fall 2008. The prerequisite change will open the course to suitably motivated students in MAE and other department interested in the topic. The change in the catalog description is to account for changes to the course contents: discussion on turbulent flows have been omitted as a separate course: ME/AE 435 (Turbulent Flows) is being taught in the department. The textbook to be used for the course is: Viscous Fluid Flow by Frank White, McGraw Hill, 3rd Edition, 2006.
9. **Semesters previously offered as an experimental course (101, 201, 301, 401):**
10. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**
    1) Ae Eng 423
    2) 
    3) 
    4) 
    5) 
    6) 

**Recommended by Department**

Signatures:
- [Signature] (Chair signature)
- [Signature] (Chair signature)

**Approved by Curricula Committee:**

Signatures:
- [Signature] (Chair signature)

**Approved by Faculty Senate:**

Signatures:

**Date:**
- 1/13/10
- 11/15/10

(Revised 1/29/09)
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: MAE

2. Discipline and Course Number: Present: Mc Eng 435  Proposed:

3. Course Title: Present: Turbulence in Fluid Flow
   Proposed: Turbulent Flows - Theory, Measurements & Modeling

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

4. Catalog Description (300 Character Spaces or Less.)
   Present: Fundamentals of statistical theory of turbulence; turbulence modeling for transport processes of heat, mass, and momentum; closure schemes for Reynolds-averaged Navier-Stokes equations in free turbulence and wall turbulence; CFD simulations of turbulent flows.
   Proposed: Navier-Stokes equations; statistical description and mean-flow equations; behavior of free shear and wall bounded flows; the energy cascade; turbulence spectra and Kolmogorov hypothesis; measurement techniques: PIV, hot-wires, LDV; turbulence modeling for transport processes and closure schemes for RANS equations; evaluation of model constants, introduction to LES, DNS and hybrid-RANS.

5. If course requires field trip check box: □

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

7. Prerequisites:
   Present: ME/AE 331
   Proposed: ME/AE 331 or ME/AE 339 or equivalent.

8. Required for Majors: □  Elective for Majors: □

9. Justification: The course was last taught in Fall 2009 (after a gap of 11 years). The prerequisite change will open the course to suitably motivated students in MAE and other department interested in the topic. The change in the catalog description is to account for changes to the course contents and make it current and topical. The textbook to be used for the course is: Turbulent Flows by Stephen B. Pope. Cambridge University Press, 2000.

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

   1) Ae Eng 435  2)  3)
   4)  5)  6)

   Recommended by Department
   (Chair signature) Date: 10/13/10

   Recommended by Discipline Specific Curricula Committee
   (Chair signature) Date: 11/5/10

   Approved by Curricula Committee: (Chair signature) Date:

   Approved by Faculty Senate: (Chair signature) Date:

   (Revised 1/29/09)
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: MAE


3. Course Title: Present: Engineering Design Methodology  Proposed:
   Abbreviated Course Title: (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)
   Present: This course examines structured engineering design theory and methodologies for conceptual design and redesign of products. Topical coverage includes customer needs gathering, functional modeling, engineering specifications creation (OFD), concept generation, selection and design embodiment. Team work/hands-on projects emphasized.
   Proposed:

5. If course requires field trip check box: □

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

7. Prerequisites:
   Present: Junior standing in engineering and at least 12 hours major field credit
   Proposed: Senior standing in engineering

8. Required for Majors: □  Elective for Majors: □

9. Justification: Advanced topics in design team forming, customer need organization and segmentation, reverse engineering, concept testing and selection have been added to the course.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1)  2)  3)  4)  5)  6)

   Recommended by Department ____________________________
   (Chair signature)  Date: 10/13/10

   Recommended by Discipline Specific Curricula Committee ____________________________
   (Chair signature)  Date: 11/5/10

   Approved by Curricula Committee: ____________________________
   (Chair signature)  Date: __________________

   Approved by Faculty Senate: ____________________________
   (Chair signature)  Date: __________________

10/05/10

(Revised 1/31/08)
Course Change Form (CC)
This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)
- New Course □
- Course Deletion □
- Credit Hours □
- Prerequisites □
- Course Title □
- Catalog Description □
- Course Number □
- Co-listing □

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)
1. Department: Mining and Nuclear Engineering
2. Discipline and Course Number: Present: Min 270
   Proposed:
3. Course Title: Present: Mining Industry Economics
   Proposed:
   Abbreviated Course Title:
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
   Present:
   Proposed:
4. Catalog Description (300 Character Spaces or Less.)
   Present:
   Proposed:

5. If course requires field trip check box: □
6. Credit Hours:
   Present: Lecture: 3.0
   Proposed: Lecture:
   Lab: Total:
7. Prerequisites:
   Present: None
   Proposed: Econ 121 or 122
8. Required for Majors: □
   Elective for Majors: □
9. Justification:

