Campus Curricula Committee Meeting Agenda
April 3, 2019
9:00am - 10:30am, Bertelsmeyer 110H
(For Faculty Senate Meeting of April 25, 2019)

Review of submitted Course Change forms:

File: 4369.9	ART 3100: Advanced Art Studio
File: 4428.9	ART 3500: Innovation Through Design Thinking
File: 4601	CHEM 5640: Neurochemistry with Clinical Correlations
File: 642.1	CIV ENG 3116: Construction Materials, Properties And Testing
File: 176.6	EDUC 3280: Teaching Methods and Skills in Content Areas
File: 1189.3	EDUC 4299: Student Teaching
File: 21.1	ENG MGT 5320: Project Management
File: 1173.20	GEO ENG 1150: Physical and Environmental Geology
File: 1988.1	GEOLOGY 1110: Physical And Environmental Geology
File: 2370.5	GEOLOGY 1119: Physical and Environmental Geology Laboratory
File: 1342.1	GEOLOGY 2610: Mineralogy And Crystallography
File: 4604	GEOLOGY 5100: Professional Geoscience Skills
File: 4605	GEOLOGY 6100: Advanced Professional Geoscience Skills
File: 4609	NUC ENG 5507: Nuclear Policy
File: 4611	NUC ENG 5509: Nuclear Nonproliferation

Review of submitted Degree Change forms:

File: 255.14	BUSAPPS-MI: Business Applications and Software Development Minor
File: 153.60	CP ENG-BS: Computer Engineering BS
File: 155.47	EL ENG-BS: Electrical Engineering BS
File: 165.25	GE ENG-MS: Geological Engineering MS *(overview)*
File: 268.1	GEO ENG-MS: GEOLOGICAL ENGINEERING MS *(program requirements)*
File: 166.4	GL&GPH-MS: Geology and Geophysics MS
File: 271	PROPOSED*: Geology and Geophysics PhD
File: 86.39	MC ENG-BS: Mechanical Engineering BS

Review of submitted Experimental Course forms:

File: 4600	AERO ENG 6001.003: The Thermo-Fluid Dynamics of Advanced Aerospace Propulsion Systems
File: 4602	ARCH ENG 5001.001: Building Physics
File: 4610	BIO SCI 5001.005 Pathogenic Microbiology Lab
File: 4591	CHEM ENG 5001.004: Catalysis and Reaction Kinetics
File: 4606	ENGLISH 3001.007: Lives and Works of J.R.R. Tolkien and C.S. Lewis
File: 4587	GEO ENG 5001.004: Field Methods in Surface and Subsurface Hydrology
File: 4603	GEOLOGY 5001.003: Preparation and Review for ASBOG Exam

File: 4607	MATH 5001.001: Introduction to Numerical Analysis
File: 4615	MKT 5001.002: Brand Management
File: 4580	MUSIC 2001.002: History of Music in Film
File: 4613	NUC ENG 5001.002: Nuclear Forensics
File: 4585	PHILOS 3001.003: Philosophy of Technology
File: 1573.5	SPANISH 2110: Basic Spanish Conversation
File: 4599	STAT 5001.001: Pensions and Social Security

**File 271 Geology and Geophysics PhD is an existing degree program.*

Course Change Request

Date Submitted: 03/13/19 10:00 am

Viewing: **ART 3100 : Advanced Art Studio**

File: 4369.9

Last approved: 05/08/17 3:15 am

Last edit: 03/13/19 10:00 am

Changes proposed by: heldenbrandt

Requested Effective Change Date	**Fall 2019** ~~05/29/2017~~
Department	Academic Support Arts, Languages, & Philosophy
Discipline	Art (ART)
Course Number	3100
Title	Advanced Art Studio
Abbreviated Course Title	Advanced Art Studio

Catalog Description

This course is for the advanced student in Sculpture, Painting or Drawing with similar topics in various chosen mediums.

Prerequisites

Art 1120, Art 1140, or Art 1164.

Field Trip Statement

Credit Hours	LEC: 1.5	LAB: 1.5	IND: 0	RSD: 0	Total: 3
Required for Majors	No				
Elective for Majors	No				

Justification for change:

We request this course to be made a repeatable course. Since the students come from three different pre-requisite courses, Art 1120, Art 1140, or Art 1164, they should be able to take Art 3100 multiple times focusing each time on the content corresponding to the content of the pre-requisite course. (Sculpture, Painting or Drawing).

In Workflow

1. **RPHILOSO Chair**
2. **CCC Secretary**
3. **Arts & Humanities DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 03/13/19 10:36 am
   Audra Merfeld-Langston (audram): Approved for RPHILOSO Chair
2. 03/13/19 1:49 pm
   Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/13/19 2:55 pm
   Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 03/18/19 8:31 am
   Brittany Parnell

Semesters previously offered as an experimental course	(ershenb): Approved for Pending CCC Agenda post
Co-Listed Courses:	
Course Reviewer Comments	

History

1. May 8, 2017 by Christina Barton (bartonch)

Key: 4369

Preview Bridge

Course Change Request

Date Submitted: 02/28/19 1:35 pm

Viewing: **ART 3500 : Innovation Through Design Thinking**

File: 4428.9

Last approved: 10/07/17 3:29 am

Last edit: 03/01/19 8:04 am

Changes proposed by: heldenbrandt

Requested Effective Change Date	**Spring 2020** ~~01/08/2018~~
Department	Arts, Languages, & Philosophy Office of Undergraduate Studies
Discipline	Art (ART)
Course Number	3500
Title	Innovation Through Design Thinking
Abbreviated Course Title	Innov Design Thinking

Catalog Description

Design thinking is a human-centered approach to innovation. Students will investigate and address a variety of identified human-centered problems through group collaboration, creative problem-solving, and prototyping. A multidisciplinary approach combines science, technology, engineering, math, and art with design thinking in a creative atmosphere.

Prerequisites

Any ART course at the 1xxx level or above.

Field Trip Statement

Credit Hours	LEC: 0	LAB: 3	IND: 0	RSD: 0	Total: 3
Required for Majors	No				
Elective for Majors	No				

Justification for change:

In Workflow

1. **RPHILOSO Chair**
2. **CCC Secretary**
3. **Arts & Humanities DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/28/19 3:31 pm Audra Merfeld-Langston (audram): Approved for RPHILOSO Chair
2. 03/01/19 10:07 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/01/19 10:44 am Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

1. the ART curriculum synchronization
2. by adding the prerequisite, the course will fulfill the upper level humanities requirements campus-wide;
3. potential for the course enrollment increase

Semesters previously offered as an experimental course

FS 2015, SP 2016, FS 2016

Co-Listed Courses:

Course Reviewer Comments

4. 03/06/19 3:54 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Oct 7, 2017 by Christina Barton (bartonch)

Key: 4428

Preview Bridge

Course Change Request

New Course Proposal

Date Submitted: 02/05/19 5:20 pm

Viewing: **CHEM 5640 : Neurochemistry with Clinical Correlations**

File: 4601

Last edit: 02/22/19 4:53 pm

Changes proposed by: tschuman

Requested Effective Change Date	Fall 2019
Department	Chemistry
Discipline	Chemistry (CHEM)
Course Number	5640
Title	Neurochemistry with Clinical Correlations
Abbreviated Course Title	Neurochemistry

Catalog Description

This course explores the chemical underpinnings of neurological phenomena. It covers the overall structure and function of neurons and glial cells, neurotransmission, signal transduction, and metabolism. A central focus of the course is relating these topics to processes such as learning and memory, as well as various pathological states.

Prerequisites

Chem 4610.

Field Trip Statement

None

Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0	Total: 3
Required for Majors	No				
Elective for Majors	Yes				

Justification for new course:

Course was taught twice in experimental offerings but as a 6001 (Chem 6001.34) level. Despite the course 6xxx level, it was registered for by more undergraduates

In Workflow

1. **RCHEMIST Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/06/19 8:11 am Rainer Glaser (GlaserR): Approved for RCHEMIST Chair
2. 02/07/19 10:16 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/22/19 4:53 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/06/19 4:01 pm Brittany Parnell (ershenb): Approved for

	than graduates. For this reason, we are seeking an undergraduate permanent course, 4xxx level.	Pending CCC Agenda post
Semesters previously offered as an experimental course	F 2014 (8 students) and F 2018 (7 students)	
Co-Listed Courses:		
Course Reviewer Comments	**shannonk (02/22/19 4:53 pm):** Course number changed from 4000 to 5000 after discussions with Tom Schuman and Nuran Ercal.	

Key: 4601

Preview Bridge

Course Change Request

Date Submitted: 02/05/19 6:58 pm

Viewing: **CIV ENG 3116 : Construction Materials, Properties And Testing**

File: 642.1

Last edit: 02/13/19 1:55 pm

Changes proposed by: feysd

Programs referencing this course	ARC ENG-BS: Architectural Engineering BS CV ENG-BS: Civil Engineering BS GE ENG-BS: Geological Engineering BS PROPOSED: test
Other Courses referencing this course	In The Prerequisites: CIV ENG 5112 : Bituminous Materials CIV ENG 5113 : Composition And Properties Of Concrete CIV ENG 5117 : Asphalt Pavement Design CIV ENG 5156 : Pavement Design MIN ENG 4922 : Tunneling & Underground Construction Techniques MIN ENG 5212 : Aggregates and Quarrying

Requested Effective Change Date	**Fall 2019** ~~08/14/2018~~
Department	Civil, Architectural, and Environmental Engineering
Discipline	Civil Engineering (CIV ENG)
Course Number	3116
Title	Construction Materials, Properties And Testing
Abbreviated Course Title	**Const Mtl Prop & Testing** ~~Const Mtls, Prop&Testing~~

Catalog Description

A study of the origin, production, uses and general properties of construction materials accompanied by selected laboratory tests and demonstrations.

Prerequisites

Civ Eng 2211 or Min Eng 3812; Civ Eng **2210** ~~3715~~ or both Geo Eng 1150 and Min Eng 3412.

In Workflow

1. **RCIVILEN Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/06/19 5:36 am Joel Burken (burken): Approved for RCIVILEN Chair
2. 02/07/19 10:20 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/20/19 11:21 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/06/19 4:02 pm Brittany Parnell (ershenb):

Field Trip Statement					Approved for Pending CCC Agenda post
Credit Hours	LEC: 2	LAB: 1	IND: 0	RSD: 0	Total: 3
Required for Majors	**Yes** ~~No~~				
Elective for Majors	No				

Justification for change:	Materials group has agreed that Mechanics of Materials is sufficient as a pre-requisite.
Semesters previously offered as an experimental course	
Co-Listed Courses:	

Course Reviewer Comments	**sraper (02/13/19 1:55 pm):** checked required for majors

Key: 642

Preview Bridge

Course Change Request

Date Submitted: 02/15/19 10:51 am

Viewing: **EDUC 3280 : Teaching Methods and Skills in Content Areas**

File: 176.6

Last approved: 02/04/19 5:03 am

Last edit: 02/15/19 11:15 am

Changes proposed by: carterke

Catalog Pages referencing this course	Teacher Education and Certification
Programs referencing this course	PHYSIC-BS: Physics BS BUS&MS-BS: Business and Mgmt Systems BS PSYCH-BS: Psychology BS

Requested Effective Change Date	Fall 2019
Department	Teacher Education and Certification
Discipline	Education (EDUC)
Course Number	3280
Title	Teaching Methods and Skills in Content Areas
Abbreviated Course Title	Tchg Mth Content Areas
Catalog Description	Series of weekly experiences, demonstrations, observations, micro teaching, small group discussions to develop concepts of and skills in a variety of basic teaching tasks. Also, demonstration and lecture exercises in the preparation and use of audio visual **materials.** ~~materials for teaching.~~ **This course has a strong writing emphasis through multiple lessons plans and a unit plan.**
Prerequisites	Educ 3216 and English 3170.
Field Trip Statement	
Credit Hours	LEC: 6 LAB: 0 IND: 0 RSD: 0 Total: 6
Required for Majors	**Yes** ~~No~~
Elective for Majors	No

Justification for change:	In an attempt to review and reduce minimum degree credit hour requirements, at the recent request of the Department of Higher Education, this change gives the opportunity to remove 3 hrs. of communication from the secondary education emphasis degree BS programs. The course has always included a strong writing emphasis, but has not clearly been identified in the course catalog as such. This is a required course for all secondary education emphasis degrees.

In Workflow

1. **REDUCATION Chair**
2. **CCC Secretary**
3. **Social Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/15/19 10:54 am
   Kelly Carter (carterke): Approved for REDUCATION Chair
2. 02/15/19 11:27 am
   Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/19/19 7:04 pm
   Barry Flachsbart (barryf): Approved for Social Sciences DSCC Chair
4. 03/06/19 4:02 pm
   Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Feb 4, 2019 by carterke (176.1)

Semesters previously offered as an experimental course

Co-Listed Courses:

Course Reviewer Comments

Key: 176

Preview Bridge

Course Change Request

Date Submitted: 02/14/19 4:10 pm

Viewing: **EDUC 4299 : Student Teaching**

File: 1189.3

Last approved: 01/18/19 5:02 am

Last edit: 02/14/19 4:10 pm

Changes proposed by: carterke

Catalog Pages referencing this course	Teacher Education and Certification
Programs referencing this course	PHYSIC-BS: Physics BS BUS&MS-BS: Business and Mgmt Systems BS PSYCH-BS: Psychology BS

Requested Effective Change Date	**Fall 2019** ~~01/07/2019~~
Department	Teacher Education and Certification
Discipline	Education (EDUC)
Course Number	4299
Title	Student Teaching
Abbreviated Course Title	Student Teaching
Catalog Description	Student teaching will be supervised participation, **in** ~~on~~ the **content area** ~~level~~ of certification **with a Missouri Certified Cooperating Teacher.** ~~in an assigned Public School.~~ Student teaching is based on 16 weeks ~~(8 weeks in two schools~~ and requires the student teacher to demonstrate his/her ability to be effective decision making teacher and an inquiry learner.
Prerequisites	Professional standing and arrangements made previous semester.
Field Trip Statement	
Credit Hours	LEC: **0** ~~12~~ LAB: **12** ~~0~~ IND: 0 RSD: 0 Total: 12
Required for Majors	No
Elective for Majors	No

Justification for change:	Catalog Description- -deleted (8 weeks in two schools. DESE now requires a minimum of 12 weeks for content area certifications. 8 wk experiences are for K-12 certifications. We don't have these programs at S&T. - Student teaching may be in public or private schools. DESE has certification, degree and experience requirements for the cooperating teacher, but allows both school settings.

In Workflow

1. **REDUCATION Chair**
2. **CCC Secretary**
3. **Social Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/14/19 4:11 pm Kelly Carter (carterke): Approved for REDUCATION Chair
2. 02/15/19 11:37 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/19/19 7:04 pm Barry Flachsbart (barryf): Approved for Social Sciences DSCC Chair
4. 03/06/19 4:02 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Jan 18, 2019 by ershenb (1189.1)

-Student teaching is not lecture. It is closest to a lab experience. Student teachers gradually take responsibility for all aspects of their classroom under direct supervision of the cooperating teacher and university supervisor.

Semesters previously offered as an experimental course

Co-Listed Courses:

Course Reviewer Comments

Key: 1189

Preview Bridge

Course Change Request

Date Submitted: 02/22/19 3:49 pm

Viewing: **ENG MGT 5320 : Project Management**

File: 21.1

Last edit: 03/12/19 12:40 pm

Changes proposed by: ershenb

Catalog Pages referencing this course	Business Administration Civil, Architectural, and Environmental Engineering Economics Engineering Management Information Science and Technology
Other Courses referencing this course	In The Prerequisites: ENG MGT 6322 : Case Studies in Project Management ENG MGT 6323 : Global Project Management

Requested Effective Change Date	**Summer 2019** ~~08/14/2018~~
Department	Engineering Management and Systems Engineering
Discipline	Engineering Management (ENG MGT)
Course Number	5320
Title	Project Management
Abbreviated Course Title	Project Management

Catalog Description

Organization structure and staffing; motivation, authority and influence; conflict management; project planning; network systems; pricing, estimating, and cost control; proposal preparation; project information systems; international project management.

Prerequisites

Graduate Standing.

Field Trip Statement

Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0	Total: 3
	Yes ~~No~~				

In Workflow

1. **RENGMNGT Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/22/19 3:54 pm Suzanna Long (longsuz): Approved for RENGMNGT Chair
2. 02/22/19 4:06 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/12/19 12:40 pm Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/18/19 8:31 am Brittany Parnell (ershenb):

Required for Majors		Approved for Pending CCC Agenda post
Elective for Majors	No	

Justification for change:	Adding Systems Engineering 5105 course and co-listing with Engineering Management 5320 to offer project management in both programs with a consistent course offering.
Semesters previously offered as an experimental course	
Co-Listed Courses:	**SYS ENG 5105** - **Course Not Found**

Course Reviewer Comments	**ershenb (02/22/19 4:06 pm):** (submitted form per the request of Dr. Steven Corns (CourseLeaf technical difficulties)) **sraper (03/12/19 12:40 pm):** Change to required for majors (MS students).

Key: 21

Preview Bridge

Course Change Request

Date Submitted: 02/19/19 3:22 pm

Viewing: **GEO ENG 1150 : Physical and Environmental Geology**

File: 1173.20

Last approved: 03/05/18 3:33 am

Last edit: 02/19/19 3:32 pm

Changes proposed by: ershenb

Programs referencing this course	CV ENG-BS: Civil Engineering BS GE ENG-BS: Geological Engineering BS PROPOSED: test
Other Courses referencing this course	In The Prerequisites: CIV ENG 3116 : Construction Materials, Properties And Testing CIV ENG 3715 : Fundamentals of Geotechnical Engineering CIV ENG 6760 : Inca Civilization Geotechnical Engineering Practices GEO ENG 2536 : Basic Weather GEO ENG 3175 : Geomorphology And Terrain Analysis GEO ENG 3249 : Fundamentals Of Computer Applications In Geological Engineering GEO ENG 5331 : Subsurface Hydrology GEO ENG 5443 : Subsurface Exploration GEO ENG 5575 : Aggregates And Quarrying GEO ENG 6407 : Inca Civilization Geotechnical Engineering Practices GEO ENG 6782 : Surface Waves (MASW) and Ground Penetrating Radar (GPR) GEOLOGY 1120 : Evolution Of The Earth GEOLOGY 2611 : Physical Mineralogy And Petrology GEOLOGY 4411 : Hydrogeology GEOLOGY 4431 : Methods Of Karst Hydrogeology GEOLOGY 4711 : Paleoclimatology and Paleoecology GEOLOGY 4831 : Computational Geology GEOLOGY 4841 : Geological Field Studies GEOLOGY 5311 : Depositional Systems GEOLOGY 5513 : Petroleum Geology GEOPHYS 2211 : Geophysical Imaging GEOPHYS 4231 : Seismic Interpretation GEOPHYS 5202 : Exploration and Development Seismology MIN ENG 3913 : Mineral Identification and Exploration

Fall 2019 ~~08/14/2018~~

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Sciences DSCC Chair**
5. **Pending CCC Agenda post**
6. **CCC Meeting Agenda**
7. Campus Curricula Committee Chair
8. FS Meeting Agenda
9. Faculty Senate Chair
10. Registrar
11. CAT entry
12. Peoplesoft

Approval Path

1. 02/21/19 10:28 am
   David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/21/19 3:54 pm
   Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/18/19 11:04 am
   Stephen Raper (sraper): Approved for Engineering DSCC Chair

Requested Effective Change Date	
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Geological Engineering (GEO ENG)
Course Number	1150
Title	Physical and Environmental Geology
Abbreviated Course Title	Physical and Environ Geo

4. 03/18/19 12:10 pm
   Katie Shannon (shannonk): Approved for Sciences DSCC Chair
5. 03/18/19 1:11 pm
   Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Catalog Description

Materials, structure, and surface features of the Earth and planets are studied in the context of the processes that continuously transform the Earth and affect management of Earth resources, hazards, engineering problems, and environmental challenges.

