

Program Change Request

Date Submitted: 03/10/17 3:13 pm

Viewing: **BIO SC-BA : Biological Sciences BA**

File: 146.17

Last approved: 10/07/16 1:36 pm

Last edit: 04/19/17 11:23 am

Changes proposed by: shannonk

Catalog Pages

Using this

Program

[Biological Sciences](#)

Start Term	Fall 2017
Program Code	BIO SC-BA
Department	Biological Sciences
Title	

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. **FS Meeting Agenda**
8. **Faculty Senate Chair**
9. **Registrar**
10. **kristyg**

Approval Path

1. 03/11/17 9:21 pm
David Westenberg (djwesten):
Approved for
RBIOLSCI Chair
2. 03/13/17 9:20 am
Kristy Giacomelli (kristyg): Approved
for CCC Secretary
3. 04/19/17 11:24 am
Ilene Morgan (imorgan):
Approved for
Sciences DSCC Chair
4. 04/20/17 4:11 pm
Lahne Black (lahne): Approved
for Pending CCC
Agenda post
5. 05/10/17 2:33 pm

Lahne Black
(lahne): Approved
for CCC Meeting
Agenda
6. 05/11/17 1:02 pm
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

History

1. Aug 1, 2014 by shannonk

2. Jul 14, 2015 by pantaleoa

3. Oct 7, 2016 by shannonk

Biological Sciences BA

Program Requirements and Description

Bachelor of Arts
Biological Sciences
Degree Requirements

Specific requirements for the B.A. degree in biological sciences include a minimum of 120 semester hours of credit, including 30 hours of biology core courses. A "C" or better is required for all Biological Science courses.

Core Courses		
BIO SCI 1201	Biological Sciences Freshman Seminar	1
BIO SCI 1113	General Biology	3
or BIO SCI 1213	Principles of Biology	
BIO SCI 1219	General Biology Lab	2
BIO SCI 1223	Biodiversity	3
BIO SCI 1229	Biodiversity Lab	1
BIO SCI 2213	Cell Biology	3

BIO SCI 2219	Cell Biology Laboratory	1
BIO SCI 2223	General Genetics	3
BIO SCI 2233	Evolution	3
BIO SCI 2263	Ecology	3
BIO SCI 4010	Seminar	1
Advanced courses, 2000 level or higher (at least one with laboratory and one 3000 or 4000 level)		9
Chemistry		
CHEM 1310 & CHEM 1319 & CHEM 1320 & CHEM 1100	General Chemistry I and General Chemistry Laboratory and General Chemistry II and Introduction To Laboratory Safety & Hazardous Materials	9
CHEM 2210 & CHEM 2220	Organic Chemistry I and Organic Chemistry II	8
Mathematics & Physical Science		
Various courses in mathematics, physics, and/or geology chosen in consultation with academic advisor. (Note: Proficiency in College Algebra must be demonstrated by a grade of "C" or better in a College Algebra course or by examination)		9
Computer Science/Statistics (Select one of the following:)		3-4
COMP SCI 1570 & COMP SCI 1580	Introduction To Programming and Introduction To Programming Laboratory	
or COMP SCI 1971 & COMP SCI 1981	Introduction To Programming Methodology and Programming Methodology Laboratory	
STAT 3111	Statistical Tools For Decision Making	
STAT 5425	Introduction to Biostatistics	
General Requirements for BA		
English Composition		6
ENGLISH 1120	Exposition And Argumentation	
One additional composition course		
Western Civilizations		6
HISTORY 1100	Early Western Civilization	
HISTORY 1200	Modern Western Civilization	
Foreign Language (three semesters of a foreign language)		12
Humanities (including one class in each of literature, philosophy, and fine arts)		12
Social Sciences (including classes in two of the following three subjects: economics, political science, psychology)		12

Elective credits: In consultation with his or her advisor, each student will elect sufficient additional courses to complete a minimum

of 120 credit hours.