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1)  
   2)  
   3)  
   4)  
   5)  
   6)  
   Recommended by Department [Chair signature]
   Recommended by Discipline Specific Curricula Committee [Chair signature]
   Approved by Curricula Committee: [Chair signature]
   Approved by Faculty Senate: [Chair signature]

Date: 10/21/10
Date: 11/5/10
Date: 
Date: 

(Revised 1/29/09)
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: ENGL & TCH COM
2. Discipline and Course Number: Present: TCH COM 331 Proposed:
3. Course Title: Present: Technical Editing Proposed:
   Abbreviated Course Title:
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
   Present: The principles and practices of technical editing, including usability, audience analysis,
   contextual editing, the conventions of scientific and technical communication, and the role of
   the editor in document development and publication.
   Proposed:
4. Catalog Description (300 Character Spaces or Less.)
5. If course requires field trip check box: □
6. Credit Hours:
   Present: Lecture: 3 Lab: 0 Total: 3
   Proposed: Lecture: Lab: Total:
7. Prerequisites:
   Present: TCH COM 65 and TCH COM 240
   Proposed: TCH COM 65, English 65, or consent of instructor
8. Required for Majors: □ Elective for Majors: □
9. Justification: The prerequisite of ENGL/TCH COM 240 Layout and Design for all 300-level tech com
   courses was part of the original proposals for the BS and MS tech com degrees.
   Experience has taught us that ENGL/TCH COM 240 is not necessary for success in our
   300-level courses. The prerequisite serves only to discourage (or prevent) students
   who do not have 240 from taking the course.
10. Semesters previously offered as an experimental course (101, 201, 301, 401): n/a
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1) 2) 3)
   4) 5) 6)
   Recommended by Department (Chair signature)
   Recommended by Discipline Specific Curricula Committee (Chair signature)
   Approved by Curricula Committee: (Chair signature)
   Approved by Faculty Senate: (Chair signature)

   (Revised 1/29/09)

   Date: 1/11/2010
   Date: 1/11/2010
   Date:
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: ENGL & TCH COM

2. Discipline and Course Number: Present: TCH COM 361 Proposed:

3. Course Title: Present: History of Technical Communication Proposed:

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

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

   Present: Introduction to the roles of the technical communicator and the technologies of communication from ancient cultures to the present

   Proposed:

5. If course requires field trip check box: □

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

7. Prerequisites:
   Present: TCH COM 65 and TCH COM 240
   Proposed: TCH COM 65, English 65, or consent of instructor

8. Required for Majors: □ Elective for Majors: X

9. Justification: The prerequisite of ENGL/TCH COM 240 Layout and Design for all 300-level tech com courses was part of the original proposals for the BS and MS tech com degrees. Experience has taught us that ENGL/TCH COM 240 is not necessary for success in our 300-level courses. The prerequisite serves only to discourage (or prevent) students who do not have 240 from taking the course.

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

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1) 
   2) 
   3) 
   4) 
   5) 

   Recommended by Department ____________________ Date: 10/20/10
   (Chair signature)

   Recommended by Discipline Specific Curricula Committee ____________________ Date: 11/1/2010
   (Chair signature)

   Approved by Curricula Committee: ____________________ Date: __________
   (Chair signature)

   Approved by Faculty Senate: ____________________ Date: __________
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: Computer Science

2. Discipline and Course Number: Present: Cmp Sc 253 Proposed:

3. Course Title: Present: Algorithms Proposed:

Abbreviated Course Title:
(24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (300 Character Spaces or Less.)
Present: Students will work to solve recurrence relations, analyze algorithms for correctness and time and space complexity, develop strategies for dynamic programming and greedy algorithms, create fundamental computing algorithms for shortest-path, minimal spanning trees, maximum flow, and hard problems.
Proposed:

5. If course requires field trip check box [ ]

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

7. Prerequisites:
Present: Comp Sci 128 and Comp Sci 153
Proposed: Cmp Sc 128, Cmp Sc 153, preceded or accompanied by Calculus I

8. Required for Majors: [ ] Elective for Majors: [ ]

9. Justification: Lack of Calculus I knowledge makes it hard for students to meet this course's demands for mathematical rigor.

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

1) 2) 3)

4) 5) 6)

Recommended by Department
(Chair signature) Date: 11/5/2010

Recommended by Discipline Specific Curricula Committee
(Chair signature) Date: 11/5/2010

Approved by Curricula Committee:
(Chair signature)

Approved by Faculty Senate:
(Chair signature)

(Revised 1/29/09)
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: Business and Information Tech

2. Discipline and Course Number: Present: Proposed: BUS 350

3. Course Title: Present:
   Proposed: Customer Focus and Satisfaction
   Abbreviated Course Title: Customer Focus
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description
   (300 Character Spaces or Less.)
   Present: Proposed:
   Major emphasis is given to the concept of customer focus, with coverage of techniques for
   obtaining customer needs, measuring customer satisfaction, developing products and
   services to satisfy customers, and maximizing the benefits of customer feedback. A semester
   long HoQ project will be done.