Prerequisites

Entrance requirements.

Field Trip Statement

Credit Hours	LEC: 2	LAB: 1	IND: 0	RSD: 0	Total: 3
Required for Majors	Yes				
Elective for Majors	No				

History

1. Feb 16, 2015 by gertschl (1173.1)
2. May 24, 2016 by kleb6b (1173.6)
3. Mar 5, 2018 by grotekr (1173.15)

Justification for change:	Geo Eng 1150 and Geology 1110 courses are being merged. (added Geology 1110 as a co-list and submitted per the request of David Wronkiewicz- technical CourseLeaf issues).
Semesters previously offered as an experimental course	
Co-Listed Courses:	**GEOLOGY 1110** - **Physical And Environmental Geology**

Course Reviewer Comments

Key: 1173

Preview Bridge

Course Change Request

Date Submitted: 02/19/19 3:19 pm

Viewing: **GEOLOGY 1110 : Physical And Environmental Geology**

File: 1988.1

Last edit: 02/19/19 3:19 pm

Changes proposed by: ershenb

Programs referencing this course	ARC ENG-BS: Architectural Engineering BS PROPOSED: test CMP SC-BS: Computer Science BS GL&GPH-BS: Geology and Geophysics BS
Other Courses referencing this course	In The Catalog Description: GEO ENG 1119 : Physical and Environmental Geology Laboratory GEOLOGY 1119 : Physical and Environmental Geology Laboratory In The Prerequisites: CIV ENG 3715 : Fundamentals of Geotechnical Engineering GEO ENG 1119 : Physical and Environmental Geology Laboratory GEO ENG 5144 : Remote Sensing Technology GEOLOGY 1119 : Physical and Environmental Geology Laboratory GEOLOGY 1120 : Evolution Of The Earth GEOLOGY 2611 : Physical Mineralogy And Petrology GEOLOGY 3310 : Structural Geology GEOLOGY 3511 : Introduction to Mineral Deposits GEOLOGY 4310 : Remote Sensing Technology GEOLOGY 4411 : Hydrogeology GEOLOGY 4431 : Methods Of Karst Hydrogeology GEOLOGY 4630 : Systematic Paleontology GEOLOGY 4711 : Paleoclimatology and Paleoecology GEOLOGY 4721 : Meteorology and Climatology GEOLOGY 4831 : Computational Geology GEOLOGY 4841 : Geological Field Studies GEOLOGY 5311 : Depositional Systems GEOLOGY 5513 : Petroleum Geology GEOLOGY 6421 : Environmental Geology GEOLOGY 6541 : Geology of Natural Resources GEOPHYS 2211 : Geophysical Imaging GEOPHYS 3210 : Introduction to Geophysics GEOPHYS 4231 : Seismic Interpretation

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/21/19 10:28 am
   David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/21/19 3:54 pm
   Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/04/19 4:53 pm
   Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/06/19 4:02 pm
   Brittany Parnell (ershenb): Approved for

GEOPHYS 5202 : Exploration and Development Seismology
MIN ENG 3913 : Mineral Identification and Exploration

Pending CCC Agenda post

Requested Effective Change Date	**Fall 2019** ~~08/01/2014~~
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Geology (GEOLOGY)
Course Number	1110
Title	Physical And Environmental Geology
Abbreviated Course Title	Physical & Environ Geol
Catalog Description	Materials, structure, and surface features of the Earth and planets are studied in the context of the processes that continuously transform the Earth and affect management of Earth resources, hazards, and environmental challenges.
Prerequisites	Entrance requirements.
Field Trip Statement	A one day field trip is required.
Credit Hours	LEC: **2** ~~3~~ LAB: **1** ~~0~~ IND: 0 RSD: 0 Total: 3
Required for Majors	**Yes**
Elective for Majors	**No**
Justification for change:	changed lecture hours to 2 and lab hour to 1, per the request of David Wronkiewicz (technical CourseLeaf issues).
Semesters previously offered as an experimental course	
Co-Listed Courses:	
Course Reviewer Comments	

Key: 1988

Preview Bridge

Course Change Request

A deleted record cannot be edited

Course Deactivation Proposal

Date Submitted: 02/19/19 11:55 am

Viewing: **GEOLOGY 1119 : Physical and Environmental Geology Laboratory**

File: 2370.5

Last approved: 10/11/17 3:30 am

Last edit: 02/20/19 9:15 am

Changes proposed by: ershenb

Programs referencing this course	CMP SC-BS: Computer Science BS
Other Courses referencing this course	In The Catalog Description: GEO ENG 1119 : Physical and Environmental Geology Laboratory

Requested Effective Change Date	**Fall 2019** ~~01/12/2016~~
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Geology (GEOLOGY)
Course Number	1119
Title	Physical and Environmental Geology Laboratory
Abbreviated Course Title	Phys & Env Geol Lab

Catalog Description

Geology 1119 is designed to accompany Geology 1110 and consists of laboratory explorations of the study of common rocks and minerals, air photographs, maps, and case studies of geological problems related to management of Earth resources, hazards, and environmental challenges..

Prerequisites

Preceded or accompanied by Geology 1110.

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Engineering DSCC Chair**
5. **Pending CCC Agenda post**
6. **CCC Meeting Agenda**
7. Campus Curricula Committee Chair
8. FS Meeting Agenda
9. Faculty Senate Chair
10. Registrar
11. CAT entry
12. Peoplesoft

Approval Path

1. 02/21/19 10:29 am
   David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/21/19 3:53 pm
   Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/04/19 4:53 pm
   Katie Shannon (shannonk): Approved for Sciences DSCC Chair

Field Trip Statement					
Credit Hours	LEC: 0	LAB: 1	IND: 0	RSD: 0	Total: 1
Required for Majors	Yes				
Elective for Majors	No				

Justification for change:

Remove the two courses GEOL 1119 and GEO ENG 1119 from our curriculum, as neither will be taught in future years.

Submitting per the request of David Wronkiewicz, due to technical difficulties.

Semesters previously offered as an experimental course

Co-Listed Courses: GEO ENG 1119 - Physical and Environmental Geology Laboratory

Course Reviewer Comments

4. 03/19/19 12:13 pm Stephen Raper (sraper): Approved for Engineering DSCC Chair
5. 03/19/19 1:21 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Oct 11, 2017 by liukh (2370.1)

Key: 2370

Preview Bridge

Course Change Request

Date Submitted: 02/15/19 12:17 pm

Viewing: **GEOLOGY 2610 : Mineralogy And Crystallography**

File: 1342.1

Last edit: 02/15/19 1:12 pm

Changes proposed by: wronk

Programs referencing this course	GL&GPH-BS: Geology and Geophysics BS
Other Courses referencing this course	In The Prerequisites: GEOLOGY 2620 : Igneous And Metamorphic Petrology GEOLOGY 3511 : Introduction to Mineral Deposits GEOLOGY 4097 : Advanced Field Geology GEOLOGY 4441 : Applied Geochemistry GEOLOGY 4521 : Ore Microscopy GEOLOGY 5671 : Clay Mineralogy

Requested Effective Change Date	**Fall 2019** ~~08/14/2018~~
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Geology (GEOLOGY)
Course Number	2610
Title	Mineralogy And Crystallography
Abbreviated Course Title	Mineral&Crystallography

Catalog Description

An introduction to the study of minerals, including their systematic classification, crystallography, morphology, chemistry, societal use, geologic occurrence, environmental application and impact, and identification by means of their physical and chemical properties.

Prerequisites

Chem **1310.** ~~1310 and Chem 1319.~~

Field Trip Statement

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/15/19 1:05 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/15/19 1:13 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/04/19 4:54 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/07/19 9:12 am Brittany Parnell (ershenb): Approved for

Credit Hours	LEC: 3	LAB: 1	IND: 0	RSD: 0	Total: 4	Pending CCC Agenda post
Required for Majors	No					
Elective for Majors	No					

Justification for change:	Chem 1319 (laboratory) is not a necessary prerequisite for this course. No additional changes are needed.
Semesters previously offered as an experimental course	
Co-Listed Courses:	

Course Reviewer Comments

Key: 1342

Preview Bridge

Course Change Request

New Course Proposal

Date Submitted: 02/07/19 10:32 am

Viewing: **GEOLOGY 5100 : Professional Geoscience Skills**

File: 4604

Last edit: 03/04/19 4:58 pm

Changes proposed by: jhogan

Programs referencing this course	GL&GPH-MS: Geology and Geophysics MS

Requested Effective Change Date	Fall 2019
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Geology (GEOLOGY)
Course Number	5100
Title	Professional Geoscience Skills
Abbreviated Course Title	Professional Geo Skills

Catalog Description

Development and communication of complex topics in the geosciences is required for successful post-MS career advancement. Best practices for developing these skills in the geosciences will be critiqued weekly, culminating with poster and oral presentations. Assessment by peer-review and self-evaluation. Topics selected from geosciences careers.

Prerequisites

Graduate Standing.

Field Trip Statement

None.

Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0	Total: 3
Required for Majors	Yes				

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/07/19 10:58 am
   David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/13/19 1:40 pm
   Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/04/19 4:58 pm
   Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/07/19 9:12 am
   Brittany Parnell (ershenb): Approved for

Elective for Majors	No	Pending CCC Agenda post

Justification for new course:	Students need hands-on training and experience of how to obtain the research and professional skills required for a successful geoscience career. They also need experience in researching papers and opportunities to presenting scientific content to larger groups of peers. This course is necessary to expose all geoscience graduate students to the expectations and skills required in the geoscience job world.
Semesters previously offered as an experimental course	None. This will be a required course for all Geology and Geophysics Masters students. A DC form is being submitted. Will be taught by Dr. Andreas Eckert. Students may not receive credit for both GEO 5100 and 6100
Co-Listed Courses:	

Course Reviewer Comments

Key: 4604

Preview Bridge

Course Change Request

New Course Proposal

Date Submitted: 02/07/19 11:29 am

Viewing: **GEOLOGY 6100 : Advanced Professional Geoscience Skills**

File: 4605

Last edit: 03/04/19 4:58 pm

Changes proposed by: jhogan

Programs referencing this course	PROPOSED: Geology and Geophysics PhD

Requested Effective Change Date	Fall 2019
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Geology (GEOLOGY)
Course Number	6100
Title	Advanced Professional Geoscience Skills
Abbreviated Course Title	Adv Pro Geo Skills
Catalog Description	Communication of complex research topics in the geosciences is required for successful post-doctoral career advancement in both academic and non-academic career paths. Best practices for developing and proposing scientific ideas in the geosciences will be critiqued weekly. Assessment of research proposals presentations includes peer- and self-evaluation.
Prerequisites	Doctoral Graduate Standing.
Field Trip Statement	None
Credit Hours	LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3
Required for Majors	No
Elective for Majors	No
Justification for new course:	Graduate students need mentoring and experience in developing both research skills and professional soft-skills required for a successful geoscience career. They also need experience in researching papers and opportunities to presenting scientific content to larger groups of peers. This course is necessary to expose all geoscience doctoral students to the expectations and skills required in the geoscience job world for both academic tracks and non-academic tracks.
Semesters previously offered as an	None. Will be a required course for the PhD program and a companion DC form is being submitted. Will be taught by Dr. Eckert. Students may not receive credit for both GEO 5100 and 6100

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/07/19 11:34 am David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/13/19 1:40 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/04/19 4:59 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/07/19 9:12 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

experimental
course

Co-Listed
Courses:

Course Reviewer
Comments

Key: 4605

Preview Bridge

Course Change Request

New Course Proposal

Date Submitted: 02/19/19 4:52 pm

Viewing: **NUC ENG 5507 : Nuclear Policy**

File: 4609

Last edit: 03/18/19 11:09 am

Changes proposed by: alajoa

Requested Effective Change Date	Fall 2019
Department	Mining & Nuclear Engineering
Discipline	Nuclear Engineering (NUC ENG)
Course Number	5507
Title	Nuclear Policy
Abbreviated Course Title	Nuclear Policy
Catalog Description	This course introduces nuclear security and safeguards policy. It explores the following topics: history of domestic and international nuclear policy, evolution of U.S. nuclear weapons policy, factors influencing policy, the IAEA, nuclear deterrence policy, nuclear safeguards policy, policy in non-proliferation issues, and various international agreements.
Prerequisites	
Field Trip Statement	
Credit Hours	LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3
Required for Majors	No
Elective for Majors	Yes
Justification for new course:	This course facilitates human capital development in nuclear security career path. The nuclear engineering program is expanding its focus areas to include nuclear nonproliferation, security, deterrence, safeguards and policy. It is designed to provide graduate level studies to professionals and students who are on nuclear security career path or intend to have a career in nuclear security. The United States of America, through various executive departments like Department of Energy (DOE), Department of State (DOS) and Department of Defense (DoD), is fully vested in nuclear security. For example, DOE's National Nuclear Security Administration (NNSA), DoD's Defense Threat Reduction Agency (DTRA), and DOS's Threat Reduction Programs are staffed by personnel with knowledge in this area of study. These agencies also require continued staffing by hiring people who possess this knowledge.
Semesters previously offered as an	Per email with Dr. Alajo, this course is required for the new graduate certificate program in Nuclear Nonproliferation.

In Workflow

1. **NUC ENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/19/19 5:03 pm Hyoung-Koo Lee (leehk): Approved for NUC ENG Chair
2. 02/20/19 1:40 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/18/19 11:09 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/18/19 11:31 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

experimental course

Co-Listed Courses:

Course Reviewer Comments	**sraper (03/18/19 11:09 am):** This is a part of a grad certificate that is in the grad office at this time and has not gone on to MDHE yet. The grad office said they have never had one rejected. This may need to be tabled in light of the Nuc Eng 5001 course that is currently shown as a hard number on the Grad Cert proposal. I have a query with grad office but no response yet.

Key: 4609

Preview Bridge

Course Change Request

New Course Proposal

Date Submitted: 02/20/19 1:18 pm

Viewing: **NUC ENG 5509 : Nuclear Nonproliferation**

File: 4611

Last edit: 03/18/19 11:09 am

Changes proposed by: usmans

Requested Effective Change Date	Fall 2019
Department	Mining & Nuclear Engineering
Discipline	Nuclear Engineering (NUC ENG)
Course Number	5509
Title	Nuclear Nonproliferation
Abbreviated Course Title	Nuclear Nonproliferation

Catalog Description

This course will introduce IAEA mission specific to nonproliferation. The class will provide discussion of essential elements of a nuclear weapon, followed by a brief historical over of nonproliferation treaties in place to deter proliferation. Methods of fissile material production will be discussed followed by a survey of tool and techniques available an

Prerequisites

Graduate Standing or enrolled in the Nuclear Nonproliferation certificate program.

Field Trip Statement

Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0	Total: 3
Required for Majors	No				
Elective for Majors	Yes				

Justification for new course:

This course facilitates human capital development in nuclear security career path. The nuclear engineering program is expanding its focus areas to include nuclear

In Workflow

1. **NUC ENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/20/19 1:20 pm Hyoung-Koo Lee (leehk): Approved for NUC ENG Chair
2. 02/20/19 1:40 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/18/19 11:09 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/18/19 11:31 am Brittany Parnell (ershenb):

	nonproliferation, security, deterrence, safeguards and policy. It is designed to provide graduate level studies to professionals and students who are on nuclear security career path or intend to have a career in nuclear security. The United States of America, through various executive departments like Department of Energy (DOE), Department of State (DOS) and Department of Defense (DoD), is fully vested in nuclear security. For example, DOE's National Nuclear Security Administration (NNSA), DoD's Defense Threat Reduction Agency (DTRA), and DOS's Threat Reduction Programs are staffed by personnel with knowledge in this area of study. These agencies also require continued staffing by hiring people who possess this knowledge.	Approved for Pending CCC Agenda post
Semesters previously offered as an experimental course	Never- this course is required for the new graduate certificate program in Nuclear Nonproliferation.	
Co-Listed Courses:		
Course Reviewer Comments	**sraper (03/18/19 11:09 am):** This is a part of a grad certificate that is in the grad office at this time and has not gone on to MDHE yet. The grad office said they have never had one rejected. This may need to be tabled in light of the Nuc Eng 5001 course that is currently shown as a hard number on the Grad Cert proposal. I have a query with grad office but no response yet.	