Bachelor of Arts Biological Sciences Pre-Medicine Emphasis Area Degree Requirements

The student will fulfill the requirements for a bachelor of arts in biological sciences as outlined above. The following classes are also required:

CHEM 2219 & CHEM 2229	Organic Chemistry I Lab and Organic Chemistry II Lab	2
2 semesters of Physics and labs:		8-10
PHYSICS 1145 & PHYSICS 1119	College Physics I and General Physics Laboratory	
or PHYSICS 1111 & PHYSICS 1119	General Physics I and General Physics Laboratory	
PHYSICS 2145 & PHYSICS 2119	College Physics II and General Physics Laboratory	
or PHYSICS 2111 & PHYSICS 2119	General Physics II and General Physics Laboratory	

The following classes are highly recommended:

BIO SCI 3333	Human Anatomy and Physiology I	3
BIO SCI 3339	Human Anatomy Physiology I Lab	1
BIO SCI 3343	Human Anatomy and Physiology II	3
BIO SCI 3349	Human Anatomy and Physiology II Laboratory	1
CHEM 4610	General Biochemistry	3

Bachelor of Arts Biological Sciences Secondary Education Emphasis Area Degree Requirements

You may earn a B.A. degree in biological sciences from Missouri S&T and certification to teach at the secondary level in the schools of Missouri with this emphasis area. This program can be completed in four academic years, and student teaching is arranged with public schools within 30 miles of the Rolla campus.

Students interested in this emphasis area should consult with the advisor for biological sciences education majors in the biological sciences department.

In order to successfully complete this emphasis area, students must have at least a 22 ACT, maintain a cumulative GPA of at least 2.5, and attain at least a 2.5 GPA average for all biology courses. Current Missouri S&T or transfer students who wish to pursue this emphasis area must meet both these GPA requirements to be accepted into the program. Students must also meet all requirements listed under the teacher education program in this catalog. Students who do not meet all the teacher certification requirements will not be eligible for the secondary education emphasis area, even if they have completed all required course work.

A degree in this emphasis area requires 131 credit hours. The required courses are provided below. A minimum grade of "C" is required by the department in all biological sciences courses counted toward this degree.

Humanities: 18 semester hours		
ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
or ENGLISH 3560	Technical Writing	
SP&M S 1185	Principles Of Speech	3
At least one course in each of the following: Literature, Philosophy and Fine Arts		9
Social Sciences: 15 semester hours		
HISTORY 3530	History of Science	3
HISTORY 1100	Early Western Civilization	3
HISTORY 1200	Modern Western Civilization	3
POL SCI 1200	American Government	3
PSYCH 1101	General Psychology	3
Mathematics/Physical Science: 9 semester hours		
MATH 1103	Fundamentals Of Algebra	3
PHYSICS 1145	College Physics I	3
GEOLOGY 1110	Physical And Environmental Geology	3
Computer Science/Statistics: 3 semester hours		
3 semester hours of Computer Science or Statistics		3
Chemistry: 17 semester hours		
CHEM 1310 & CHEM 1319 & CHEM 1320 & CHEM 1100	General Chemistry I and General Chemistry Laboratory and General Chemistry II and Introduction To Laboratory Safety & Hazardous Materials	9
CHEM 2210 & CHEM 2220	Organic Chemistry I and Organic Chemistry II	8
Biological Sciences: 27 semester hours		
BIO SCI 1201	Biological Sciences Freshman Seminar	1

BIO SCI 1213 & BIO SCI 1219	Principles of Biology and General Biology Lab	5
BIO SCI 1223 & BIO SCI 1229	Biodiversity and Biodiversity Lab	4
BIO SCI 1173	Introduction to Environmental Sciences	3
BIO SCI 2213 & BIO SCI 2219	Cell Biology and Cell Biology Laboratory	4
BIO SCI 2223	General Genetics	3
BIO SCI 2233	Evolution	3
BIO SCI 2263	Ecology	3
BIO SCI 4010	Seminar	1
Education: 42 semester hours		
EDUC 1040	Perspectives In Education	2
EDUC 1104	Teacher Field Experience	2
EDUC 1164	Aiding Elementary, Middle And Secondary Schools	2
EDUC 1174	School Organization & Adm For Elementary & Secondary Teachers	2
EDUC 2216	Course EDUC 2216 Not Found	3
EDUC 3216	Teaching Reading in Content Area	3
EDUC 3280	Teaching Methods And Skills In The Content Areas	6
EDUC 4298	Student Teaching Seminar	1
EDUC 4299	Student Teaching	12
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
PSYCH 2300	Educational Psychology	3
PSYCH 3311	Psychological & Educational Development Of The Adolescent	3
PSYCH 4310	Psychology Of The Exceptional Child	3