5. If course requires field trip check box: ☐

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

7. Prerequisites:
   Present:
   Proposed: MKT 310 or MKT 307 or Eng Mgt 251

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

9. Justification: This is to create a co-listing for MKT 350, an established course.

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

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1) MKT3
   2)
   3)
   4)
   5)
   6)

   Recommended by Department
   (Chair signature)
   Date: 11/3/10

   Recommended by Discipline Specific Curricula Committee
   (Chair signature)
   Date: 11/3/10

   Approved by Curricula Committee: _____________________________
   (Chair signature)
   Date: ____________

   Approved by Faculty Senate: _____________________________
   (Chair signature)
   Date: ____________

(Revised 1/29/09)
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:** Business and Information Tech
2. **Discipline and Course Number:** Present: MKT 350  
   Proposed:
3. **Course Title:** Present: New Product Development  
   Proposed: Customer Focus and Satisfaction
   **Abbreviated Course Title:** Customer Focus  
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. **Catalog Description**
   (300 Character Spaces or Less.)
   - Present: Major emphais is given to the concept of customer focus, with coverage of techniques for obtaining customer needs, measuring customer satisfaction, developing products and services to satisfy customers, and maximizing the benefits of customer feedback. Students will work through a new product develop.
   - Proposed: Major emphais is given to the concept of customer focus, with coverage of techniques for obtaining customer needs, measuring customer satisfaction, developing products and services to satisfy customers, and maximizing the benefits of customer feedback. A semester long HoQ project will be done.
5. **If course requires field trip check box:** □
6. **Credit Hours:**  
   - Present:  
   - Lecture: 3  
   - Lab:  
   - Total: 3
7. **Prerequisites:**  
   - Present: MKT 311 or MKT 307 or Eng mgt 251
   - Proposed:
8. **Required for Majors:** □  
   **Elective for Majors:** □
9. **Justification:** Title to reflect course description more accurately and to add BUS 350 as a co-listed course.
10. **Semesters previously offered as an experimental course (101, 201, 301, 401):**
11. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**
   - 1) BUS 350  
   - 2)  
   - 3)  
   - 4)  
   - 5)  
   - 6)
   - Recommended by Department:  
   - (Chair signature)  
   - Date: 11/3/10
   - Recommended by Discipline Specific Curricula Committee:  
   - (Chair signature)  
   - Date: 11/3/10
   - Approved by Curricula Committee:  
   - (Chair signature)  
   - Date:  
   - Approved by Faculty Senate:  
   - (Chair signature)  
   - Date:  

(Revised 1/29/09)
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: Business and Information Tech
2. Discipline and Course Number: Present: MKT 450 Proposed:
3. Course Title: Present: Advanced New Product Development
   Proposed: Advanced Customer Focus and Satisfaction
   Abbreviated Course Title: Advanced Customer Focus
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (300 Character Spaces or Less.)
   Present: Major emphasis is given to the concept of customer focus, with coverage of techniques for
   obtaining customer needs, measuring customer satisfaction, developing products and
   services to satisfy customers, and maximizing the benefits of customer feedback. Each
   student will complete an individual new pr
   Proposed: Major emphasis is given to the concept of customer focus, with coverage of techniques for
   obtaining customer needs, measuring customer satisfaction, developing products and
   services to satisfy customers, and maximizing the benefits of customer feedback. Individual
   focused research is included.
5. If course requires field trip check box: □
6. Credit Hours:
   Present: Lecture: 3 Lab: Total: 3
   Proposed: Lecture: Lab: Total:
7. Prerequisites:
   Present: MKT 311 or MKT 307 or Eng mgt 251
   Proposed:
8. Required for Majors: □ Elective for Majors: X
9. Justification: Title to reflect course description more accurately and to add BUS 450 as a co-listed course.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1) BUS 450
   2)
   3)
   4)
   5) 6)

   Recommended by Department: Chair signature
   Date: 11/3/10
   Recommended by Discipline Specific Curricula Committee: Chair signature
   Date: 11/3/10
   Approved by Curricula Committee: Chair signature
   Date: 
   Approved by Faculty Senate: Chair signature
   Date: 

(Revised 1/29/09)
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: Business & Information Tech

2. Discipline and Course Number: Present: Proposed: BUS 450

3. Course Title: Present:

   Proposed: Advanced Customer Focus and Satisfaction

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

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

   Present:

   Proposed: Major emphasis is given to the concept of customer focus, with coverage of techniques for
   obtaining customer needs, measuring customer satisfaction, developing products and
   services to satisfy customers, and maximizing the benefits of customer feedback. Individual
   focused research is included.