Key: 4611

Preview Bridge

Program Change Request

Date Submitted: 02/21/19 12:34 pm

Viewing: BUSAPPS-MI : Business Applications and Software Development Minor

File: 255.14

Last approved: 04/19/18 10:42 am

Last edit: 02/21/19 1:21 pm

Changes proposed by: cz87c

Catalog Pages Using this Program
Business and Management Systems
Information Science and Technology

Start Term
Fall 2019 ~~08/13/2018~~
Program Code
BUSAPPS-MI
Department
Business and Information Technology
Title
Business Applications and Software Development Minor

Program Requirements and Description

In Workflow

1. **RINFSCTE Chair**
2. **CCC Secretary**
3. **Social Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. Kristy Giacomelli

Approval Path

1. 02/21/19 12:49 pm siauk: Approved for RINFSCTE Chair
2. 02/22/19 8:30 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/25/19 4:10 pm Barry Flachsbart (barryf): Approved for Social Sciences DSCC Chair
4. 03/06/19 4:01 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Mar 21, 2018 by Barry Flachsbart (barryf)
2. Apr 19, 2018 by Brittany Parnell (ershenb)

3. Apr 19, 2018 by Brittany Parnell (ershenb)

Minor in Business Applications and Software Development

The Minor requires 15 credit hours, as follows:

Required Courses:		6
~~IS&T 3553~~	~~Modular Software Systems in Java~~	
IS&T 3420	**Introduction to Data Science and Management**	
IS&T 5520	Data Science and Machine Learning with Python	

And three courses from the following list:		9
IS&T 1552	Implementing Information Systems: Data Perspective	3
or IS&T 1562	Java and Data Structures	
IS&T 3131	Computing Internals and Operating Systems	3
~~IS&T 3420~~	~~Introduction to Data Science and Management~~	
IS&T 3423	Database Management	3
IS&T 3443	Database Applications in Business	3
ERP 5240	Enterprise Application Development and Software Security	3

Justification for request
Supporting Documents
Course Reviewer Comments
ershenb (02/21/19 1:21 pm): updated start term to Fall 2019

Key: 255

Program Change Request

Date Submitted: 11/13/18 9:23 am

Viewing: CP ENG-BS : Computer Engineering BS

File: 153.60

Last approved: 11/02/18 11:29 am

Last edit: 02/27/19 8:50 am

Changes proposed by: stanleyj

Catalog Pages Using this Program
Computer Engineering

Start Term
Fall 2019
Program Code
CP ENG-BS
Department
Electrical and Computer Engineering
Title
Computer Engineering BS

Program Requirements and Description

In Workflow

1. RELECENG Chair
2. CCC Secretary
3. Engineering DSCC Chair
4. Pending CCC Agenda post
5. CCC Meeting Agenda
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. Kristy Giacomelli

Approval Path

1. 11/21/18 3:37 pm Daryl Beetner (daryl): Approved for RELECENG Chair
2. 11/27/18 1:36 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 12/03/18 8:54 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 12/17/18 10:24 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post
5. 01/02/19 12:07 pm Brittany Parnell (ershenb): Rollback to RELECENG Chair for CCC Meeting Agenda
6. 01/02/19 2:26 pm Daryl Beetner

(daryl): Approved for RELECENG Chair
7. 01/02/19 3:37 pm Brittany Parnell (ershenb): Approved for CCC Secretary
8. 02/27/19 8:50 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
9. 03/06/19 3:54 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Aug 6, 2014 by Stanley (stanleyj)
2. Aug 13, 2014 by pantaleoa
3. Sep 21, 2015 by kleb6b
4. Apr 25, 2016 by Stanley (stanleyj)
5. Dec 1, 2016 by Stanley (stanleyj)
6. Sep 19, 2017 by Stanley (stanleyj)
7. Jun 18, 2018 by Stanley (stanleyj)
8. Nov 2, 2018 by Stanley (stanleyj)

Bachelor of Science Computer Engineering[1]

Entering freshmen desiring to study Computer Engineering will be admitted to the Freshman Engineering Program. They will be permitted to state a Computer Engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Freshman Engineering program is on enhanced advising and career counseling, with the goal of providing to the student the information necessary to make an informed decision regarding the choice of a major.

For the Bachelor of Science degree in Computer Engineering, a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. At least two grade points per credit hour must also be attained in all courses taken in Computer Engineering.

Electrical and Computer Engineering degree programs will require a minimum of **21** ~~24~~ credit hours of humanities/social-sciences as specified below:

- ENGLISH 1120
- HISTORY 1200 **or** HISTORY 1300 **or** HISTORY 1310 **or** POL SCI 1200
- ECON 1100 **or** ECON 1200
- Technical Communication Elective: ENGLISH 1160 **or** ENGLISH 3560
- SP&M S 1185
- The remaining minimum of **6** ~~9~~ additional credit hours must be three-credit hour lecture courses offered in disciplines in the humanities and social sciences. Humanities courses are defined as those in: Art, English and Technical Communication, Etymology, Foreign Languages, Music, Philosophy, Speech and Media Studies, and Theatre. Social Sciences courses are defined as those in: ~~Economics, History, Political Science, and Psychology. At least one of the courses must be at the upper level.~~**Economics, History, Political Science,** ~~Upper-level H/SS courses are defined as those at the 2000-level or above,~~ and **Psychology.** ~~that require as a prerequisite the successful completion of a lower-level H/SS course.~~ Study abroad courses may count as **H/SS courses. H/SS courses** ~~upper-level H/SS courses, even if they do not have a prerequisite. H/SS courses~~ numbered 2001, 3001, and 4001 (experimental courses) may also be used to complete these elective requirements.

Courses in business, education, information science and technology, or any other discipline not listed above will **not** satisfy the humanities/social sciences elective requirement, although such courses may count toward general education requirements. Transfer credits from other universities in sociology and general humanities may count as humanities or social science electives.

The Computer 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. These interrelations are presented and discussed through classroom and laboratory instruction.

Free Electives Footnote:

Each student is required to take three 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	**Credits**	**Second Semester**	**Credits**
FR ENG 1100[2]	1	MECH ENG 1720	3
MATH 1214[3]	4	MATH 1215[3]	4
CHEM 1310	4	PHYSICS 1135[3,4]	4
CHEM 1319	1	ECON 1100 or 1200	3
HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3	Elective-Hum or Soc (any level)[5]	3
ENGLISH 1120	3		
	16		17
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
ELEC ENG 2100[3,6,7]	3	COMP ENG 2210[3,6,8]	3
ELEC ENG 2101[3,6]	1	COMP ENG 2211[3,6]	1
MATH 2222[3]	4	ELEC ENG 2120[3,7,9]	3
COMP SCI 1570[3]	3	MATH 3304[3]	3

COMP SCI 1580[3]	1	COMP SCI 1200[3]	3
PHYSICS 2135[3,4]	4	COMP SCI 1575	3
	16		16

Junior Year

First Semester	Credits	Second Semester	Credits
COMP ENG 3110	3	COMP ENG Elective A[3,14]	3
COMP ENG 3150	3	ELEC ENG 3410[3,6,9]	3
COMP ENG 3151[3,6,8]	1	COMP SCI 3800 or 2500[3]	3
ELEC ENG 2200[3,6,7]	3	STAT 3117[12]	3
ELEC ENG 2201[3,6,7]	1	Communication Elective [13]	3
Mathematics Elective[10]	3		
SP&M S 1185[13]	3		
	17		15

Senior Year

First Semester	Credits	Second Semester	Credits
COMP ENG 5410[3]	3	COMP ENG Elective D[3,15,16]	3
COMP ENG Elective C[3,15,16]	3	COMP ENG Elective E[3,15,16]	3
COMP ENG 4096[3,17]	1	COMP ENG 4097[3,17]	3
Elective-Hum or Soc (any level)[5]	3	~~Elective-Hum or Soc (upper level)[5]~~	~~3~~
Engineering Science Elective [11]	3	**Professional Development Elective[20]**	**3**
COMP ENG Elective B[3,19]	3	Free Elective[18]	3
	16		15
Total Credits: 128			

Notes: Student must satisfy the common engineering freshman year requirements and be admitted into the department.

1	The minimum number of hours required for a degree in Computer Engineering is 128.
2	Students that transfer to Missouri S&T after their freshman year are not required to enroll in Freshman Engineering Seminars.
3	A minimum grade of "C" must be attained in MATH 1214, MATH 1215, MATH 2222, and MATH 3304, PHYSICS 1135 and PHYSICS 2135 (or their equivalents), COMP SCI 1570, COMP SCI 1580, COMP SCI 1575, COMP SCI 1200, COMP SCI 2500 or COMP SCI 3800, COMP ENG 2210, COMP ENG 2211, COMP ENG 3150, COMP ENG 3151, COMP ENG 3110,COMP ENG 5410, COMP ENG 4096, and ELEC ENG 2100, ELEC ENG 2101, ELEC ENG 2120, ELEC ENG 2200, ELEC ENG 2201, and ELEC ENG 3410 and the COMP ENG electives A, B, C, D and E. Also, students may not enroll in other courses that use these courses as prerequisites until the minimum grade of "C" is attained.
4	Students may take PHYSICS 1111 and PHYSICS 1119 in place of PHYSICS 1135. Students may take PHYSICS 2111 and PHYSICS 2119 in place of PHYSICS 2135.
5	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.
6	Students who drop a lecture course prior to the deadline to drop a class must also drop the corequisite lab course.
7	Students must earn a passing grade on the ELEC ENG Advancement Exam I (associated with ELEC ENG 2100) before they enroll in ELEC ENG 2120 or ELEC ENG 2200 and ELEC ENG 2201.
8	

	Students must earn a passing grade on the COMP ENG Advancement Exam (associated with COMP ENG 2210) before they enroll in any course with COMP ENG 2210 and COMP ENG 2211 as prerequisites.
9	Students must earn a passing grade on the ELEC ENG Advancement Exam II (associated with ELEC ENG 2120) before they enroll in ELEC ENG 3410 and ELEC ENG 3411.
10	Students must take one of the following courses: MATH 3108, MATH 3109, MATH 5302, MATH 5603, MATH 5105, MATH 5106, MATH 5107, MATH 5108, MATH 4209, MATH 4211, MATH 5215, MATH 5222, MATH 5325, MATH 4530, MATH 5737, MATH 5351, MATH 5154, MATH 4096, MATH 5483, MATH 5585, STAT 5644, STAT 5346, STAT 5353.
11	Students must take one of MECH ENG 2340, MECH ENG 2519, MECH ENG 2527, PHYSICS 2311, PHYSICS 2401, CHEM 2210, BIO SCI 2213, BIO SCI 2223, CIV ENG 2200, MECH ENG 2350, PHYSICS 2305, PHYSICS 4311, CER ENG 4240, or NUC ENG 3205.
12	Students may replace STAT 3117 with STAT 3115 or STAT 5643.
13	Student must take English 3560 or English 1160. Students may replace SpMS 1185 with the ROTC sequence of Mil Army 4250 and 4500 or Mil Air 4110 and 4120
14	Comp Eng Elective A must be a 4000 or 5000-level Comp Eng, Elec Eng, or Comp Sci course with at least a 3-hour lecture component. This normally includes all Comp Eng and Elec Eng 4000 or 5000-level courses except Comp Eng or Elec Eng 4000, 4099, 4096, and 4097 or Comp Sci 5000, 4010, 5600, and 4099.
15	Comp Eng Electives C, D, and E must be 3000, 4000 or 5000-level courses from an approved list of science, mathematics, and engineering courses. In particular, this list includes all 3000, 4000 or 5000-level Comp Eng, Elec Eng and Comp Sci courses except required courses in Comp Eng, Elec Eng, and Comp Sci and except Comp Eng 4096 and 4097, Elec Eng 2800, 1002, 1003, 4096, and 4097, and Comp Sci 2002 and 4600/5600). Comp Eng Electives C, D, and E must include at least six hours of engineering or computer science courses.
16	COMP ENG Electives C, D, and E cannot include more than three hours of COMP ENG 4000, COMP ENG 4099, ELEC ENG 4000, or ELEC ENG 4099.
17	Students pursuing dual degrees in COMP ENG and ELEC ENG may take either COMP ENG 4096 or ELEC ENG 4096 and COMP ENG 4097 or ELEC ENG 4097. Students may not receive credit for both COMP ENG 4096 and ELEC ENG 4096 or COMP ENG 4097 and ELEC ENG 4097 in the same degree program.
18	Students are required to take at least three credit hours. Elec Eng 2800 level, ELEC ENG 4096, ELEC ENG 4097, COMP ENG 4096 and COMP ENG 4097 may not be used for free electives. No more than one credit hour of COMP ENG 3002 or ELEC ENG 3002 may be applied to the BS degree for free electives.
19	Comp Eng Elective B must be a 4000 or 5000 level COMP ENG course with at least a 3-hour lecture component, excluding COMP ENG 4096 and COMP ENG 4097. Students admitted to the accelerated BS/MS program must satisfy Cp Eng Electives B and C with 5xxx or 6xxx-level courses and a minimum grade of B.
20	**Students must take one of the following courses: *BUS 5980, ECON 4430, ECON 5337, ENG MGT 2310, ENG MGT 3320, ENG MGT 4110, ENG MGT 5514, PHIL 3225***

An ~~A~~accelerated BS/MS program is optional.

Emphasis Areas for Computer Engineering

Note: The following emphasis areas identify courses from which a student may opt to develop a specific emphasis. It is not required that students obtain an emphasis specialty within computer engineering.

Computational Intelligence

Highly Recommended

COMP ENG 5310	Computational Intelligence	3
ELEC ENG 5370	Introduction to Neural Networks and Applications	3
COMP ENG 6310	Markov Decision Processes	3
Suggested		
ELEC ENG 5330	Fuzzy Logic Control	3
COMP ENG 5450	Digital Image Processing	3
COMP ENG 5460	Machine Vision	3

Computer Architecture and Embedded Systems

Highly Recommended		
COMP ENG 5110	Principles of Computer Architecture	3
COMP ENG 5120	Digital Computer Design	3
COMP ENG 5151	Digital Systems Design Laboratory	3
COMP ENG 5160	Embedded Processor System Design	3
COMP ENG 5170	Real-Time Systems	3
Suggested		
COMP ENG 5610	Real-Time Digital Signal Processing	3
COMP ENG 5130	Advanced Microcomputer System Design	3
ELEC ENG 3100	Electronics I	3
COMP SCI 3100	Software Engineering I	3

Integrated Circuits and Logic Design

Highly Recommended		
COMP ENG 2210	Introduction to Digital Logic	3
COMP ENG 5210	Introduction To VLSI Design	3
COMP ENG 5220	Digital System Modeling	3
COMP ENG 6210	Digital Logic	3
Suggested		
ELEC ENG 3100	Electronics I	3
COMP ENG 5110	Principles of Computer Architecture	3
COMP ENG 5151	Digital Systems Design Laboratory	3
COMP ENG 5120	Digital Computer Design	3
COMP ENG 5130	Advanced Microcomputer System Design	3
COMP ENG 5510	Fault-Tolerant Digital Systems	3

Networking, Security, and Dependability

Highly Recommended		
COMP ENG 5420	Introduction to Network Security	3
COMP ENG 5430	Wireless Networks	3
COMP ENG 6440	Network Performance Analysis	3

COMP ENG 6510	Resilient Networks	3
Suggested		
COMP ENG 5510	Fault-Tolerant Digital Systems	3

Accelerated BS/MS Program Option for EE and CpE Majors

Electrical engineering or computer engineering undergraduates in ECE at Missouri S&T may opt to apply for an accelerated BS/MS ECE program where a student can achieve both degrees faster than if pursuing the degrees separately. The degrees may be BS EE and MS EE, BS CpE and MS CpE, BS EE and MS CpE, or BS CpE and MS EE. The benefits of the program for admitted students are:

- Undergraduate and graduate courses may be chosen with greater flexibility,
- ~~Dual enrollment status is automatically granted.~~**Up to six** ~~Six~~ hours of 5000-level or above ECE coursework may apply **to** ~~to~~ both the BS and MS requirements,
- The ~~dual-counted~~ classes ~~may be~~ taken **for shared BS/MS credit may be taken** at the lower undergraduate tuition rate,
- The GRE is not required for admission,
- Other graduate credit courses may be taken anytime after entering the program, and
- Work on a thesis project may begin before the BS requirements are completed.

The BS-degree requirements are modified for admitted students such that EE Electives D and E or CpE Electives B and C will be satisfied by six-credit-hours of 5000-level or above ECE coursework. **To be eligible for the accelerated BS/MS ECE program, an** ~~a~~ **EE or CpE undergraduate must be at or beyond the junior level with a minimum of 60 credit hours and must have completed 18 credit hours of EE and/or CpE courses at Missouri S&T with at least a 3.50 GPA in the ECE courses. To be admitted, the student must complete the program application and must have the recommendation of an** ~~an~~ **ECE faculty member who agrees to serve as the graduate thesis advisor. No other MS degree requirements** ~~The Graduate Form 1 must be completed no later than the beginning of the semester after the dual-counted courses~~ **are changed.** ~~**completed. Until completing their BS degree, students must fill out a form each semester indicating which courses will be completed for graduate credit.** The courses must be identified as dual-counted courses and must be completed with a B or better.These six hours of coursework will be taken as undergraduate credit, must be approved by the academic advisor, and may not be undergraduate research, special problems, or transfer courses.~~**The** ~~(A co-listed course can only apply for these undergraduate requirements if it is under an EE or CpE registration. Note that the choice of EE or CpE registration may effect how a course can apply within an~~ MS ~~program.) Other courses for the MS~~ degree ~~program~~ must be **for the** ~~identified as graduate credit when taken. All other MS degree requirements are not changed and the MS degree must be for the~~ thesis option. **The program may be** ~~The program may be~~ combined with existing honors research and emphasis area options. Admitted students will have both undergraduate and graduate records in the Registrar's Office.

The Accelerated program application must be completed within one semester after the shared-credit courses are completed. Courses taken for shared credit will be identified on this application form and on Graduate Form 1, which is submitted after the student enters the graduate program. The ~~These~~ **six hours of shared-credit coursework will be taken as undergraduate credit, must be approved by the academic advisor, and may not be undergraduate research, special problems, or transfer courses (a co-listed course can only apply for these undergraduate requirements if it is under an EE or CpE registration. Note that the choice of EE or CpE registration may affect how a course can apply within an MS program.) An additional six credit hours of coursework for graduate credit (beyond the shared BS/MS credits) can be taken while in the undergraduate program by applying for dual undergraduate/graduate enrollment.** ~~**courses.**~~ **Taking additional courses for graduate credit will require formal application to the graduate program. Acceptance to the MS degree from the Accelerated Program is automatic so long as the student meets ECE graduate student academic performance requirements.** ~~Upon separate completion of requirements, the BS degree would be awarded followed by the MS degree at a later semester, or the BS and MS degrees may be awarded simultaneously at the same semester. To be eligible for the accelerated BS/MS ECE program, a EE or CpE undergraduate must be at or beyond the junior level with a minimum of 60 credit hours and must have completed 18 credit hours of EE and/or CpE courses at Missouri S&T with at least a 3.50 GPA in the ECE courses. To be admitted, the student must complete the program application and must have the recommendation of an ECE faculty member who agrees to serve as the graduate thesis advisor. The Graduate Form 1 must be completed no later than the beginning of the~~

~~semester after the dual-counted courses are completed. Until completing their BS degree, students must fill out a form each semester indicating which courses will be completed for graduate credit.~~To remain in the program, the student must maintain good standing within the undergraduate EE or CpE program and must maintain continuous enrollment at Missouri S&T. If the student exits the program before completion of the MS degree requirements or fails to maintain continuous enrollment at Missouri S&T, the **shared-credit** ~~dual-counted~~ courses may not apply toward graduate requirements in the event of future readmission.