5. If course requires field trip check box: ☐

6. Credit Hours:

   Present: Lecture: Lab: Total:
   Proposed: Lecture: 3 Lab: Total: 3

7. Prerequisites:

   Present:

   Proposed: MKT 311 or MKT 307 or Eng Mgt 251*

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

9. Justification: This is to create a co-listing for MKT 450, an established course.

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

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

1) MKT

   2) MKT

   3) MKT

   4) MKT

   5) MKT

   6) MKT

   Recommended by Department:

   Recommended by Discipline Specific Curricula Committee:

   Approved by Curricula Committee:

   Approved by Faculty Senate:

   Date: 11/3/10

   Date: 11/3/10

   Date: __________

   Date: __________

   (Chair signature)

   (Chair signature)

   (Chair signature)

   (Chair signature)

(Revised 1/29/09)
Experimental Course Form (EC)

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Summer and Fall Semester Offerings – January 1
Spring Semester Offerings – August 1

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Department: GSE

Discipline and Course Number: GE 401

Course Title: Surface Waves (MASW) & Ground Penetrating Radar (GPR)

Abbreviated Title (24 spaces or less): MASW and GPR

Instructor(s): Anderson

Credit Hours: Lecture: 2 Lab: 1 Total: 

Prerequisites: GE 50 or CE 215 or equivalent, and graduate standing

Semester(s) previously taught: Spring 2010

Brief Course Description: (40 words or less)
Basic theory and the acquisition, processing and interpretation of surface waves (MASW and ReMi) and ground penetrating radar (GPR) data are covered. Emphasis is placed on geotechnical and structural applications of these non-invasive imaging technologies. Numerous case studies are presented in order to illustrate the utility of these geophysical tools.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3) 4) 5) 6)

Department Chair: [Signature] Date: 9-21-10

Discipline Specific Curricula Committee: [Signature] Date: 10-15-10

Curricula Committee: [Signature] Date: 

09/21/10

(Revision 1/31/2008)
Experimental Course Form (EC)

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Summer and Fall Semester Offerings – January 1
Spring Semester Offerings – August 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.

Department: Mining and Nuclear Engineering

Discipline and Course Number: ExpEng 401

Course Title: Regulatory Issues in the Explosives Industry

Abbreviated Title (24 spaces or less): Explosives Regulations

Instructor(s): Dr. Paul Worsey Dr. Gillian Worsey

Credit Hours: Lecture: 3 Lab: Total: 3

Prerequisites:

Semester(s) previously taught:

Brief Course Description: (40 words or less)
A comprehensive coverage of the regulations governing the explosives industry, including those of the Bureau of Alcohol, Tobacco Firearms and Explosives (ATF), the Department of Transportation (DOT), the Environmental Protection Agency (EPA) and other federal agencies.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.

1) 2) 3)

4) 5) 6)

Department Chair: ______________________________ (Chair Signature) Date: 09/13/10

Discipline Specific Curricula Committee: ______________________________ (Chair signature) Date: 10-15-10

Curricula Committee: ______________________________ (Chair Signature) Date: ________

09/14/10

(Revised 1/31/2008)
Experimental Course Form (EC)

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Department: Mechanical and Aerospace Engineering

Discipline and Course Number: ME 301

Course Title: Fuel Cell Principles

Abbreviated Title (24 spaces or less): Fuel Cell Principles

Instructor(s): Umit O. Koylu

Credit Hours: Lecture: 3 Lab: 0 Total: 3

Prerequisites: ME 221

Semester(s) previously taught:

Brief Course Description: (40 words or less)
Fuel cell fundamentals including thermodynamics, reaction kinetics, mass transport, characterization, and modeling are discussed. Different types of fuel cells such as proton exchange membrane and solid oxide are covered together with subsystem design and system integration as well as environmental impacts.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3)
4) 5) 6)

Department Chair: ___________________________ (Chair Signature) Date: 09/16/10

Discipline Specific Curricula Committee: ___________________________ (Chair Signature) Date: 09/15/10

Curricula Committee: ___________________________ (Chair Signature) Date: ____________

09/15/10 (Revised 1/31/2008)
Experimental Course Form (EC)

This form must be filed with the Secretary to the Campus Curricula Committee, after the department chair's notation, by the appropriate deadline. Filing deadlines for inclusion in the initial release of the Schedule of Classes are as follows:

- Summer and Fall Semester Offerings – January 1
- Spring Semester Offerings – August 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.

Department: Economics

Discipline and Course Number: Econ 301

Course Title: Economic Analysis of Natural Resources of South Africa

Abbreviated Title (24 spaces or less): Econ of S.A. Resources

Instructor(s): Dr. Gregg Gelles

Credit Hours: Lecture: 1 Lab: Total:

Prerequisites: Geo 301 - Geological Analysis of Natural Resources of South Africa (taken concurrently with Econ 301 - Economics Analysis of Natural Resources of South Africa)

Semester(s) previously taught: none

Brief Course Description: (40 words or less)
Economic analysis of the utilization of natural resources of South Africa with an emphasis on strategic minerals, solid earth energy resources, bling minerals (diamond, gold), and endangered species. Students will utilize technology to complete joint projects with students from the University of the Western Cape, South Africa.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.

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

Department Chair: [Signature] Date: 10/11/10

Discipline Specific Curricula Committee: [Signature] Date: 10/22/10

Curricula Committee: [Signature] Date: _______
Experimental Course Form (EC)

This form must be filed with the Secretary to the Campus Curricula Committee, after the department chair’s notation, by the appropriate deadline. Filing deadlines for inclusion in the initial release of the Schedule of Classes are as follows:

- **Summer and Fall Semester Offerings** – January 1
- **Spring Semester Offerings** – August 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.**

Department: Economics

**Discipline and Course Number:** Econ 301

**Course Title:** Field Investigation of the Economics of Natural Resources of South Africa

**Abbreviated Title (24 spaces or less):** Econ. Field Studies S.A.

**Instructor(s):** Dr. Greg Gelles

**Credit Hours:** Lecture: 2 Lab: Total: 

**Prerequisites:** Econ 301 – Economic Analysis of Natural Resources of South Africa, Geo 301 – Geological Analysis of Natural Resources of South Africa, Geo 301 – Geological Field Investigation of Natural Resources of South Africa (taken concurrently with Econ 301 – Geological Field Investigation of Natural Resources of South Africa)

**Semester(s) previously taught:** none

**Brief Course Description: (40 words or less)**
A three week field studies in South Africa examining the economic utilization of the natural resources of the country including site visits to mines (diamond, gold), geological sites (Cape of Good Hope), big game animal parks, and areas of cultural interest associated with utilization of these resources.

**List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.**

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

**Department Chair:** [Signature]

**Discipline Specific Curricula Committee:** [Signature]

**Curricula Committee:** [Signature]

Date: 10/11/10

Date: 10/22/10

(Revised 1/31/2008)
Hi Angie,

I need to update the wording on the 'Prerequisites' for both the forms I just sent you for the Econ 301's.

EC form Econ 301/ *Economic Analysis of Natural Resources of South Africa* Prerequisites should read:
*Preceded or accompanied by Geol 301 – Geological Analysis of Natural Resources of South Africa.*

EC form Econ 301/ *Field Investigation of the Economics of Natural Resources of South Africa* Prerequisites should read:
*Geol 301 Geological Analysis of Natural Resources of South Africa, Econ 301 Economic Analysis of Natural Resources of South Africa, preceded or accompanied by Geol 301 – Geological Field Investigation of Natural Resources of South Africa.*

The curriculum committee within Geological wanted the wording changed on theirs to include 'preceded or accompanied by' so that decision affects our forms as the four courses (our 2 and their 2) are taken together, in tandem or in some combination intertwined. Thank you!!

~marcy

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**Marcy L. Scott**

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Department of Economics  
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Missouri University of Science and Technology  
Rolla, MO 65409-1250  
573-341-4800  
573-341-4866 (fax)  
[www.mst.edu](http://www.mst.edu)  
(FORMERLY University of Missouri-Rolla/UMR)
Experimental Course Form (EC)

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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.

Department: Geological Sciences and Engineering

Discipline and Course Number: Geo 301

Course Title: Geological Field Investigation of Natural Resources of South Africa

Abbreviated Title (24 spaces or less): Geol. Field Studies S.A.

Instructor(s): Dr. John P. Hogan

Credit Hours: Lecture: 2 Lab: Total: [Blank]

Prerequisites: Geo 301 - Geological Analysis of Natural Resources of South Africa, Econ 301 - Economic Analysis of Natural Resources of South Africa, and Econ 301 - Field Investigation of the Economics of Natural Resources of South Africa (taken concurrently with Econ 301 - Field Investigation of the Economics of Natural Resources of South Africa)

Semester(s) previously taught: none

Brief Course Description: (40 words or less)
A three week field studies in South Africa of the geology of the natural resources of the country including site visits to mines (diamond, gold), geological sites (Cape of Good Hope), and areas of cultural interest associated with utilization of these resources.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3) 4) 5) 6)

Department Chair: [Signature] Date: 10-11-10

Discipline Specific Curricula Committee: [Signature] Date: 10-22-2010

Curricula Committee: [Signature] Date: [Blank]

(Revised 1/31/2008)
Experimental Course Form (EC)

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Department: Geological Sciences and Engineering
Discipline and Course Number: Geo 301
Course Title: Geological Analysis of Natural Resources of South Africa
Abbreviated Title (24 spaces or less): Geol. Resources of S.A.
Instructor(s): Dr. John P. Hogan
Credit Hours: Lecture: 1 Lab: 0 Total: 1
Prerequisites: Econ 301 - Economic Analysis of Natural Resources of South Africa (taken concurrently Geo 301 - Geological Analysis of Natural Resources of South Africa)

Semester(s) previously taught: none

Brief Course Description: (40 words or less)
Geological analysis of natural resources of South Africa with an emphasis on strategic minerals (platinum), solid earth energy resources (coal, tight gas shales), industrial minerals (iron, lead), and bling minerals (diamonds, gold). Students will utilize technology to complete joint projects with students from the University of the Western Cape, South Africa.