~~The student is responsible for checking on how dual-enrollment status and graduate coursework will affect scholarships and other financial aid. International students should check with international affairs during completion of an accelerated BS/MS to ensure immigration status will be maintained throughout the program.~~

The student is responsible for checking on how dual-enrollment status and graduate coursework will affect scholarships and other financial aid. Once you become a graduate student, you are not eligible for Federal Pell Grants, though are still eligible for Federal Financial Aid and will be eligible for fellowships and teaching/research assistantships. International students should check with international affairs during completion of an accelerated BS/MS to ensure immigration status will be maintained throughout the program.

Justification for request

In addition to changes made to add the Professional Elective to the EE program, modifications were made to the description of the Accelerated BS/MS program. Modifications are a result of interactions between ECE, Graduate Studies, Cashiers, and the Registrar and are intended to improve consistency between the Accelerated program and the existing BS and MS program, and to make implementation easier overall. The description was modified to:

- Improve readability. Most edits were simply to change the order of the text.

- Remove statement “dual enrollment status is automatically granted”. To make the process smoother for the registrar and graduate studies, students must apply for dual undergraduate/graduate enrollment (though status should be automatically granted once the student applies)

- Refer to classes taken for “shared credit” rather than “dual counted classes” or similar to avoid confusion with classes taken as dual undergraduate/graduate enrollment

- State that students must complete the undergraduate program, then apply and begin the MS degree program. They will be awarded a BS and MS degree separately. This change was made to make it clear to the cashier when the student would stop paying for courses at the undergraduate rate and would begin paying at the graduate rate. At most, students can have 6 shared BS/MS credits and 6 credits as dual undergraduate/graduate enrollment which are counted as graduate credit but paid for at the undergraduate rate.

- State that the student must specify which courses will be used for shared credit in the application form and in Graduate Form 1.

- Add a few details regarding scholarships and grants that students might want to double check before applying for the program.

Supporting Documents

Professional Development Elective - 1018.docx

Course Reviewer Comments

ershenb (11/27/18 1:35 pm): Removed Math 3103 from footnote 10 per Dr. Stanley's email (Math 3103 is being deactivated Spring 2019).

ershenb (12/04/18 9:10 am): grammatical edits

ershenb (01/02/19 12:07 pm): Rollback: Rollback per the request of Dr. Raper and Dr. Beetner.

daryl (01/02/19 2:24 pm): The previous changes to add a Professional Elective are acceptable. Additional modifications were made to improve the description of the Accelerated BS/MS program.

daryl (01/02/19 2:26 pm): Modest change to justification.

sraper (02/27/19 8:50 am): Changed wording as requested by DSCC. Email confirmation from ECE as to the specific wording.

Key: 153

In Spring 2018, the College of Engineering and Computing made a uniform requirement for engineering degree programs of 21 humanity and social science credit hours, which meets ABET requirements. The EE and CpE BS degree programs in Spring 2018 had 24 humanity and social science credit hours, providing an opportunity for The ECE department to adopt a new 3 credit hour course addressing EE and CpE BS degree program needs. In Spring 2018, the ECE department presented the 3 credit hour opportunity to the ECE Academy and to ECE Faculty and requested feedback for 3 credit hour course that would better prepare our students for post-graduation opportunities. The ECE Academy and Faculty recommended a "Systems" elective or similar area course, where students select from a course list which could include: Project Management; Engineering Ethics; Engineering Economics; Entrepreneurship; Leadership. For CpE, in reviewing possible course adoption options, the EE and CpE Associate Chairs and the Department Chair examined the ASEE Computer Engineering Curriculum Recommendations from 2016, which include the following areas:

- Circuits and Electronics
- Computing Algorithms
- Computer Architecture and Organization
- Digital Design
- Computer Networks
- Preparation for Professional Service
- Information Security
- Signal Processing
- Systems and Project Engineering
- System Resource Management
- Software Design

In the current CpE BS degree program curriculum, there are 4 areas from the ASEE recommendations that are weakly addressed, including Information Security, Systems and Project Engineering, and System Resource Management. In evaluating the recommendations from the ECE Academy and Faculty for a "Systems" area type course could be utilized to enhance the experience for students in Preparation for Professional Service, Systems and Project Engineering, and/or System Resource Management.

This "Systems" area elective was presented to the ECE Faculty at the August 2018 ECE Faculty Retreat. The ECE Faculty recommended contacting companies and exploring currently offered undergraduate courses in the proposed course list areas. At the beginning of the Fall 2018 semester, the EE and CpE Associate Chairs for Undergraduate Studies identified possible offerings for a possible "Systems" elective. The CpE Associate Chair for Undergraduate Studies consulted with the Civil, Architectural and Environmental Engineering, Engineering Management, and Mechanical and Aerospace Engineering departments about the content, frequency of offering, and prerequisites for courses on the course list. The CpE Associate Chair for Undergraduate Studies met with 12 companies at the September 2018 Career Fair to question what course area(s) would strengthen our graduates in preparing them for internship/co-op and full time positions. The feedback from the 12 companies for a new course area includes:

- Embedded systems/Real-time systems/PLCs (3 companies)
- Leadership/Project management (5 companies)
- Communication skills (4 companies)

- Project work/Team building (5 companies)
- Business or engineering economics (2 companies)
- Technical and personal communication (4 companies)
- Ethics (1 company)

In taking the compiled list of courses from the EE and CpE Associate Chairs for Undergraduate Studies for a possible "Systems" elective and looking at the ECE Academy and Company recommendations as well as the recommendations from the departments offering the courses, the following list of undergraduate courses was compiled for a 3 credit hour Professional Elective:

- *BUS 5980 Business Models for Entrepreneurship and Innovation* (LEC 3.0)
- *ECON 4430 Cost-Benefit Analysis* (LEC 3.0)
- *ECON 5337 Financial Mathematics* (LEC 3.0)
- *ENG MGT 2310 Introduction to System Engineering (LEC 3.0)*
- *ENG MGT 3320 Introduction to Project Management (LEC 3.0)*
- *ENG MGT 4110 General Management-Design and Integration (LEC 3.0)*
- *ENG MGT 5514 Patent Law (LEC 3.0)*
- *PHIL 3225 Engineering Ethics (LEC 3.0)*

The course list was reviewed in September 2018 by the ECE Executive Committee and Department Chair. The Executive Committee was receptive to the course list but wanted to insure that the courses would be offered regularly for students and that would be room for ECE in the sections for these courses. The Executive Committee agreed that the courses meet the intent of the ECE Academy and Company recommendations, and they fill a Professional Development elective in the "Systems" area. Accordingly, the following motion for a 3 credit hour Professional Development Elective was put together for consideration for the ECE Faculty at the October 18, 2018 faculty meeting.

Proposed motion:

- Replace the 3.0 credit hour upper level Hum/SS requirement in the EE and CpE BS degree programs with:
  - 3.0 credit hour Professional Development Elective where EE and CpE students must take one of the following courses:
    - ***BUS 5980 Business Models for Entrepreneurship and Innovation*** (LEC 3.0)
    - ***ECON 4430 Cost-Benefit Analysis*** (LEC 3.0)
    - ***ECON 5337 Financial Mathematics*** (LEC 3.0)
    - ***ENG MGT 2310 Introduction to System Engineering*** *(LEC 3.0)*
    - ***ENG MGT 3320 Introduction to Project Management*** *(LEC 3.0)*
    - ***ENG MGT 4110 General Management-Design and Integration*** *(LEC 3.0)*
    - ***ENG MGT 5514 Patent Law*** *(LEC 3.0)*
    - ***PHIL 3225 Engineering Ethics (LEC 3.0)***
  - Professional Development Elective is either a co- or prerequisite for EE 4096/CpE 4096
- The proposed motion will reduce the EE and CpE Hum/SS requirements from 24 hours to 21 hours which meets the engineering Hum/SS requirement for S&T

After discussion, the motion was unanimously approved by the ECE Faculty to adopt this Professional Development Elective and is sought to be made effective for the Fall 2019 semester.

Program Change Request

Date Submitted: 11/28/18 11:56 am

Viewing: EL ENG-BS : Electrical Engineering BS

File: 155.47

Last approved: 06/18/18 12:29 pm

Last edit: 02/27/19 8:52 am

Changes proposed by: ferdowsi

Catalog Pages Using this Program
Electrical Engineering

Start Term
Fall 2019 ~~08/13/2018~~
Program Code
EL ENG-BS
Department
Electrical and Computer Engineering
Title
Electrical Engineering BS

Program Requirements and Description

In Workflow

1. **RELECENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. Kristy Giacomelli

Approval Path

1. 11/28/18 8:24 pm Daryl Beetner (daryl): Approved for RELECENG Chair
2. 11/30/18 2:47 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 12/13/18 3:02 pm Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 12/17/18 10:25 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post
5. 01/02/19 12:06 pm Brittany Parnell (ershenb): Rollback to RELECENG Chair for CCC Meeting Agenda
6. 01/02/19 2:17 pm Daryl Beetner

(daryl): Approved for RELECENG Chair
7. 01/02/19 3:37 pm Brittany Parnell (ershenb): Approved for CCC Secretary
8. 02/27/19 8:52 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
9. 03/06/19 4:02 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Aug 6, 2014 by Watkins (watkins)
2. Aug 13, 2014 by pantaleoa
3. Apr 25, 2016 by Watkins (watkins)
4. Jun 18, 2018 by Watkins (watkins)

Bachelor of Science Electrical Engineering[1]

Entering freshmen desiring to study Electrical Engineering will be admitted to the Freshman Engineering Program. They will be permitted to state a Electrical Engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Freshman Engineering Program is on enhanced advising and career counseling, with the goal of providing to the student the information necessary to make an informed decision regarding the choice of a major.

For the Bachelor of Science degree in Electrical Engineering a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. At least two grade points per credit hour must also be attained in all courses taken in Electrical Engineering.

Electrical and Computer Engineering degree programs will require a minimum of **21** ~~24~~ credit hours of humanities/social-sciences as specified below:

- **ENGLISH 1120**
- ~~ENGLISH 1120HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200~~**HISTORY 1200** ~~ECON 1100~~ **or HISTORY 1300 or HISTORY 1310 or POL SCI 1200** ~~ECON 1200~~
- **ECON 1100 or ECON 1200**

- Technical Communication Elective: **ENGLISH 1160 or ENGLISH 3560**
- **SP&M S 1185**
- ~~ENGL 1160 or ENGL 3560SP&M 1185~~The remaining minimum of **6** ~~9~~-additional credit hours must be three-credit hour lecture courses offered in disciplines in the humanities and social sciences. Humanities courses are defined as those in: Art, English and Technical Communication, Etymology, Foreign Languages, Music, Philosophy, Speech and Media Studies, and Theatre. Social Sciences courses are defined as those in: ~~Economics, History, Political Science, and Psychology. At least one of the courses must be at the upper level.~~**Economics, History, Political Science,** ~~Upper-level H/SS courses are defined as those at the 2000 level or above,~~ and **Psychology.** ~~that require as a prerequisite the successful completion of a lower level H/SS course.~~ Study abroad courses may count as **H/SS courses. H/SS courses** ~~upper-level H/SS courses, even if they do not have a prerequisite. H/SS courses~~ numbered 2001, 3001, and 4001 (experimental courses) may also be used to complete these elective requirements.

Courses in business, education, information science and technology, or any other discipline not listed above will **not** satisfy the humanities/social sciences elective requirement, although such courses may count toward general education requirements. Transfer credits from other universities in sociology and general humanities may count as humanities or social science electives.

The Electrical 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:

Students are required to take five hours of free electives in consultation with their 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	**Credits**	**Second Semester**	**Credits**
FR ENG 1100[2]	1	MECH ENG 1720	3
CHEM 1310	4	MATH 1215[3]	4
CHEM 1319	1	PHYSICS 1135[3,4]	4
MATH 1214[3]	4	ECON 1100 or 1200	3
HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3	Elective-Hum or Soc Sci (any level)[5]	3
ENGLISH 1120	3		
	16		17
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
ELEC ENG 2100[3,6,7]	3	ELEC ENG 2200[3,6,7,10]	3
ELEC ENG 2101[3,6]	1	ELEC ENG 2201[3,6,7]	1
MATH 2222[3]	4	ELEC ENG 2120[3,7,9]	3
COMP ENG 2210[3,6,8]	3	MATH 3304[3]	3
COMP ENG 2211[3,6]	1	Engineering Science Elective[11]	3
PHYSICS 2135[3,4]	4	COMP SCI 1570	3
		COMP SCI 1580[12]	1
	16		17

Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
ELEC ENG 3100[3,6,9,10]	3	ELEC ENG 3600[3,9]	4
ELEC ENG 3101[3,6,9,10]	1	El Eng Elective A[10,14,19]	3
ELEC ENG 3320	3	ELEC ENG 3430	3
ELEC ENG 3321	1	ELEC ENG 3431	1
SP&M S 1185[13]	3	STAT 3117[12]	3
MATH 3108	3	Communication Elective [13]	3
	14		17
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
El Eng Power Elective[3,6,9,15]	3	El Eng Elective C[10,14]	3
El Eng Power Elective Lab[3,6,9,15]	1	El Eng Elective E[17,19]	3
El Eng Elective B[10,14]	3	ELEC ENG 4097	3
El Eng Elective D[10,16,19]	3	~~Elective-Hum or Soc Sci (upper level)[5]~~	~~3~~
ELEC ENG 4096[3]	1	**Professional Development Elective[20]**	**3**
Free Elective[18]	2	Free Elective[18]	3
Elective-Hum or Soc Sci (any level)[5]	3		
	16		15
Total Credits: 128			

Note: Student must satisfy the common engineering freshman year requirements and be admitted into the department. See Freshman Engineering.

1	The minimum number of hours required for a degree in Electrical Engineering is 128.
2	Students that transfer after their freshman year are not required to enroll in FR ENG 1100.
3	A minimum grade of "C" must be attained in MATH 1214, MATH 1215, MATH 2222, and MATH 3304, PHYSICS 1135 and PHYSICS 2135 (or their equivalents), ELEC ENG 2100, ELEC ENG 2101, ELEC ENG 2120, ELEC ENG 2200, ELEC ENG 2201, ELEC ENG 3320, ELEC ENG 3321, ELEC ENG 3430, ELEC ENG 3431, ELEC ENG 3100, ELEC ENG 3101, and ELEC ENG 3600, the ELEC ENG power elective (ELEC ENG 3500 and ELEC ENG 3501 or ELEC ENG 3540 and ELEC ENG 3541), ELEC ENG 4096 and COMP ENG 2210 and COMP ENG 2211. Also, students may not enroll in other courses that use these courses as prerequisites until the minimum grade of "C" is attained.
4	Students may take PHYSICS 1111 and PHYSICS 1119 in place of PHYSICS 1135. Students may take PHYSICS 2111 and PHYSICS 2119 in place of PHYSICS 2135.
5	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.
6	Students who drop a lecture course prior to the last week to drop a class must also drop the corequisite lab.
7	Students must earn a passing grade on the ELEC ENG Advancement Exam I (associated with ELEC ENG 2100) before they enroll in ELEC ENG 2120 or ELEC ENG 2200 and ELEC ENG 2201.
8	Students must earn a passing grade on the COMP ENG Advancement Exam (associated with COMP ENG 2210) before they enroll in any course with COMP ENG 2210 and/or COMP ENG 2211 as prerequisites.
9	Students must earn a passing grade on the ELEC ENG Advancement Exam II (associated with ELEC ENG 2120) before they

	enroll in ELEC ENG 3500, ELEC ENG 3540, ELEC ENG 3501, ELEC ENG 3541, ELEC ENG 3320,ELEC ENG 3321, ELEC ENG 3430,ELEC ENG 3431, ELEC ENG 3100, ELEC ENG 3101, or ELEC ENG 3600, or other courses with ELEC ENG 2120 as a prerequisite.
10	Students must earn a passing grade on the ELEC ENG Advancement Exam III (associated with ELEC ENG 2200) before they enroll in ELEC ENG 3100 and ELEC ENG 3101 or other courses with ELEC ENG 2200 as a prerequisite.
11	Students must take MECH ENG 2340, MECH ENG 2519, MECH ENG 2527, PHYSICS 2305, PHYSICS 2311, PHYSICS 2401, NUC ENG 3103, CHEM 2210, BIO SCI 2213, or BIO SCI 2223. The following pairs of course are substitutions: CIV ENG 2200 and MECH ENG 2350 or ENG MGT 2110 and ENG MGT 3310.
12	Students may replace STAT 3117 with STAT 3115 or STAT 5643. Students may replace COMP SCI 1580 with ELEC ENG 3001 Circuits and Systems Laboratory.
13	Students must take ENGLISH 3560 or ENGLISH 1160. Students may replace SP&M S 1185 with the ROTC sequence of MIL ARMY 4250 and MIL ARMY 4500 or MIL AIR 4110 and MIL AIR 4120.
14	ELEC ENG Electives A, B, and C must be chosen from ELEC ENG 56XX, ELEC ENG 3500, ELEC ENG 3540, ELEC ENG 3410, ELEC ENG 3250, ELEC ENG 3340, ELEC ENG 3440, ELEC ENG 3120, and COMP ENG 3150. Only one ELEC ENG 56XX course may be used.
15	The ELEC ENG Power Elective may be satisfied with ELEC ENG 3500 and ELEC ENG 3501 or ELEC ENG 3540 and ELEC ENG 3541.
16	ELEC ENG Elective D must be a 4XXX-level or above ELEC ENG or COMP ENG course with at least a 3-hour lecture component. ELEC ENG 4000 , ELEC ENG 5000, COMP ENG 4000, COMP ENG 5000, ELEC ENG 4099, COMP ENG 4099, ELEC ENG 4096, COMP ENG 4096, ELEC ENG 4097, COMP ENG 4097, ELEC ENG 5070, COMP ENG 5070, ELEC ENG 58XX, and COMP ENG 58XX may not be used for Elective D.
17	ELEC ENG Elective E may be any 3XXX-level or above ELEC ENG or COMP ENG course except ELEC ENG 3002, ELEC ENG 38XX, ELEC ENG 4096, ELEC ENG 4097, and ELEC ENG 5070 and COMP ENG 3002, COMP ENG 38XX, COMP ENG 4000, COMP ENG 4096, COMP ENG 4097, and COMP ENG 5070.
18	Students are required to take five hours of free elective in consultation with their academic advisors. Credits that do not count toward this requirement are deficiency courses (such as algebra and trigonometry) and extra credits from courses meeting other requirements. Any courses outside of engineering and science must be at least three credit hours. ELEC ENG 28XX, ELEC ENG 38XX, ELEC ENG 4096, ELEC ENG 4097, COMP ENG 28XX, COMP ENG 38XX, COMP ENG 4096 and COMP ENG 4097 may not be used for free electives. No more than one credit hour of ELEC ENG 3002 or COMP ENG 3002 may be applied to the BS degree for free electives.
19	Students that pursue an optional degree emphasis area have restricted options for El Eng Electives A, D, and E. Students admitted to the accelerated BS/MS program must satisfy El Eng Electives D and E with 5xxx or 6xxx-level courses and a minimum grade of B.
20	**Students must take one of the following courses: BUS 5980, ECON 4430, ECON 5337, ENG MGT 2310, ENG MGT 3320, ENG MGT 4110, ENG MGT 5514, or PHILOS 3225.**

All Electrical Engineering students are encouraged to take the fundamentals of Engineering Examination prior to graduation. It is the first step toward becoming a registered professional engineer.