List all co-listed courses: Include Initials of Dept. Chair, if signature is not already included below.
1) 
2) 
3) 
4) 
5) 
6) 

Department Chair: __________________________ (Chair Signature) Date: 10-11-10
Discipline Specific Curricula Committee: __________________________ (Chair signature) Date: 10/22/2010
Curricula Committee: __________________________ (Chair Signature) Date: __________

10/11/10

(Revised 1/31/2008)
Experimental Course Form (EC)

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Department: Business & Information Technology

Discipline and Course Number: ERP 301

Course Title: Enterprise Resource Planning Systems in Small and Medium Size Enterprise

Abbreviated Title (24 spaces or less): ERP for Small, Med Ent.

Instructor(s): Yu-Hsien Chiu

Credit Hours: Lecture: 3.0 Lab: Total: 3.0

Prerequisites: ERP346 or (BUS120 and ERP 246)

Semester(s) previously taught: None

Brief Course Description: (40 words or less)
The course provides an overview of enterprise applications for small and midsize companies. SAP Business One is introduced to illustrate the enterprise-wide application for entrepreneurs, who manage business functions across sales, operation, and financials, all in a single integrated system. Enterprise integration will be examined and examples developed.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3)
4) 5) 6)

Department Chair: Caroline Fish (Chair Signature) Date: 10/19/10

Discipline Specific Curricula Committee: Kaye Thomsen (Chair signature) Date: 10/20/10

Curricula Committee: ________________________________ (Chair Signature) Date: __________________________

10/14/10

(Revised 1/31/2009)
Experimental Course Form (EC)

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Department: Mechanical and Aerospace Engineering

Discipline and Course Number: Mc Eng 401

Course Title: Advanced Digital Design and Manufacturing

Abbreviated Title (24 spaces or less): Digital Design & Manuf

Instructor(s): Dr. Ming C. Leu

Credit Hours: Lecture: 3 Lab: Total: 3

Prerequisites: Mc Eng 308 or Mc Eng 363

Semester(s) previously taught: None

Brief Course Description: (40 words or less)
This course covers selective topics essential to advanced digital design and manufacturing. These topics include freeform modelling, reverse engineering, NC path generation, and immersive digital design and manufacturing. Students will learn theoretical and practical materials on the various topics from the lectures as well as from project exercises.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3)
4) 5) 6)

Department Chair: [Signature]
Date: 10/3/10

Discipline Specific Curricula Committee: [Signature]
Date: 11/5/10

Curricula Committee: [Signature]
Date: ____________

10/05/10

(Revised 1/31/2008)
Experimental Course Form (EC)

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Spring Semester Offerings – August 1

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Department: Civil, Architectural and Environmental Engineering

Discipline and Course Number: CE 301

Course Title: Phytoremediation and Natural Treatment Systems: Science and Design

Abbreviated Title (24 spaces or less): Phytoremediation

Instructor(s): Dr. Joel G. Burken

Credit Hours: Lecture: 3 Lab: Total: 3

Prerequisites: CE/EnvE 265, Graduate standing, or consent of instructor

Semester(s) previously taught:

Brief Course Description: (40 words or less)
Student learn the scientific basics of chemical transport in soil and groundwater and learn the fundamental plants physiology and processes. Students then learn how these processes are utilized in design of phytoremediation and natural treatment systems, including the most up to date literature and design guidance available.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) EnvE 301
2) 3)
4) 5) 6)

Department Chair: ____________________________ (Chair Signature) Date: 10/20/10

Discipline Specific Curricula Committee: ____________________________ (Chair signature) Date: 11/5/10

Curricula Committee: ____________________________ (Chair Signature)
CE/EnvE 301 Phytoremediation

J.G. Burken

Syllabus: Phytoremediation and Natural Treatment Systems: Science and Design
Department of Civil, Architectural and Environmental Engineering
Spring 2011

Lectures: 1.5 hours 2 times/week. Location: TBD - Distance class

Instructor: Dr. Joel G. Burken (burken@mst.edu) Phone: (573) 341-6547
224 Butler-Carlton C.E. Hall Office Hours: ????? and - open door

Text/Readings: Required Textbook: None!
We will use the ITRC Phytoremediation guidance document as an initial reference available at:
We will focus mostly on notes I’ve developed with colleagues (perhaps a text will develop).
We will also be reading a lot of current literature the last 2/3 of the class nad getting input form
the authors of the papers.

References: Phytoremediation: Degradation and Control of Contaminants, Editors: S.C. McCutcheon and
J.L. Schnoor, John Wiley and Sons, 2003 (worth the $$ if you plan to work in the field)
Phytoremediation: Methods and Reviews, N. Willey (Editor) Humana Press 2007

Course Description: Student learn the scientific basics of chemical transport in soil and groundwater and learn
the fundamental plants physiology and processes. Students then learn how these
processes are utilized in design of phytoremediation and natural treatment systems,
including the most up to date literature and design guidance available.

Objectives of this class. Students will be able to:
- evaluate hydrogeologic data to estimate contaminant transport in soil and groundwater.
- Develop a working knowledge of plant processes and physiology that are important in
  phytoremediation applications.
- critically evaluate phytoremediation approaches and applications on mechanistic and feasibility
  (technical and economic) levels.
- access information on new scientific breakthroughs in the field and propose potential applications in the
  remediation field
- communicate knowledge and findings in a technically accurate and professional manner, including
  conversations with technological leaders in the field

Grading: (Subject to changes)

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>10%</td>
</tr>
<tr>
<td>Final</td>
<td>15%</td>
</tr>
<tr>
<td>Homework</td>
<td>25%</td>
</tr>
<tr>
<td>Class project &amp; Presentations</td>
<td>20%</td>
</tr>
<tr>
<td>Class Participation</td>
<td>10%</td>
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</tbody>
</table>

QUIZZES: All quizzes will be announced ahead of time. Quizzes are mostly over innovative technologies
covered in class to ensure comprehension of materials before we critically evaluate the papers and
applications. The goal is to stay atop of current material. Quizzes will be conceptual, not on design
or technical details.

HOMEWORK: Various types, many are research-oriented or mini-project in nature. Students will demonstrate
scientific and engineering detail in the homework that represents the expected depth of technical
competency. I encourage working together but present separate work when requested. Note
Collaborations that might be construed as cheating. Show originality in each person’s work to show
that all parties gained an understanding of the objectives behind each homework project or assignment. If the final product of working together is very similar, briefly describe each contribution. Quality of presentation is always important. Use proper units, present the problem and conceptual solution clearly, label any spreadsheet work clearly.

PROJECT/PRESENTATION: Each student or teams will pick one of the topic below (Week 7 and on) and do a detailed, critical review not only of the paper assigned for the week, but related articles and applications. This will be presented to the class. Presentations are expected to be thorough and professional. We anticipate linking up with some author’s via distance technology and inviting a couple to town also.

EXAMS: Midterms will be closed book and in 2 parts. Definitions and concepts will be covered first and then problems of a technical, quantifiable nature. Final may be take home in nature... to be determined.

<table>
<thead>
<tr>
<th>Week</th>
<th>Reading</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Groundwater and contaminant handout</td>
<td>Background: Contaminant physical-chemical characteristics.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contaminant solubility, partitioning, phase transfers</td>
</tr>
<tr>
<td>2</td>
<td>Handout, epa.gov/superfund</td>
<td>The Laws! CERCLA, RCRA, Clean Water Act</td>
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<tr>
<td></td>
<td></td>
<td>Plant processes intro</td>
</tr>
<tr>
<td>3</td>
<td>Chapter Raven’s book ITRC Phyto Section</td>
<td>Plant physiology basics</td>
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<tr>
<td></td>
<td></td>
<td>chemical reactions &amp; Oxidation/reduction</td>
</tr>
<tr>
<td>4</td>
<td>ITRC Phyto Section</td>
<td>Rhizoremediation transformation reaction mechanisms under different electron acceptor conditions</td>
</tr>
<tr>
<td>5</td>
<td>ITRC Phyto Section</td>
<td>Plant uptake of contaminants and fate in plants</td>
</tr>
<tr>
<td>6</td>
<td>ITRC Phyto Section JGB’s Green Liver chapter</td>
<td>Vapor phase transport and fate</td>
</tr>
<tr>
<td>7</td>
<td>ITRC Phyto Section JGB’s Phytovolatilization</td>
<td>Metals transport and fate</td>
</tr>
<tr>
<td></td>
<td>Current Literature</td>
<td>Hyperaccumulators – Rufus Chaney</td>
</tr>
<tr>
<td>8</td>
<td>Current Literature</td>
<td>Novel mechanisms in contaminant uptake and transport - Jason White or Barb Zeeb</td>
</tr>
<tr>
<td>9</td>
<td>Current Literature</td>
<td>Endophytic degradation: Novel plant-bacterial interactions - Jaco Vongrarnaflodt or Lee Newman</td>
</tr>
<tr>
<td>10</td>
<td>Current Literature</td>
<td>Selenium and metalloids uptake and potential volatilization - Norm Terry or Gary Banuelos</td>
</tr>
<tr>
<td>11</td>
<td>ITRC Alternative Capping Current Literature</td>
<td>Alternative Capping &amp; Leachate treatment - Ron Zalesny or Steve Rock</td>
</tr>
<tr>
<td>12</td>
<td>ITRC Constructed wetlands Current Literature</td>
<td>Constructed wetlands for municipal wastewater - Scott Wallace</td>
</tr>
<tr>
<td>13</td>
<td>ITRC Constructed wetlands Current Literature</td>
<td>Constructed wetlands for metals - Rinus Otte or Mark Fitch</td>
</tr>
<tr>
<td>14</td>
<td>Current Literature</td>
<td>Full Scale systems. Decade of experiences – Lou Licht</td>
</tr>
<tr>
<td>15</td>
<td>Open Topics</td>
<td>Coolest thing anyone can find throughout the year that we do not yet cover.</td>
</tr>
<tr>
<td>16</td>
<td>Final, (? Take home week earlier?)</td>
<td></td>
</tr>
</tbody>
</table>