An accelerated BS/MS program and a formal emphasis in circuits and electronics, optics and devices, controls and systems, communications and signal processing, power and energy, electromagnetics, or computer engineering are optional.

Emphasis Areas for Electrical Engineering

Circuits and Electronics, Communications and Signal Processing, Computer Engineering, Controls and Systems, Electromagnetics, Optics and Devices, Power and Energy

A declared emphasis area is not required. A student may choose to obtain an Electrical Engineering degree without a formal emphasis or may choose to obtain an Electrical Engineering degree with a declared emphasis in one or more of the emphasis areas of electrical engineering. A major change request is required to add the emphasis area option to the degree program.

For students who seek an Electrical Engineering degree without a formal emphasis, these emphasis areas may guide the choice of their ELEC ENG Electives A, B, C, D, and E as well as their free electives. Students should consult with their advisors on such course selections.

For students who seek an Electrical Engineering degree with a declared emphasis, courses in the declared emphasis area will be applied to ELEC ENG Electives A, D, and E in the degree requirements. For students who choose to have multiple emphasis areas, the additional courses will apply to ELEC ENG Elective B or C and free elective requirements. Students should seek guidance from their advisors on emphasis areas and on courses that are relevant to more than one emphasis area. Students may have an emphasis area or emphasis areas listed on their transcript by completing three three-credit-hour courses in electrical and computer engineering from the designated lists with at least one of the courses being at the 4XXX-level or above. This requirement will be satisfied by completing the relevant ABC Elective course, a 4XXX-level or above course for Elective D, and another 3XXX-level or above course for Elective E from the designated listing. The required ELEC ENG courses ELEC ENG 3320, ELEC ENG 3430, ELEC ENG 3100, and ELEC ENG 3600 and the course used to satisfy the power requirement (ELEC ENG 3500 or ELEC ENG 3540) may not be used to meet the three course requirement. Transfer courses do not apply to emphasis areas. A co-listed course may count toward both areas. Experimental courses **ELEC ENG 3001**, **ELEC ENG 4001**, **ELEC ENG 5001**, **COMP ENG 3001**, **COMP ENG 4001**, ~~ELEC ENG 3001, ELEC ENG 4001, ELEC ENG 5001, COMP ENG 3001, COMP ENG 4001,~~ or **COMP ENG 5001** ~~COMP ENG 5001~~ require departmental approval to apply toward an emphasis area.

Circuits and Electronics		
ELEC ENG 3120	Electronics II	3
ELEC ENG 41XX and ELEC ENG 51XX Courses		
Communications and Signal Processing		
ELEC ENG 3410	Digital Signal Processing	3
ELEC ENG 3440	Digital Communications II	3
ELEC ENG 44XX and ELEC ENG 54XX Courses		
Computer Engineering		
ELEC ENG 3410, COMP ENG 3XXX-level or above Courses (Excluding COMP ENG 3000, COMP ENG 4000, COMP ENG 5000, COMP ENG 3002, COMP ENG 4096, COMP ENG 4097, and COMP ENG 5070) See the COMP ENG degree program for details on COMP ENG areas.		
Controls and Systems		
ELEC ENG 3340	Basic Programmable Logic Controllers	3
ELEC ENG 43XX and ELEC ENG 53XX Courses		
Electromagnetics		
ELEC ENG 46XX and ELEC ENG 56XX Courses		
Optics and Devices		
ELEC ENG 3250	Electronic And Photonic Devices	3
ELEC ENG 42XX and ELEC ENG 52XX Courses		
Power and Energy		
ELEC ENG 3500	Electromechanics	3
ELEC ENG 3540	Power System Design And Analysis	3
ELEC ENG 5150	Photovoltaic Systems Engineering	3
ELEC ENG 5520	Power Electronics	3

ELEC ENG 5521	Power Electronics Laboratory	2
ELEC ENG 45XX and ELEC ENG 55XX Courses		

Accelerated BS/MS Program Option for EE and CpE Majors

Electrical engineering or computer engineering undergraduates in ECE at Missouri S&T may opt to apply for an accelerated BS/MS ECE program where a student can achieve both degrees faster than if pursuing the degrees separately. The degrees may be BS EE and MS EE, BS CpE and MS CpE, BS EE and MS CpE, or BS CpE and MS EE. The benefits of the program for admitted students are:

- Undergraduate and graduate courses may be chosen with greater flexibility,
- ~~Dual-enrollment status is automatically granted,~~**Up to six** ~~Six~~ hours of 5000-level or above ECE coursework may apply **to** ~~to~~ both the BS and MS requirements,
- The ~~dual-counted~~ classes ~~may be~~ taken **for shared BS/MS credit may be taken** at the lower undergraduate tuition rate,
- The GRE is not required for admission,
- Other graduate credit courses may be taken anytime after entering the program, and
- Work on a thesis project may begin before the BS requirements are completed.

The BS-degree requirements are modified for admitted students such that EE Electives D and E or CpE Electives B and C will be satisfied by six-credit-hours of 5000-level or above ECE coursework. **To be eligible for the accelerated BS/MS ECE program, an** ~~a~~ **EE or CpE undergraduate must be at or beyond the junior level with a minimum of 60 credit hours and must have completed 18 credit hours of EE and/or CpE courses at Missouri S&T with at least a 3.50 GPA in the ECE courses. To be admitted, the student must complete the program application and must have the recommendation of an** ~~an~~ **ECE faculty member who agrees to serve as the graduate thesis advisor. No other MS degree requirements** ~~The Graduate Form 1 must be completed no later than the beginning of the semester after the dual-counted courses~~ **are changed.** ~~**completed. Until completing their BS degree, students must fill out a form each semester indicating which courses will be completed for graduate credit.**~~ **The** ~~(A co-listed course can only apply for these undergraduate requirements if it is under an EE or CpE registration. Note that the choice of EE or CpE registration may effect how a course can apply within an~~ **MS** ~~program.) Other courses for the MS~~ **degree** ~~program~~ **must be for the** ~~identified as graduate credit when taken. All other MS degree requirements are not changed and the MS degree must be for the~~ **thesis option. The program may be** ~~The program may be~~ **combined with existing honors research and emphasis area options. Admitted students will have both undergraduate and graduate records in the Registrar's Office.**

The Accelerated program application must be completed within one semester after ~~If~~ **the shared-credit** ~~student exits the program before completion of the MS degree requirements or fails to maintain continuous enrollment at Missouri S&T, the dual-counted~~ **courses are completed. Courses taken** ~~may not apply toward graduate requirements in the event of future readmission. The student is responsible~~ **for shared credit will be identified** ~~checking~~ **on the application form** ~~how dual-enrollment status~~ **and on Graduate Form 1, which is submitted after the student enters the graduate** ~~graduate coursework will affect scholarships and other financial aid. International students should check with international affairs during completion of an accelerated BS/MS to ensure immigration status will be maintained throughout the~~ **program.** ~~The courses must be identified as dual-counted courses and must be completed with a B or better.~~**The** ~~These~~ six hours of **shared-credit** coursework will be taken as undergraduate credit, must be approved by the academic advisor, and may not be undergraduate research, special problems, or transfer **courses (a co-listed course can only apply for these undergraduate requirements if it is under an EE or CpE registration. Note that the choice of EE or CpE registration may affect how a course can apply within an MS program.) An additional six credit hours of coursework for graduate credit (beyond the shared BS/MS credits) can be taken while in the undergraduate program by applying for dual undergraduate/graduate enrollment.** ~~courses.~~ **Taking additional courses for graduate credit will require formal application to the graduate program. Acceptance to the MS degree program from the Accelerated program is automatic so long as the student meets ECE graduate student academic performance requirements.** ~~(A co-listed course can only apply for these undergraduate requirements if it is under an EE or CpE registration. Note that the choice of EE or CpE registration may effect how a course can apply within an MS program.) Other courses for the MS degree program must be identified as graduate credit when taken. All other MS degree requirements are not changed and the MS degree must be for the thesis option. The program may be combined with existing honors research and emphasis area options. Admitted students will have both undergraduate and graduate records in the Registrar's Office.Upon separate completion of requirements, the BS degree would be awarded followed by the MS degree at a later semester, or the BS and MS degrees may be awarded simultaneously at the same semester. To be~~

~~eligible for the accelerated BS/MS ECE program, a EE or CpE undergraduate must be at or beyond the junior level with a minimum of 60 credit hours and must have completed 18 credit hours of EE and/or CpE courses at Missouri S&T with at least a 3.50 GPA in the ECE courses. To be admitted, the student must complete the program application and must have the recommendation of an ECE faculty member who agrees to serve as the graduate thesis advisor. The Graduate Form 1 must be completed no later than the beginning of the semester after the dual-counted courses are completed. Until completing their BS degree, students must fill out a form each semester indicating which courses will be completed for graduate credit.~~To remain in the **Accelerated** program, the student must maintain good standing within the undergraduate EE or CpE program and must maintain continuous enrollment at Missouri S&T. **If ~~Upon separate completion of requirements,~~ the student exits ~~BS degree would be awarded followed by~~ the program before completion of the MS degree requirements ~~at a later semester,~~ or fails to maintain continuous enrollment at Missouri S&T, the shared-credit courses ~~the BS and MS degrees~~ may not apply toward graduate requirements in the event of future readmission. ~~be awarded simultaneously at the same semester.~~**

The student is responsible for checking on how dual-enrollment status and graduate coursework will affect scholarships and other financial aid. Once you become a graduate student, you are not eligible for Federal Pell Grants, though are still eligible for Federal Financial Aid and will be eligible for fellowships and teaching/research assistantships. International students should check with international affairs during completion of an accelerated BS/MS to ensure immigration status will be maintained throughout the program.

~~If the student exits the program before completion of the MS degree requirements or fails to maintain continuous enrollment at Missouri S&T, the dual-counted courses may not apply toward graduate requirements in the event of future readmission. The student is responsible for checking on how dual-enrollment status and graduate coursework will affect scholarships and other financial aid. International students should check with international affairs during completion of an accelerated BS/MS to ensure immigration status will be maintained throughout the program.~~

Justification for request

In addition to changes made to add the Professional Elective to the EE program, modifications were made to the description of the Accelerated BS/MS program. Modifications are a result of interactions between ECE, Graduate Studies, Cashiers, and the Registrar and are intended to improve consistency between the Accelerated program and the existing BS and MS program, and to make implementation easier overall. The description was modified to:

- Improve readability

- Remove statement “dual enrollment status is automatically granted”. To make the process smoother for the registrar and graduate studies, students must apply for dual undergraduate/graduate enrollment (though status should be automatically granted once the student applies)

- Refer to classes taken for “shared credit” rather than “dual counted classes” or similar to avoid confusion with classes taken as dual undergraduate/graduate enrollment

- State that students must complete the undergraduate program, then apply and begin the MS degree program. They will be awarded a BS and MS degree separately. This change was made to make it clear to the cashier when the student would stop paying for courses at the undergraduate rate and would begin paying at the graduate rate. At most, students can have 6 shared BS/MS credits and 6 credits as

dual undergraduate/graduate enrollment which are counted as graduate credit but paid for at the undergraduate rate.

- State that the student must specify which courses will be used for shared credit in the application form and in Graduate Form 1.

- Add a few details regarding scholarships and grants that students might want to double check before applying for the program.
Supporting Documents
Course Reviewer Comments
ershenb (11/29/18 11:03 am): .
ershenb (12/04/18 9:28 am): grammatical edit
ershenb (01/02/19 12:06 pm): Rollback: Rollback per the request of Dr.Raper and Dr. Beetner.
daryl (01/02/19 2:16 pm): The previous changes to add a Professional Elective are acceptable. Additional modifications were made to improve the description of the Accelerated BS/MS program.
sraper (02/06/19 3:49 pm): Changed "and" to "or".
sraper (02/27/19 8:52 am): Changed wording as suggested by DSCC. Confirmed wording via email from ECE.

Key: 155

Program Change Request

Date Submitted: 02/06/19 3:20 pm

Viewing: GE ENG-MS : Geological Engineering MS

File: 165.25

Last approved: 02/04/19 2:29 pm

Last edit: 02/07/19 10:40 am

Changes proposed by: grotekr

Catalog Pages Using this Program
Geological Engineering

Start Term
Fall 2019
Program Code
GE ENG-MS
Department
Geosciences and Geological and Petroleum Engineering
Title
Geological Engineering MS

Program Requirements and Description

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. Kristy Giacomelli

Approval Path

1. 02/06/19 7:55 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/13/19 1:40 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/20/19 11:24 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/06/19 4:02 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Sep 5, 2014 by pantaleoa
2. Jul 23, 2015 by pantaleoa

3. Jul 23, 2015 by pantaleoa
4. Apr 23, 2016 by pantaleoa
5. Feb 4, 2019 by Brittany Parnell (ershenb)

The department of Geosciences and Geological and Petroleum Engineering is home to three separate programs, geological engineering, geology and geophysics, and petroleum engineering. Geotechnics is a part of the geological engineering program.

Geological engineering is the application of the knowledge and principles of geology to the solution of problems in engineering practice. These applications include the evaluation of geological conditions for natural hazard assessment, environmental protection studies, groundwater resource and pollution investigations, mineral and energy development, site selection of civil works facilities, and land use and environmental impact analysis.

The geological engineering laboratories are well equipped for research relating to physical and hydraulic properties of rock, groundwater hydrology, remote sensing, and geographic information systems. Computer applications are emphasized, and the department has a laboratory equipped with a variety of personal computer equipment for student use. A groundwater hydrology laboratory is equipped to conduct research in subsurface fluid flow and computer facilities are available for the modeling of flow through porous media.

Recent research projects in the GE program include:

- Designing excavating tools for geomaterials on earth and in space.
- Measuring the permeability of soils using satellites, drones and ground-based geophysics.
- Evaluating earthquake hazards along the New Madrid fault.
- Using satellite data to investigate aquifer depletion and land subsidence.
- Studying blasting efficiency for enhancing productivity in the mining industry.
- Predicting water pollution based on geologic and land use factors.
- Developing a rock fall hazard rating system for Missouri highways.
- Using LIDAR to research the rock raveling process.
- Developing a virtual geotechnical database for the greater St. Louis Metropolitan Area.
- Identifying areas suitable for managed aquifer recharge in the U.S. and Iraq.
- Creation of a geologic GIS database for the St. Louis Metropolitan Area.
- Detection of underground mines and caverns using geophysical methods.
- Using drone data to find the locations to drill wells in fractured rock.
- Applying mining methods to potential space mining applications, and reducing the size of asteroid on potential collision courses with earth.
- Developing sustainable point of use drinking water systems in developing areas.
- Using renewable energy systems to power active groundwater pumping and remediation systems.
- Characterizing the reliability of wind and solar energy system prediction models.

The department maintains a computer learning center and Geographic Information Systems Laboratory with PCs, and a variety of peripheral devices such as scanners, digitizers, and printers. ArcGIS, ERDAS, IDRIS, AutoCAD Map and World, and other software packages are available for instruction and research. Applications of GIS and Remote Sensing Technology which are stressed include site characterization and selection, geologic hazards mapping, and terrain analysis. The department also offers graduate certificates in geotechnics, subsurface water resources, water resources, natural hazards, and space mining. The minimum Graduate Record Examinations (GRE) scores required for acceptance consideration in the Geology and Geophysics graduate program are Q = 148, Q+V = 300, and A(W) = 3.0.

Contact information, e-mail gee@mst.edu or visit our website at http://gse.mst.edu/.

Justification for request

Supporting Documents

Course Reviewer Comments

ershenb (02/07/19 10:40 am): You will see two Geological Engineering MS degree forms coming through workflow. This form corresponds to information that will be listed on the overview tab in the graduate catalog for Geological Engineering. The other degree form corresponds to program requirements/emphasis areas that will be listed on a new Master's tab in the catalog.

Key: 165

Program Change Request

Date Submitted: 02/06/19 3:36 pm

Viewing: GEO ENG-MS : GEOLOGICAL ENGINEERING MS

File: 268.1

Last edit: 02/20/19 11:24 am

Changes proposed by: grotekr

Catalog Pages Using this Program
Geological Engineering

Start Term
Fall 2019
Program Code
GEO ENG-MS
Department
Geosciences and Geological and Petroleum Engineering ~~GEO ENG~~
Title
GEOLOGICAL ENGINEERING MS

Program Requirements and Description

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. Kristy Giacomelli

Approval Path

1. 02/12/19 7:00 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/13/19 1:40 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/20/19 11:24 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/06/19 4:02 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

MS Program requirements:

For students pursuing a thesis-based master's degree, the requirements are those of the **campus,** ~~college,~~ as given on Form 1 (https://grad.mst.edu/currentstudents/forms/). For students interested in a course-based (non-thesis) master's degree, the following study plan is required.

30 hr non-thesis MS-degree study plan for Geological Engineering

Non-thesis MS students must take at least one course in each of the three core geological engineering **areas** ~~courses~~ indicated below, and then must select one or more courses from each emphasis area. Substitutions for core geological engineering courses may be made on a case-by-case basis, especially if some of these courses have been completed as part of the undergraduate curriculum. 30 credit hours must be passed to earn the MS degree.

Core Geological Engineering Areas ~~Courses~~

(take all 3) = 9 hrs

GEO ENG 5443	Subsurface Exploration	3
GEO ENG 5331	Subsurface Hydrology	3
or GEO ENG 5381	Intermediate Subsurface Hydrology And Contaminant Transport Mechs	
GEO ENG 5441	Engineering Geology And Geotechnics	3
or GEO ENG 6441	Geotechnical Construction Practice	
or GEO ENG 6625	Applications in Geological Engineering	
~~GEO ENG 6001~~	~~Special Topics~~	~~0-6~~

Engineering Geology and Geotechnics Emphasis Area

(choose 1-3 courses, at least one course must be in the Geological Engineering department) = 3 to 9 hrs

GEO ENG 5471	Rock Engineering	3
GEO ENG 6441	Geotechnical Construction Practice	3
GEO ENG 6477	Discontinuous Rock	3
GEO ENG 6625	Applications in Geological Engineering	3
CIV ENG 5715	Intermediate Soil Mechanics	3
CIV ENG 5716	Geotechnical Earthquake Engineering	3
CIV ENG 5729	Foundation Engineering II	3

Environmental and Hydrology Emphasis Area

(chose 1-3 courses) = 3 to 9 hrs

GEO ENG 5233	Risk Assessment In Environmental Studies	3
GEO ENG 5235	Environmental Geological Engineering	3
GEO ENG 5237	Geological Aspects Of Hazardous Waste Management	3
GEO ENG 5381	Intermediate Subsurface Hydrology And Contaminant Transport Mechs	3
GEO ENG 6235	Advanced Concepts Of Environmental Geological Engineering	3

GEO ENG 6237	Advanced Geological & Geotechnical Design For Hazardous Waste Mgt	3
GEO ENG 6331	Advanced Subsurface Hydrology	3

Engineering Geophysics Emphasis Area

(choose 1 to 2 courses) = 3 to 6 hrs

GEO ENG 5736	Geophysical Field Methods	3
GEO ENG 5761	Transportation Applications of Geophysics	3
GEO ENG 5782	Environmental and Engineering Geophysics	3
GEO ENG 6782	Surface Waves (MASW) and Ground Penetrating Radar (GPR)	3

Data Analysis Emphasis Area

(choose 1 to 2 courses) = 3 to 6 hrs

GEO ENG 5144	Remote Sensing Technology	3
GEO ENG 5146	Applications Of Geographic Information Systems	3
GEO ENG 5315	Advanced Statistical Methods in Geology and Engineering	3
GEO ENG 5556	Renewable Energy Systems	3
COMP SCI 5204	Regression Analysis	3
STAT 5260	Statistical Data Analysis Using SAS	3
STAT 5346	Regression Analysis	3
STAT 5353	Statistical Data Analysis	3
STAT 5814	Applied Time Series Analysis	3

*Additional substitutions may be made depending on availability, pre-requisites, and desired focus.

**These requirements will be viewed by the geological engineering graduate faculty at intervals no longer than three years.

Justification for request

Supporting Documents

Course Reviewer Comments

ershenb (02/07/19 10:28 am): You will see two Geological Engineering MS degree forms coming through workflow. This form corresponds to information that will be listed on the overview tab in the graduate catalog for Geological Engineering. The other degree form corresponds to program requirements/emphasis areas that will be listed on a new Master's tab in the catalog.

ershenb (02/07/19 10:39 am): Apologies, please disregard my comment above (02/07/19 10:28am); This degree form corresponds to the information that will be listed on the new Master's tab, NOT the overview tab as stated above.

ershenb (02/12/19 4:11 pm): correctly changed department to Geosciences and Geological and Petroleum Engineering

ershenb (02/13/19 12:30 pm): formatting

sraper (02/20/19 11:24 am): Replaced "College" with "Campus" as the reference is to a campus and not college web location.

Key: 268

Program Change Request

Date Submitted: 02/08/19 4:09 pm

Viewing: GL&GPH-MS : Geology and Geophysics MS

File: 166.4

Last approved: 07/23/15 10:45 am

Last edit: 02/13/19 1:24 pm

Changes proposed by: sbrower

Catalog Pages Using this Program

Geology and Geophysics

Start Term

Fall 2019 ~~08/17/2015~~

Program Code

GL&GPH-MS

Department

Geosciences and Geological and Petroleum Engineering

Title

Geology and Geophysics MS

Program Requirements and Description

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. Kristy Giacomelli

Approval Path

1. 02/05/19 12:52 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/07/19 3:50 pm Brittany Parnell (ershenb): Rollback to Initiator
3. 02/07/19 4:28 pm David Borrok (borrokd): Approved for RGEOSENG Chair
4. 02/08/19 11:52 am Brittany Parnell (ershenb): Rollback to Initiator
5. 02/11/19 7:15 am David Borrok (borrokd): Approved for RGEOSENG Chair
6. 02/13/19 1:40 pm Brittany Parnell (ershenb): Approved for CCC Secretary

7. 03/04/19 4:55 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
8. 03/07/19 9:12 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Jun 17, 2014 by pantaleoa
2. Jun 22, 2015 by pantaleoa
3. Jul 23, 2015 by pantaleoa

Graduate work in geology and geophysics is offered at both the master of science (thesis and non-thesis) and doctoral levels. Programs are designed to provide you with an understanding of the fundamentals and principles of geology, geochemistry, and geophysics. Research investigations comprise a significant part of each program, and at the doctoral level an original contribution to the science is required.

Research emphasis of the program is in:

- Low Temperature and Environmental Geochemistry
- Mineralogy/Petrology/Economic Geology
- Geophysics/Tectonics/Remote Sensing
- Sedimentology/Paleontology/Stratigraphy/Petroleum Exploration

In geology and geochemistry, opportunities for research at both the M.S. and Ph.D. levels are available in mining geology, petroleum geology, stratigraphy and sedimentation, geochemistry, clay mineralogy, remote sensing, GIS, palynology, structural geology, igneous and metamorphic petrology, and volcanology.

In geophysics, opportunities for research at both the M.S. and Ph.D. levels are available in the areas of reflection and refraction seismology, theoretical seismology, geophysical data analysis, gravity, magnetics, seismic hazards, and computational geophysics.

The study of the Earth and other planets includes all areas of scientific inquiry. To work effectively in so broad a discipline requires considerable depth and breadth of understanding of physical principles and advanced proficiency in mathematics, particularly for those students contemplating advanced studies in geophysics. A thorough undergraduate training in an earth or physical science is ordinarily regarded as necessary prerequisite for advanced study in geology or geophysics.

Earth sciences have been an integral part of the university since its founding. The program has a long and proud history of faculty and students who have contributed to the advancement of the science and to mineral and hydrocarbon exploration. The university was formerly the Missouri School of Mines. Because of the school's tradition and location near the Missouri Lead **District,** ~~District~~ the emphasis of the program has been in hard rock exploration. The program has now expanded to include geochemistry, geophysics, and soft rock geology. Our graduates find employment in mining, environmental, and petroleum industries. It is our intention to provide the student with a sufficiently diverse and complete education that he or she may seek employment in any area of the earth sciences.

The program has a wide variety of equipment for research and exploration in geology, geochemistry, and geophysics. In addition to its own facilities, the Missouri Department of Natural Resources, and the U.S. Geological Survey's mid-continent mapping division are also located in Rolla. Cooperative research with other departments within the university or other campuses of the University of Missouri may be undertaken by our faculty and graduate students. Interaction with mining engineering, geological engineering, petroleum engineering, metallurgy, environmental engineering, biological sciences and various other programs/departments is routine. Cooperative programs are also undertaken with local mining companies, petroleum companies, or other industries using the skills and techniques of the earth scientist. Thus, your research interests need not fall entirely within the interests of our faculty or within the bounds of the equipment directly available within the program.

Although an advanced degree level is not a requirement for professional practice in geology or geophysics, the B.S. should usually be considered a preparatory, the M.S. should be considered the professional degree, and the Ph.D. should be sought by candidates interested in a career in teaching or research.

The M.S. degree is typically granted with the thesis option, although a non-thesis option is now available. **All Geology and Geophysics MS students are required to take the Professional Geosciences Skills course (GEOLOGY 5100) and either Advanced Physical Geology (GEOLOGY 5111) or Global Tectonics (GEOPHYS 5096).**

~~A qualifying examination is required of all Ph.D.students during the third semester of residency.~~For students whose native language is not English, a minimum score of **79** ~~550~~ on the standard Test of English as a Foreign Language is generally required for admission. **The minimum Graduate Record Examinations (GRE) scores required for acceptance consideration in the Geology and Geophysics graduate program are Q = 148, Q+V = 300, and A(W) = 3.0.**

Justification for request

The first required courses are being included because Graduate students need mentoring and experience in developing both research skills and professional soft-skills required for a successful geoscience career. They also need experience in researching papers and opportunities to present scientific content to larger groups of peers. New CC forms for these courses (GEO 5100 and GEO 6100) have been submitted as required. Graduate students need one or the other of the second courses (or even both depending upon the committee) to establish a firm understanding of fundamental concepts in the Geosciences such that they will be able to use this information in understanding the broader significance of their research. These course are already in the books and offered on a regular basis.

The faculty decided to make explicit the entrance requirements for the GRE etc.

Supporting Documents

Course Reviewer Comments

ershenb (02/07/19 3:50 pm): Rollback: Dr. Hogan needs put some information on this Geology and Geophysics MS form. Rolling it back for those edits.

ershenb (02/08/19 11:52 am): Rollback: Sharon Lauck needs to make additional edits.

ershenb (02/13/19 1:18 pm): .

ershenb (02/13/19 1:20 pm): changed start term to Fall 2019

ershenb (02/13/19 1:24 pm): .

Key: 166

Program Change Request

New Program Proposal

Date Submitted: 03/05/19 10:34 am

Viewing: PROPOSED : Geology and Geophysics PhD

File: 271

Last edit: 03/05/19 10:47 am

Changes proposed by: sbrower

Start Term
Fall 2019
Program Code
PROPOSED
Department
Geosciences and Geological and Petroleum Engineering
Title
Geology and Geophysics PhD

Program Requirements and Description

In Workflow

1. RGEOSENG Chair
2. CCC Secretary
3. Sciences DSCC Chair
4. Pending CCC Agenda post
5. CCC Meeting Agenda
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. Kristy Giacomelli

Approval Path

1. 02/11/19 7:15 am David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/13/19 1:40 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/04/19 4:54 pm Katie Shannon (shannonk): Rollback to Initiator
4. 03/05/19 11:03 am David Borrok (borrokd): Approved for RGEOSENG Chair
5. 03/05/19 11:41 am Brittany Parnell (ershenb): Approved for CCC Secretary
6. 03/05/19 2:57 pm Katie Shannon (shannonk): Approved for

Sciences DSCC Chair
7. 03/07/19 9:13 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

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All Geology and Geophysics Ph.D. students **are required to take** the **Professional Geosciences Skills course (GEOLOGY 6100) and either Advanced Physical Geology (GEOLOGY 5111) or Global Tectonics (GEOPHYS 5096).** A qualifying examination is required of all Ph.D. students during the third semester of residency.

For students whose native language is not English, a minimum score of 79 on the standard Test of English as a Foreign Language is generally **required** for admission. **The minimum Graduate Record Examinations (GRE) scores required for acceptance consideration in the Geology and Geophysics graduate program are Q = 148, Q+V = 300, and A(W) = 3.0.**

Justification for request
*existing PhD program that had to be put on a new degree form

The first required courses are being included because Graduate students need mentoring and experience in developing both research skills and professional soft-skills required for a successful geoscience career. They also need experience in researching papers and opportunities to present scientific content to larger groups of peers. New CC forms for these courses (GEO 5100 and GEO 6100) have been submitted as required.

Graduate students need one or the other of the second courses (or even both depending upon the committee) to establish a firm understanding of fundamental concepts in the Geosciences such that they will be able to use this information in understanding the broader significance of their research. These courses are already in the books and offered on a regular basis.

The faculty decided to make explicit the entrance requirements for the GRE etc.
Supporting Documents
Course Reviewer Comments
ershenb (02/13/19 1:25 pm): .
shannonk (03/04/19 4:54 pm): Rollback: This should be a DC form, not a new proposal form
ershenb (03/05/19 10:39 am): The program says "PROPOSED" but it is not a new program. The existing PhD degree form had to be deleted and replaced with this one.
ershenb (03/05/19 10:47 am): .

Key: 271

Program Change Request

Date Submitted: 02/25/19 1:43 pm

Viewing: MC ENG-BS : Mechanical Engineering BS

File: 86.39

Last approved: 05/03/18 8:53 am

Last edit: 02/26/19 9:30 am

Changes proposed by: nisbett

Catalog Pages Using this Program
Mechanical Engineering

Start Term
Fall 2019 ~~08/13/2018~~
Program Code
MC ENG-BS
Department
Mechanical & Aerospace Engineering
Title
Mechanical Engineering BS

Program Requirements and Description

In Workflow

1. **RMECHENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. Kristy Giacomelli

Approval Path

1. 02/25/19 4:44 pm James Drallmeier (drallmei): Approved for RMECHENG Chair
2. 02/26/19 9:54 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/12/19 12:39 pm Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/18/19 8:31 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Feb 24, 2014 by nisbett
2. Aug 6, 2014 by nisbett

3. Jul 21, 2015 by pantaleoa
4. May 3, 2018 by nisbett

Bachelor of Science
Mechanical Engineering

Entering freshmen desiring to study mechanical engineering will be admitted to the Freshman Engineering Program. They will, however, be permitted, if they wish, to state a mechanical engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Freshman Engineering program is on enhanced advising and career counseling, with the goal of providing to the student the information necessary to make an informed decision regarding the choice of a major.

For the bachelor of science degree in mechanical engineering a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. An average of at least two grade points per credit hour must also be attained in all courses taken in mechanical engineering.

Each student's program of study must contain a minimum of 21 credit hours of course work in general education as follows:

1. ENGLISH 1120
2. HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SC 1200
3. ECON 1100 or ECON 1200
4. ENGL 1160 or ENGL 3560 or SP&MS 1185
5. A literature elective
6. A humanity or social science elective*
7. A humanity or social science elective* that has, as a prerequisite, a humanity or social science course already taken.

* Humanity and social science electives must be at least 3 credit hours of lecture designation, and also meet the requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog.

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.

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
FR ENG 1100	1	ECON 1100 or 1200	3
CHEM 1310[a]	4	MECH ENG 1720	3
ENGLISH 1120	3	PHYSICS 1135[a]	4
HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3	MATH 1215[a, b]	4
CHEM 1319	1	Elective-Hum or Soc Sci[f]	3

MATH 1214[a, b]	4		
	16		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
MATH 2222[a]	4	MECH ENG 2761	3
Programming Elective[a, c]	3	MECH ENG 2519[a]	3
CIV ENG 2200[a]	3	MECH ENG 2360[a]	3
PHYSICS 2135[a]	4	MATH 3304[a]	3
MECH ENG 2653	3	MET ENG 2110[a]	3
	17		15

Junior Year

First Semester	Credits	Second Semester	Credits
MECH ENG 3313	3	MECH ENG 3411[a]	3
MECH ENG 3521	3	MECH ENG 3131	3
ELEC ENG 2800	3	MECH ENG 4840	2
CIV ENG 2210[a]	3	Elective-Communications[d]	3
CIV ENG 2211	1	MECH ENG 3708	3
Elective-Advanced Math/Stat or Comp Sci[e]	3	MECH ENG 3525	3
	16		17

Senior Year

First Semester	Credits	Second Semester	Credits
MECH ENG 4842	2	ENG MGT 1100	1
MECH ENG 4479	3	ENG MGT 1210	2
MECH ENG technical elective[g]	3	MECH ENG 4761	3
Literature elective[f]	3	MECH ENG 4480	1
Technical elective[h]	3	MECH ENG 5000-level technical elective[g]	3
Elective-Advanced Hum or Soc Sci[f]	3	Breadth elective[i]	3
	17		13
Total Credits: 128			

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	A grade of "C" or better is required in CHEM 1310, MATH 1214, MATH 1215, MATH 2222, MATH 3304, PHYSICS 1135, PHYSICS 2135, programming elective, MET ENG 2110, CIV ENG 2200, CIV ENG 2210, MECH ENG 2519, MECH ENG 2360, and MECH ENG 3411, both as prerequisite for follow-up courses in the curriculum and for graduation.
b	MATH 1208 and MATH 1221 may be substituted for MATH 1214 and MATH 1215, respectively.
c	The programming elective consists of a lecture and lab combination, and may be selected from COMP SCI 1970/COMP SCI 1980, COMP SCI 1971/COMP SCI 1981, or COMP SCI 1972/COMP SCI 1982, or COMP SCI 1570/COMP SCI 1580. Note that COMP SCI 1570/COMP SCI 1580 requires one more credit hour than the other options.
d	This course must be selected from the following: ENGLISH 1160, ENGLISH 3560 or SP&M S 1185, or the complete four course

	sequence in Advanced ROTC (MIL ARMY 3250, MIL ARMY 3500, MIL ARMY 4250, and MIL ARMY 4500; or MIL AIR 3110, MIL AIR 3120, MIL AIR 4110 and MIL AIR 4120).
e	This course must be selected from the following: COMP SCI 3200, MATH 3108, STAT 3113, STAT 3115 or any 5000-level math or computer science course approved by the student's advisor.
f	All electives must be approved by the student's advisor. Humanity and social science electives must be at least 3 credit hours of lecture designation, and also meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog.
g	Six hours of technical electives, subject to approval by the student's advisor, must be in the department of mechanical and aerospace engineering. At least three of these technical elective hours must be at the 5000 level. This elective may not include co-op, special problems, or research credits, such as as 3002, 4000, or 4099. Honors students have special requirements for technical electives.
h	This elective must be a three credit hour course, subject to approval by the student's advisor, from any of the following areas: math, statistics, science, engineering, or computer science. The course must be at the 3000 or higher level, or have a prerequisite that is part of the required mechanical engineering curriculum. Exceptions to the course level may be approved by the student's advisor. The elective may not include co-op, special problems, or research credits, such as 3002, 4000, or 4099.
i	This elective consists of three credit hours, subject to approval by the student's advisor, and may be satisfied by any of the following: (1) A three credit hour course from any of the following areas: math, statistics, science, engineering, computer science, business, or IST. The course must be at the 3000 or higher level, or have a prerequisite that is part of the required mechanical engineering curriculum. Exceptions to the course level may be approved by the student's advisor; (2) Any three credit hour course in the list of approved courses for the global studies minor; or (3) Any combination of three credit hours from co-op (3002), special problems (3000, 4000, or 5000), research (4099), or design team credit (ENG MGT 2011, 2012, or 2013).
j	All mechanical engineering students must take the Fundamentals of Engineering Examination prior to graduation. A passing grade on this examination is not required to earn a B.S. degree. However, it is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process as described in assessment requirements found elsewhere in this catalog.