I like quotes, Feel free to give me good ones. Here’s one for you:

“It am a member of a fragile species, still new to the earth, the youngest of creatures of any scale, here only a few moments as evolutionary time is measured, a juvenile species, a child of a species. We are only tentatively set in place, error-prone, at risk of fumbling, in real danger at the moment of leaving behind only a thin layer of our fossils, radioactive at that.” –Lewis Thomas, From The Fragile Species
Experimental Course Form (EC)

An EC form must be submitted before an experimental course is to be offered. EC forms approved SP2009 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: Materials Science and Engineer

Discipline and Course Number: MSE 401

Course Title: Advanced Principles of Microstructural Design

Abbreviated Title (24 spaces or less): Adv Microstructural

Instructor(s): Dr. Rajiv S. Mishra

Credit Hours: Lecture: 3.0 Lab: 0.0 Total: 3.0

Prerequisites:

Semester(s) previously taught: FS2004; SP2006

Brief Course Description: (40 words or less)
This course will introduce the microstructural principles that can be used to design advanced materials. It will help students learn about the principles and microstructural design approaches. In addition, they will design a theoretical microstructure for high efficiency structure.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3) 4) 5) 6)

Department Chair: Wayne [Signature] Date: 10/22/10

Discipline Specific Curricula Committee: Steve [Signature] Date: 11/5/16

Curricula Committee: [Signature] Date: 

(Revised 10/12/2010)
Experimental Course Form (EC)

An EC form must be submitted before an experimental course is to be offered. EC forms approved SP2009 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: Dept. of Geology & Engineering

Discipline and Course Number: Geo 401

Course Title: Advanced depositional systems

Abbreviated Title (24 spaces or less): Adv depo systems

Instructor(s): Wan Yang

Credit Hours: Lecture: 3 Lab: Total:

Prerequisites: Geo 223

Semester(s) previously taught: None

Brief Course Description: (40 words or less)

Development of three dimensional depositional models using Walther’s Law, Walther’s Warning and seismic stratigraphy. Emphasis on overall geometries and internal porosity and permeability characteristics of aquifers and hydrocarbon reservoirs. Literature research, class project, and class presentation are required. (Currently teaching as a 333, want to create a 400 level.)

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.

1) Geo 333 2) 3) 4) 5) 6)

Department Chair: Ralph E. Hori (Chair Signature) Date: 10-25-10

Discipline Specific Curricula Committee: David [Signature] Date: 11/5/2010

Curricula Committee: [Signature] Date: ___

(Revised 10/12/2010)
Experimental Course Form (EC)

An EC form must be submitted before an experimental course is to be offered. EC forms approved SP2009 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: Dept. of Geology & Engineering

Discipline and Course Number: Geo 401

Course Title: Advanced stratigraphy and basin evolution

Abbreviated Title (24 spaces or less): Adv strat & basin

Instructor(s): Wan Yang

Credit Hours: Lecture: 3 Lab: Total:

Prerequisites: Geo 223, GEO 220

Semester(s) previously taught: None

Brief Course Description: (40 words or less)
Advanced topics in sedimentary geology and time-stratigraphy, especially sequence stratigraphy. Concepts, models, and critical thinking in sequence stratigraphic analysis of basin fills by integrating microscopic, outcrop, well, and seismic data and observations. Applications in basin analysis and groundwater and petroleum exploration. Class project and presentations are required.

Currently teaching as 324 want to create a 400 level

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3)
4) 5) 6)

Department Chair: Ralph E. Hori (Chair Signature) Date: 10-25-10

Discipline Specific Curricula Committee: David Gaul (Chair Signature) Date: 11-5-2010

Curricula Committee: (Chair Signature) Date: 

(Revised 10/12/2010)