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:		6
MECH ENG 5527	Combustion Processes	3
or AERO ENG 5527	Combustion Processes	
MECH ENG 5533	Internal Combustion Engines	3
MECH ENG 5566	Solar Energy Technology	3
MECH ENG 5567	Heat Pump And Refrigeration Systems	3
MECH ENG 5571	Environmental Controls	3
MECH ENG 5575	Mechanical Systems For Environmental Control	3
AERO ENG 5169	Introduction to Hypersonic Flow	3
AERO ENG 5535	Aerospace Propulsion Systems	3
b. One course from the following list:		3
MECH ENG 5519	Advanced Thermodynamics	3

or AERO ENG 5519	Advanced Thermodynamics	
MECH ENG 5525	Intermediate Heat Transfer	3
or AERO ENG 5525	Intermediate Heat Transfer	
MECH ENG 5131	Intermediate Thermofluid Mechanics	3
or AERO ENG 5131	Intermediate Thermofluid Mechanics	
MECH ENG 5139	Computational Fluid Dynamics	3
or AERO ENG 5139	Computational Fluid Dynamics	
c. One additional course from either list “a” or list “b”, or from the following list:		3
ECON 4540	Energy Economics	3
ELEC ENG 5150	Photovoltaic Systems Engineering	3
ENV ENG 5660	Introduction To Air Pollution	3
NUC ENG 4257	Two-phase Flow in Energy Systems - I	3

Note: By using the breadth elective 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 additional stipulation that four courses must be taken as follows:

a. The following course:		3
MECH ENG 3653	Manufacturing	3
b. One course from the following Manufacturing/Automation courses:		3
MECH ENG 5653	Computer Numerical Control of Manufacturing Processes	3
MECH ENG 5655	Manufacturing Equipment Automation	3
MECH ENG 5449	Robotic Manipulators and Mechanisms	3
MECH ENG 5606	Material Processing By High-Pressure Water Jet	3
c. One course from the following Design courses:		3
MECH ENG 5763	Computer Aided Design: Theory and Practice	3
MECH ENG 5656	Design For Manufacture	3
MECH ENG 5702	Synthesis Of Mechanisms	3
d. One course from the following list:		3
MECH ENG 5708	Rapid Product Design And Optimization	3
MECH ENG 5758	Integrated Product Development	3
e. The Math/Stat elective must be one of the following:		3
STAT 3113	Applied Engineering Statistics	3
STAT 3115	Engineering Statistics	3

A suggested sequence for the junior and senior years is given below. Note that by using the breadth elective and technical electives to satisfy the above requirements, this emphasis area requires the same total number of credit hours as the BSME degree. A change of major

form should be submitted to designate the manufacturing processes emphasis area.

Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
MECH ENG 3313	3	MECH ENG 3411[a]	3
ELEC ENG 2800	3	MECH ENG 3131	3
MECH ENG 3521	3	MECH ENG 3525	3
CIV ENG 2210[a]	3	MECH ENG 4840	2
CIV ENG 2211	1	MECH ENG 3653	3
STAT 3113 or 3115	3	Elective-Communications[d]	3
	16		17
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
MECH ENG 4842	2	ENG MGT 1100	1
MECH ENG 4479	3	ENG MGT 1210	2
MECH ENG 3708	3	MECH ENG 4761	3
Manufacturing Technical Elective[f]	3	MECH ENG 4480	1
Manufacturing Technical Elective[f]	3	Manufacturing Technical Elective[f]	3
Elective Literature[e]	3	Electives-Hum or Soc Sci[e]	3
	17		13
Total Credits: 63			

a	A grade of “C” or better is required in CHEM 1310, MATH 1214, MATH 1215, MATH 2222, MATH 3304, PHYSICS 1135, PHYSICS 2135, programming elective, MET ENG 2110, CIV ENG 2200, CIV ENG 2210, MECH ENG 2519, MECH ENG 2360 and MECH ENG 3411, both as prerequisite for follow-up courses in the curriculum and for graduation.
b	MATH 1208 and MATH 1221 may be substituted for MATH 1214 and MATH 1215, respectively.
c	The programming elective consists of a lecture and lab combination, and may be selected from COMP SCI 1970/COMP SCI 1980, COMP SCI 1971/COMP SCI 1981, COMP SCI 1972/COMP SCI 1982, or COMP SCI 1570/COMP SCI 1580. Note that COMP SCI 1570/COMP SCI 1580 requires one more credit hour than the other options.
d	This course must be selected from the following: ENGLISH 1160, ENGLISH 3560 or SP&M S 1185, or the complete four course sequence in Advanced ROTC (MIL ARMY 3250, MIL ARMY 3500, MIL ARMY 4250, and MIL ARMY 4500; or MIL AIR 3110, MIL AIR 3120, MIL AIR 4110 and MIL AIR 4120).
e	All electives must be approved by the student’s advisor. Humanity and social science electives must be at least 3 credit hours of lecture designation, and also meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog.
f	The nine hours of manufacturing technical elective must be selected as follows: One course from the following manufacturing/automation courses: MECH ENG 5653, MECH ENG 5655, MECH ENG 5449, MECH ENG 5606. One of the following design courses: MECH ENG 5763, MECH ENG 5656, MECH ENG 5702. One course from the following list: MECH ENG 5708, MECH ENG 5758.
g	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.

Mechanical Design and Analysis Emphasis Area

Students desiring to obtain a bachelor of science in mechanical engineering with an emphasis area in mechanical design and analysis must satisfy all requirements of the bachelor of science in mechanical engineering, with the additional stipulation that four courses must be taken as follows:

a. One design course from the following list:		3
MECH ENG 5709	Machine Design II	3
MECH ENG 5702	Synthesis Of Mechanisms	3
MECH ENG 5704	Compliant Mechanism Design	3
MECH ENG 5708	Rapid Product Design And Optimization	3
MECH ENG 5715	Concurrent Engineering	3
MECH ENG 5656	Design For Manufacture	3
MECH ENG 5757	Integrated Product And Process Design	3
MECH ENG 5760	Probabilistic Engineering Design	3
MECH ENG 5763	Computer Aided Design: Theory and Practice	3
MECH ENG 5761	Engineering Design Methodology	3
b. One analysis course from the following list:		3
MECH ENG 5307	Vibrations I	3
MECH ENG 5211	Introduction To Continuum Mechanics	3
MECH ENG 5212	Introduction to Finite Element Analysis	3
MECH ENG 5234	Stability of Engineering Structures	3
MECH ENG 5236	Fracture Mechanics	3
MECH ENG 5313	Intermediate Dynamics Of Mechanical And Aerospace Systems	3
MECH ENG 5222	Introduction To Solid Mechanics	3
MECH ENG 5238	Fatigue Analysis	3
MECH ENG 5449	Robotic Manipulators and Mechanisms	3
MECH ENG 5478	Mechatronics	3
c. Two additional courses from either of the previous lists.		6

Note that by using the breadth elective 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 mechanical design and analysis emphasis area.

Systems Integration Emphasis Area

The Systems Integration emphasis area is required and available only for students pursuing a bachelor of science in mechanical engineering in the cooperative program delivered at Missouri State University. This emphasis area includes all requirements of the bachelor of science in mechanical engineering, except for the substitutions stipulated below.

The following requirements in the mechanical engineering curriculum are removed (16 credit hours):

ELEC ENG 2800	Electrical Circuits	3
ENG MGT 1100	Practical Concepts for Technical Managers	1
Elective-Advanced Math/Stat or Comp Sci		3
MECH ENG 5000-level technical elective		3
Technical elective		3
Breadth elective		3
The following requirements are added (16 credit hours):		
ELEC ENG 2100	Circuits I	3
ELEC ENG 2101	Circuit Analysis Laboratory I	1
ELEC ENG 2120	Circuits II	3
ENG MGT 3320	Introduction to Project Management	3
Systems Integration technical elective. One of the following:		3
MECH ENG 5307	Vibrations I	3
MECH ENG 5478	Mechatronics	3
MECH ENG 5481	Mechanical And Aerospace Control Systems	3
MECH ENG 5533	Internal Combustion Engines	3
MECH ENG 5571	Environmental Controls	3
MECH ENG 5575	Mechanical Systems For Environmental Control	3
MECH ENG 5656	Design For Manufacture	3
MECH ENG 5704	Compliant Mechanism Design	3
MECH ENG 5708	Rapid Product Design And Optimization	3
MECH ENG 5709	Machine Design II	3
MECH ENG 5715	Concurrent Engineering	3
MECH ENG 5757	Integrated Product And Process Design	3
MECH ENG 5763	Computer Aided Design: Theory and Practice	3
One of the following:		
STAT 3113	Applied Engineering Statistics	3
STAT 3115	Engineering Statistics	3
STAT 3117	Introduction To Probability And Statistics	3
COMP SCI 3200	Introduction To Numerical Methods	3

All of the substitutions for this emphasis area appear in the junior and senior years. A suggested sequence for the junior and senior years is given below.

Junior Year			
First Semester	Credits	Second Semester	Credits
MECH ENG 3313	3	MECH ENG 3411[a]	3
MECH ENG 3521	3	MECH ENG 3131	3
ELEC ENG 2100	3	MECH ENG 3525	3
ELEC ENG 2101	1	MECH ENG 3708	3
CIV ENG 2210[a]	3	MECH ENG 4840	2

CIV ENG 2211	1	ELEC ENG 2120	3
STAT 3113, or 3115, or 3117, or COMP SCI 3200	3		
	17		17

Senior Year

First Semester	Credits	Second Semester	Credits
MECH ENG 4842	2	MECH ENG 4761	3
MECH ENG 4479	3	Systems Integration technical elective[g]	3
MECH ENG 4480	1	Literature elective[e]	3
MECH ENG technical elective[f]	3	Elective - Advanced Hum or Soc Sci[e]	3
Elective - Communications[d]	3	ENG MGT 3320	3
ENG MGT 1210	2		
	14		15

Total Credits: 63

a	A grade of "C" or better is required in CHEM 1310, MATH 1214, MATH 1215, MATH 2222, MATH 3304, PHYSICS 1135, PHYSICS 2135, programming elective, MET ENG 2110, CIV ENG 2200, CIV ENG 2210, MECH ENG 2519, MECH ENG 2360 and MECH ENG 3411, both as prerequisite for follow-up courses in the curriculum and for graduation.
b	MATH 1208 and MATH 1221 may be substituted for MATH 1214 and MATH 1215, respectively.
c	The programming elective consists of a lecture and lab combination, and may be selected from COMP SCI 1970/COMP SCI 1980, COMP SCI 1971/COMP SCI 1981, or COMP SCI 1972/COMP SCI 1982, or COMP SCI 1570/COMP SCI 1580. Note that COMP SCI 1570/COMP SCI 1580 requires one more credit hour than the other options.
d	This course must be selected from the following: ENGLISH 1160, ENGLISH 3560 or SP&M S 1185, or the complete four course sequence in Advanced ROTC (MIL ARMY 3250, MIL ARMY 3500, MIL ARMY 4250, and MIL ARMY 4500; or MIL AIR 3110, MIL AIR 3120, MIL AIR 4110 and MIL AIR 4120).
e	All electives must be approved by the student's advisor. Humanity and Social Science electives must be at least 3 credit hours of lecture designation, and also meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog.
f	The mechanical engineering technical elective is subject to approval by the student's advisor, and must be in the department of mechanical and aerospace engineering. This elective may not include co-op, special problems, or research credits, such as 3002, 4000, or 4099. Honors students have special requirements for technical electives.
g	The systems integration technical elective must be selected from the following list: MECH ENG 5307, 5478, 5481, 5533, 5571, 5575, 5656, 5704, 5708, 5709, 5715, 5757, 5763.
h	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.

Justification for request

The Systems Integration emphasis area targets the needs of employers seeking a mechanical engineer with strength in managing projects requiring integration of sub-systems. This emphasis area differs from

the base mechanical engineering degree only in the junior and senior years of the curriculum. It focuses the curriculum by replacing some of the electives with expanded coverage of electrical circuits (ELEC ENG 2100, 2101, and 2120 instead of ELEC ENG 2800), engineering management (ENG MGT 3320 instead of ENG MGT 1100), and a systems integration elective from a select list. The emphasis area requires no new courses. The Program Change form for MDHE is attached.

Supporting Documents

PCRequestforStaffReviewSept17_000 Systems Integration Emphasis.pdf

Course Reviewer Comments

ershenb (02/26/19 8:16 am): formatting

ershenb (02/26/19 9:30 am): Removed MATH 3103 from footnote e (BS in MECH ENG), per the request of Dr. Keith Nisbett. Also, attached MDHE form for the Systems Integration emphasis area per the request of Dr. Keith Nisbett.

Key: 86

☒ **PUBLIC**

☐ **INDEPENDENT**

SAVE

SUBMIT

ATTACH

SHOW ATTACHMENTS

PROGRAM CHANGE REQUEST FOR STAFF REVIEW

☐ Title or CIP change only

☐ Combination program created out of closely allied existing programs

☒ Option(s) added to existing program(s) **attach copy of "before and after" curriculum, plus any existing and proposed options*

☐ Addition of certificate program developed from approved existing parent degree

☐ Addition of free-standing single-semester certificate program

Before the Proposed Change			**After the Proposed Change**		
Title of Old Program/Certificate	Degree	CIP Code	Title of New Program/Certificate	Degree	CIP Code
	BS in Mechanical Engineering	14.1901	Systems Integration Emphasis Area	BS in Mechanical Engineering	14.1901

☐ Delete program(s)

☐ Delete options

☐ Program placed on "Inactive Status" list

Program/Certificate/Option	Degree and CIP Code	Intended Date of Deletion/Inactivation
		MM/YY

Change of address: _____

Closed location: _____

List sites where changes on this form should be applied (such as main campus, all off-site locations, etc.)

Any site where the BS in Mechanical Engineering degree is offered.

_____

Name/Title of Institutional Officer | Signature | Date

Institution _____

Course Change Request

New Experimental Course Proposal

Date Submitted: 01/31/19 11:24 am

Viewing: **AERO ENG 6001.003 : The Thermo-Fluid Dynamics of Advanced Aerospace Propulsion Systems**

File: 4600

Last edit: 02/20/19 3:36 pm

Changes proposed by: rigginsd

Requested Effective Change Date	Fall 2019
Department	Mechanical & Aerospace Engineering
Discipline	Aerospace Engineering (AERO ENG)
Course Number	6001
Topic ID	003
Experimental Title	The Thermo-Fluid Dynamics of Advanced Aerospace Propulsion Systems
Experimental Abbreviated Course Title	Advanced Propulsion
Instructors	David W Riggins
Experimental Catalog Description	The relationships between engine/vehicle/mission performance and energy availability are derived in detail and are utilized to explain and clarify the full thermodynamic spectrum for rocket-powered vehicles, air-breathing vehicles, combined cycle-based vehicles, and unconventional and advanced vehicle concepts.
Prerequisites	Aero Eng 5535 or equivalent as approved by the instructor.
Field Trip Statement	
Credit Hours	LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3
Justification for new course:	This PhD level course was developed for the purpose of educating interested students about new developments in the second law analysis of aerospace vehicles and propulsion systems.
Semester(s) previously taught	Fall 2016
Co-Listed Courses:	
Course Reviewer Comments	**sraper (02/06/19 3:45 pm):** Fixed a typo.

Key: 4600

Preview Bridge

In Workflow

1. **RMECHENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 01/31/19 3:56 pm James Drallmeier (drallmei): Approved for RMECHENG Chair
2. 02/01/19 8:55 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/13/19 1:44 pm Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/06/19 3:54 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Course Change Request

New Experimental Course Proposal

Date Submitted: 02/05/19 4:16 pm

Viewing: **ARCH ENG 5001.001 : Building Physics**

File: 4602

Last edit: 02/20/19 3:43 pm

Changes proposed by: baur

Requested Effective Change Date	Spring 2020
Department	Civil, Architectural, and Environmental Engineering
Discipline	Architectural Engineering (ARCH ENG)
Course Number	5001
Topic ID	001
Experimental Title	Building Physics
Experimental Abbreviated Course Title	Building Physics
Instructors	Baur, Feys

Experimental Catalog Description

The class will focus on three important aspects of building physics: heat, moisture and acoustics. After introduction of the fundamental concepts of each aspect, the influence of material properties, modifications, selection, and assembly on each of those aspects will be taught. The assessment of student performance will be largely project-based.

Prerequisites

Mech Eng 2527 and Civ Eng 3330.

Field Trip Statement

Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0	Total: 3

Justification for new course:

This course will be course cross-listed with CE 5001 Building Physics.

In Workflow

1. **RCIVILEN Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 02/06/19 5:36 am Joel Burken (burken): Approved for RCIVILEN Chair
2. 02/07/19 10:11 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/20/19 11:17 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/06/19 3:54 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Semester(s) previously taught	
Co-Listed Courses:	CIV ENG 5001 - Special Topics
Course Reviewer Comments	**kristyg (02/06/19 1:23 pm):** I changed the course pre-requisites at the request of the initiator. KG **ershenb (02/07/19 10:09 am):** co-listed Civ Eng 5001 Special Topics. **sraper (02/08/19 9:22 am):** Edited course description as requested by program (via email). **sraper (02/14/19 8:48 am):** Changed "instructed" to "taught" in catalog description per emails from DSCC members.

Key: 4602

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 02/20/19 10:46 am

Viewing: **BIO SCI 5001.005 : Pathogenic Microbiology Lab**

File: 4610

Last edit: 03/07/19 9:38 am

Changes proposed by: djwesten

Requested Effective Change Date	Fall 2019
Department	Biological Sciences
Discipline	Biological Sciences (BIO SCI)
Course Number	5001
Topic ID	005
Experimental Title	Pathogenic Microbiology Lab
Experimental Abbreviated Course Title	Path Lab
Instructors	Dave Westenberg
Experimental Catalog Description	Introduction to the genetic and biochemical techniques used for the culture and identification of pathogenic microorganisms. Students will learn to identify virulence factors and modes of horizontal gene transfer leading to virulence.
Prerequisites	Preceded or accompanied by Bio Sci 5313.
Field Trip Statement	
Credit Hours	LEC: 0 LAB: 1 IND: 0 RSD: 0 Total: 1
Justification for new course:	This is a new laboratory course to accompany a very popular upper level elective lecture course in pathogenic microbiology. Offering a laboratory section will provide hands-on experience with many of the key concepts addressed in the lecture and is consistent with a department initiative to provide more laboratory courses for biology majors.
Semester(s) previously taught	Not taught before
Co-Listed Courses:	
Course Reviewer Comments	

In Workflow

1. **RBIOLSCI Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 02/20/19 11:49 am
   David Duvernell (duvernelld): Approved for RBIOLSCI Chair
2. 02/20/19 1:43 pm
   Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/04/19 4:50 pm
   Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/06/19 4:01 pm
   Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Key: 4610

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 01/03/19 12:34 pm

Viewing: **CHEM ENG 5001.004 : Catalysis and Reaction Kinetics**

File: 4591

Last edit: 02/20/19 3:44 pm

Changes proposed by: jcwang

Requested Effective Change Date	Fall 2019
Department	Chemical and Biochemical Engineering
Discipline	Chemical Engineering (CHEM ENG)
Course Number	5001
Topic ID	004
Experimental Title	Catalysis and Reaction Kinetics
Experimental Abbreviated Course Title	Catalysis & Kinetics
Instructors	Ali Rownaghi

Experimental Catalog Description

This course builds on the principles of reaction mechanism and equilibrium, transport phenomena, and reactor design to develop expertise in catalysis for engineering and product problems. Topics include industrial catalysis, catalyst preparation and characterization, catalyst selection and design, as well as laboratory testing of catalysts and reactors.

Prerequisites

Chem Eng 3150.

Field Trip Statement

Credit Hours	LEC: 2	LAB: 1	IND: 0	RSD: 0	Total: 3

Justification for new course:

In Workflow

1. **RCHEMENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 01/17/19 11:53 am
   Brittany Parnell (ershenb): Approved for RCHEMENG Chair
2. 01/17/19 11:56 am
   Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/13/19 1:44 pm
   Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/06/19 4:02 pm
   Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

	Subject matter is important to various fields including chemical process industry, environmental engineering, and sustainable energy & fuel. This devoted course is the first one on campus to cover it in depth and breadth, and will benefit interested students across several disciplines.
Semester(s) previously taught	None
Co-Listed Courses:	
Course Reviewer Comments	**ershenb (01/17/19 11:53 am):** Approving the form per the request of Dr. Muthanna Al-Dahhan (email), due to CourseLeaf technical difficulties.

Key: 4591

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 02/08/19 11:27 am

Viewing: **ENGLISH 3001.007 : Lives and Works of J.R.R. Tolkien and C.S. Lewis**

File: 4606

Last edit: 02/20/19 3:51 pm

Changes proposed by: kswenson

Requested Effective Change Date	Fall 2019
Department	English and Technical Communication
Discipline	English (ENGLISH)
Course Number	3001
Topic ID	007
Experimental Title	Lives and Works of J.R.R. Tolkien and C.S. Lewis
Experimental Abbreviated Course Title	Tolkien and Lewis
Instructors	Bryan, Eric
Experimental Catalog Description	A study of the works of prominent British authors JRR Tolkien and CS Lewis in the context of early twentieth century history and culture, with special attention given to the mythological, religious, and linguistic origins of their novels.
Prerequisites	English 1120.
Field Trip Statement	
Credit Hours	LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3
Justification for new course:	This course will build on our Fantasy lit and Mythology and Folklore offerings, both of which are very popular with students.
Semester(s) previously taught	N/A
Co-Listed Courses:	
Course Reviewer Comments	

In Workflow

1. **RENGLISH Chair**
2. **CCC Secretary**
3. **Arts & Humanities DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 02/08/19 11:28 am Kristine Swenson (kswenson): Approved for RENGLISH Chair
2. 02/08/19 11:32 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/08/19 12:06 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 03/06/19 4:02 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Key: 4606

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 02/12/19 11:51 am

Viewing: **GEO ENG 5001.004 : Field Methods in Surface and Subsurface Hydrology**

File: 4587

Last edit: 02/25/19 8:59 am

Changes proposed by: grotekr

Requested Effective Change Date	Fall 2019
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Geological Engineering (GEO ENG)
Course Number	5001
Topic ID	004
Experimental Title	Field Methods in Surface and Subsurface Hydrology
Experimental Abbreviated Course Title	Hydrology Field Methods
Instructors	Katherine Grote
Experimental Catalog Description	Field methods for characterizing physical and chemical properties of surface and subsurface flow. Methods will include chemical sampling, quantifying surface water-groundwater interactions, determining aquifer properties using wells, monitoring flow direction and discharge, and acquiring and interpreting geophysical data for hydrological analyses.
Prerequisites	One of the following is required: Geo Eng 5331, Geo Eng 5332, Geo Eng 5381, Geology 4411, Geology 4431, or consent of instructor.
Field Trip Statement	Local field trips required.
Credit Hours	LEC: 1 LAB: 2 IND: 0 RSD: 0 Total: 3
Justification for new course:	This course offers students an opportunity for hands-on experience with hydrological methods commonly used in industry, governmental agencies, and research. Students will apply theory learned in lecture-based classes to obtain and interpret data, will develop critical thinking skills in planning, executing, and processing data from field campaigns, and will improve their analytical and communication skills as they interpret data they've collected, integrate different types of data into a site model, and present their findings in written and oral reports.
Semester(s) previously taught	none
Co-Listed Courses:	

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 02/12/19 7:00 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/13/19 1:40 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/20/19 11:21 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/06/19 4:02 pm Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Course Reviewer Comments	**sraper (02/20/19 11:21 am):** Awaiting feedback on cost or not of field trips. Also need to consider prereq statement.

Key: 4587

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 02/06/19 2:28 pm

Viewing: **GEOLOGY 5001.003 : Preparation and Review for ASBOG Exam**

File: 4603

Last edit: 02/25/19 8:50 am

Changes proposed by: borrokd

Requested Effective Change Date	Fall 2019
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Geology (GEOLOGY)
Course Number	5001
Topic ID	003
Experimental Title	Preparation and Review for ASBOG Exam
Experimental Abbreviated Course Title	ASBOG Prep
Instructors	David Borrok
Experimental Catalog Description	The national Association of State Boards of Geology (ASBOG) provides a standardized written examination for determining qualifications of applicants seeking licensure as professional geologists. In this course, we will review the basic geologic principles and skills targeted by the ASBOG exam.
Prerequisites	None.
Field Trip Statement	No field trips
Credit Hours	LEC: 1 LAB: 0 IND: 0 RSD: 0 Total: 1
Justification for new course:	Professional licensure in Geology is becoming increasingly popular for geoscientists and geological engineers. The GGPE department wants to ensure that our students have a good grasp of practical geology skills and are in the best position to succeed in obtaining this certification.
Semester(s) previously taught	None
Co-Listed Courses:	
Course Reviewer Comments	

Key: 4603

Preview Bridge

In Workflow

1. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 02/06/19 2:29 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 02/07/19 10:23 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/22/19 4:54 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/07/19 9:12 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Course Change Request

New Experimental Course Proposal

Date Submitted: 02/14/19 1:46 am

Viewing: **MATH 5001.001 : Introduction to Numerical Analysis**

File: 4607

Last edit: 03/08/19 11:58 am

Changes proposed by: prunnion

Requested Effective Change Date	Fall 2019
Department	Mathematics & Statistics
Discipline	Mathematics (MATH)
Course Number	5001
Topic ID	001
Experimental Title	Introduction to Numerical Analysis
Experimental Abbreviated Course Title	Intro Num Analysis
Instructors	He, Jiang, Han, Zhang, or Singler
Experimental Catalog Description	Mathematical foundation and theory of the basic numerical methods for nonlinear equations, function approximations, numerical differentiation/integration, ordinary differential equations, and matrix computation, including the convergence, accuracy, and stability analysis; extension of the basic methods to the corresponding more advanced methods.
Prerequisites	Math 3304.
Field Trip Statement	
Credit Hours	LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3
Justification for new course:	This course will leverage the background of our faculty and offer a lower-level introduction to these topics, some of which are taught in existing (permanent and experimental) 6000-level coursework.
Semester(s) previously taught	None
Co-Listed Courses:	
Course Reviewer Comments	

In Workflow

1. **RMATHEMA Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 02/14/19 7:29 am sclark: Approved for RMATHEMA Chair
2. 02/15/19 11:38 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/04/19 4:55 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/07/19 9:12 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Key: 4607

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 03/02/19 11:45 am

Viewing: **MKT 5001.002 : Brand Management**

File: 4615

Last edit: 03/08/19 12:00 pm

Changes proposed by: barryf

Requested Effective Change Date	Fall 2019
Department	Business and Information Technology
Discipline	Marketing (MKT)
Course Number	5001
Topic ID	002
Experimental Title	Brand Management
Experimental Abbreviated Course Title	Brand Management
Instructors	Mindy Limbeck
Experimental Catalog Description	A study of the fundamental concepts of brand management as applied to a company's ability to withstand competitive pressures and succeed in ever-changing market conditions. Analysis of brand management from the consumer perspective. Emphasis placed on building, measuring and evaluating strategies to build brand equity.
Prerequisites	Mkt 3110 or graduate standing.
Field Trip Statement	
Credit Hours	LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3
Justification for new course:	Many of our students that pursue marketing go into social media marketing, including brand management and digital promotions. We are looking to further aid them in their career paths by deepening their knowledge of the field.
Semester(s) previously taught	None
Co-Listed Courses:	
Course Reviewer Comments	

Key: 4615

Preview Bridge

In Workflow

1. **RBUSADMN Chair**
2. **CCC Secretary**
3. **Social Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 03/03/19 8:50 pm siauk: Approved for RBUSADMN Chair
2. 03/04/19 10:30 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/04/19 12:50 pm Barry Flachsbart (barryf): Approved for Social Sciences DSCC Chair
4. 03/07/19 9:12 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Course Change Request

New Experimental Course Proposal

Date Submitted: 11/26/18 11:37 am

Viewing: **MUSIC 2001.002 : History of Music in Film**

File: 4580

Last edit: 02/25/19 8:51 am

Changes proposed by: heldenbrandt

Requested Effective Change Date	Summer 2019
Department	Academic Support Arts, Languages, & Philosophy
Discipline	Music (MUSIC)
Course Number	2001
Topic ID	002
Experimental Title	History of Music in Film
Experimental Abbreviated Course Title	History of Music in Film
Instructors	Kyle Wernke

Experimental Catalog Description

Music in film is often times the first experience people have with music in the "classical" style. There is a rich history of music composed for this media and students will discover how it has evolved over time and shaped our culture. This course will cover music for film starting in 1932 and ending in 2018 looking at specific genres, composers, and musical

Prerequisites

None

Field Trip Statement

Students should be prepared to view one film in the theater during the semester (chosen by the instructor) as a class. Students will then write a short summary of their observations and will be expected to discuss their observations in class. Students will be required to purchase their own tickets, the class will carpool from the university to the theater.

Credit Hours LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3

In Workflow

1. **RPHILOSO Chair**
2. **RHISTORY Chair**
3. **CCC Secretary**
4. **Arts & Humanities DSCC Chair**
5. **Pending CCC Agenda post**
6. **CCC Meeting Agenda**
7. Campus Curricula Committee Chair
8. CAT entry
9. Registrar

Approval Path

1. 01/24/19 11:24 am
   Audra Merfeld-Langston (audram): Approved for RPHILOSO Chair
2. 01/24/19 11:49 am
   sfogg: Approved for RHISTORY Chair
3. 01/24/19 11:52 am
   Brittany Parnell (ershenb): Approved for CCC Secretary
4. 01/25/19 8:17 am
   Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

5. 03/07/19 9:12 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Justification for new course:
History of Film Music can be offered in order to fulfill a fine arts requirement for students without musical, artistic, or theatrical experience. It is also a combination of two disciplines that could appeal to students of music and film.

Semester(s) previously taught

Co-Listed Courses: HISTORY 2001 - Special Topics

Course Reviewer Comments

Key: 4580

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 02/22/19 1:36 pm

Viewing: **NUC ENG 5001.002 : Nuclear Forensics**

File: 4613

Last edit: 03/18/19 3:44 pm

Changes proposed by: castanoc

Requested Effective Change Date	Fall 2019
Department	Mining & Nuclear Engineering
Discipline	Nuclear Engineering (NUC ENG)
Course Number	5001
Topic ID	002
Experimental Title	Nuclear Forensics
Experimental Abbreviated Course Title	Nuclear Forensics
Instructors	Carlos Henry Castano Giraldo
Experimental Catalog Description	Learn concepts and terminology associated with nuclear forensics and radiochemistry. Learn about the techniques used in nuclear forensics including laboratory demonstrations. Includes cosmochemistry, isotope production in a neutron field, solvent extraction principles, and typical spent fuel inventory and reprocessing techniques.
Prerequisites	None
Field Trip Statement	We will potentially do ONE trip visit to Missouri University Research Reactor (MURR) in Columbia to perform radiochemistry experiments on radioactive open sources (on ONE saturday of the semester). However this will be made optional for distance students.
Credit Hours	LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3
Justification for new course:	This course facilitates human capital development in nuclear security career path. The nuclear engineering program is expanding its focus areas to include nuclear nonproliferation, security, deterrence, safeguards and policy. It is designed to provide graduate level studies to professionals and students who are on nuclear security career path or intend to have a career in nuclear security. The United States of America, through various executive departments like Department of Energy (DOE), Department of State (DOS) and Department of Defense (DoD), is fully vested in nuclear security. For example, DOE's National Nuclear Security Administration (NNSA), DoD's Defense Threat Reduction Agency (DTRA), and DOS's Threat Reduction Programs are staffed by personnel with knowledge in this area of study. These agencies also require continued staffing by hiring people who possess this knowledge.
Semester(s) previously taught	New Course

In Workflow

1. **NUC ENG Chair**
2. **CCC Secretary**
3. **Engineering DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar
9. Peoplesoft

Approval Path

1. 02/22/19 3:12 pm Hyoung-Koo Lee (leehk): Approved for NUC ENG Chair
2. 02/25/19 8:48 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 03/18/19 11:07 am Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/18/19 11:31 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Co-Listed Courses:

Course Reviewer Comments	**sraper (03/18/19 11:07 am):** This form has been submitted with a hard number for a Nuc Eng Grad Certificate. There are already two other Nuc Eng for the certificate that have requested hard numbers. I asked if there were any special circumstances to override our policy and received no response. In addition, the grad certificate has not left the grad office yet so no approval from MDHE.

Key: 4613

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 11/29/18 8:56 am

Viewing: **PHILOS 3001.003 : Philosophy of Technology**

File: 4585

Last edit: 02/25/19 8:57 am

Changes proposed by: heldenbrandt

Requested Effective Change Date	Fall 2019
Department	Academic Support Arts, Languages, & Philosophy
Discipline	Philosophy (PHILOS)
Course Number	3001
Topic ID	003
Experimental Title	Philosophy of Technology
Experimental Abbreviated Course Title	Philosophy of Technology
Instructors	Dr. Patrick Gamez
Experimental Catalog Description	Students will learn the conceptual tools and skills for reflection on the ethical, social, and philosophical dimensions of life in a technological society. Specific topics covered might include: philosophy of engineering, artificial intelligence, information ethics, cybernetics, technological unemployment, human enhancement, existentialism, and others.
Prerequisites	Sophomore standing or above.
Field Trip Statement	There will be no field trips associated with this course.
Credit Hours	LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3
Justification for new course:	First, a philosophy of technology course will meet the needs of students in STEM fields who want to explore the humanities in a way that it is relevant to their central interests in science and technology. Especially for engineering students who are not interested in the epistemological issues raised by theorizing in the natural sciences, this will be a more attractive and important elective than, e.g., philosophy of science. Moreover, it will be make our students more competitive; employers have recently stated that they want STEM graduates to have a humanities background, and philosophical reflection on technological society meets this desideratum. Second, this course will serve to bolster existing minors. If successful, the plan is to make this course a recommended elective for our existing minor in Philosophy of Technology, as well as hopefully integrating it into the existing interdisciplinary Science, Technology, and Society minor (housed in the Department of History and Political Science). Third, this course will allow current and new faculty to integrate their research and teaching. As we do not have a graduate program, often our course offerings are not

In Workflow

1. **RPHILOSO Chair**
2. **CCC Secretary**
3. **Arts & Humanities DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 01/24/19 11:25 am Audra Merfeld-Langston (audram): Approved for RPHILOSO Chair
2. 01/24/19 11:48 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 01/25/19 8:18 am Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 03/07/19 9:12 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

	reflective of the research interests of our faculty. This is a rare opportunity to offer a course that is both highly relevant to both student and faculty interests.
Semester(s) previously taught	None
Co-Listed Courses:	

Course Reviewer Comments

Key: 4585

Preview Bridge

Course Change Request

Date Submitted: 02/08/19 4:19 pm

Viewing: **SPANISH 2110 : Basic Spanish Conversation**

File: 1573.5

Last approved: 07/07/14 3:48 am

Last edit: 02/11/19 4:11 pm

Changes proposed by: porcelj

Requested Effective Change Date	**Spring 2020** ~~08/01/2014~~
Department	Academic Support Arts, Languages, & Philosophy
Discipline	Spanish (SPANISH)
Course Number	2110
Title	Basic Spanish Conversation
Abbreviated Course Title	Basic Spanish **Conv** ~~Conversation~~
Catalog Description	Spanish conversation and oral practice.
Prerequisites	**Spanish** ~~SPANISH~~ 1180.
Field Trip Statement	
Credit Hours	LEC: **3** ~~2~~ LAB: 0 IND: 0 RSD: 0 Total: **3** ~~2~~
Required for Majors	No
Elective for Majors	No
Justification for change:	Spanish Basic conversation is a course for completion of the Spanish minor. As a 2-credit course, leaves students one credit short of the required amount of total credits for minor completion. The change will solve this problem.
Semesters previously offered as an experimental course	
Co-Listed Courses:	
Course Reviewer Comments	

Key: 1573

In Workflow

1. **RPHILOSO Chair**
2. **CCC Secretary**
3. **Arts & Humanities DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 02/08/19 8:33 pm Audra Merfeld-Langston (audram): Approved for RPHILOSO Chair
2. 02/11/19 3:49 pm Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/11/19 4:11 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 03/07/19 9:13 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. Jul 7, 2014 by lahne (1573.1)

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 01/29/19 1:26 pm

Viewing: **STAT 5001.001 : Pensions and Social Security**

File: 4599

Last edit: 02/25/19 9:18 am

Changes proposed by: prunnion

Requested Effective Change Date	Fall 2019
Department	Mathematics & Statistics
Discipline	Statistics (STAT)
Course Number	5001
Topic ID	001
Experimental Title	Pensions and Social Security
Experimental Abbreviated Course Title	Pensions Soc Sec
Instructors	Adekpedjou
Experimental Catalog Description	This course is a continuation of Stat 5756 and covers the second part of the material required for the Society of Actuaries MLC (Models for Life Contingencies) exam. Topics include reserves, multiple state models, joint life, pension plans, retirement benefits, and social security.
Prerequisites	Stat 5756.
Field Trip Statement	
Credit Hours	LEC: 3 LAB: 0 IND: 0 RSD: 0 Total: 3
Justification for new course:	This course leverages the expertise of our faculty and helps continue the development of our Actuarial Science emphasis.
Semester(s) previously taught	None
Co-Listed Courses:	
Course Reviewer Comments	**ershenb (01/29/19 2:42 pm):** Emailed Paul Runnion and changed course to Stat 5001.

In Workflow

1. **RMATHEMA Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
4. **Pending CCC Agenda post**
5. **CCC Meeting Agenda**
6. Campus Curricula Committee Chair
7. CAT entry
8. Registrar

Approval Path

1. 01/29/19 2:14 pm sclark: Approved for RMATHEMA Chair
2. 01/30/19 8:08 am Brittany Parnell (ershenb): Approved for CCC Secretary
3. 02/04/19 5:13 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/07/19 9:13 am Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

Key: 4599

Preview Bridge