Justification for
request

EDUC 2216 course number has changed to EDUC 3216 for Secondary Education
Emphasis Area BA

Before the change in course numbering, part of the BA requirement was 45 hours at
200 level or above. During the change in course numbering, this requirement was

changed (not at our department level) to 3000 or above

<http://catalog.mst.edu/undergraduate/degreeprogramsandcourses/#text>.

The other departments on campus that offer BA degrees and may have been affected by this change are: chemistry, economics, English, history, multidisciplinary studies, philosophy, and psychology.

The problem for Biology BA degrees is that all required Chemistry, Physics, Math, History, English, and Biology courses for the BA degrees are 1000 or 2000 level, therefore it is not possible to meet this requirement within 120 hours. We would like to change our BA degree requirement to 45 hours at 2000 level or above

Supporting
Documents

Course Reviewer
Comments

imorgan (04/19/17 11:23 am): I removed an editorial comment from the form.

Key: 146

Program Change Request

Date Submitted: 04/06/17 4:32 pm

Viewing: **CHEM-BS : Chemistry BS**

File: 16.21

Last approved: 06/19/15 9:08 am

Last edit: 04/19/17 12:01 pm

Changes proposed by: tschuman

Catalog Pages

Using this

Program

[Chemistry](#)

Start Term Fall **2017** ~~2015~~

Program Code CHEM-BS

Department Chemistry

Title

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. **kristyg**

Approval Path

1. 04/06/17 8:37 pm
woelk (woelkk):
Approved for
RCHEMIST Chair
2. 04/08/17 4:04 pm
Kristy Giacomelli
(kristyg): Approved
for CCC Secretary
3. 04/19/17 11:30 am
Ilene Morgan
(imorgan):
Approved for
Sciences DSCC
Chair
4. 04/20/17 4:12 pm
Lahne Black
(lahne): Approved
for Pending CCC
Agenda post
5. 05/10/17 2:33 pm
Lahne Black

(lahne): Approved
for CCC Meeting
Agenda

6. 05/11/17 1:02 pm
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

History

1. Apr 28, 2014 by
Thomas Schuman
(tschuman)
2. Jun 19, 2015 by
woelk (woelkk)

Chemistry BS

Program Requirements and Description

Bachelor of Science Chemistry

A minimum of **127** ~~of 131~~ credit hours is required for a Bachelor of Science degree in Chemistry and an average of at least two grade points per credit hour must be obtained. These requirements for the B.S. degree are in addition to credit received for algebra, trigonometry, and basic ROTC.

The Chemistry science curriculum requires nine semester hours in humanities and must include [ENGLISH 1160](#) or [ENGLISH 3560](#). A minimum of nine semester hours is required in social sciences, including either [HISTORY 1300](#), [HISTORY 1310](#), [HISTORY 1200](#), or [POL SCI 1200](#). Specific requirements for the bachelor degree are outlined in the sample program listed below.

Freshman Year			
First Semester	Credits	Second Semester	Credits
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	CHEM 1510	2
CHEM 1100	1	MATH 1224	5
CHEM 1110	1	MATH 1215	4
MATH 1208	5	Electives	6

MATH 1214	4		
ENGLISH 1120	3		
HISTORY 1200 , or 1300 , or 1310 , or POL SCI 1200	3		
	17		15
Sophomore Year			
First Semester	Credits	Second Semester	Credits
CHEM 2210	4	CHEM 2220	4
CHEM 2219	1	CHEM 2229	1
MATH 2222	4	CHEM 3410	3
Electives	3	PHYSICS 2135	4
PHYSICS 1135	4	Select one of the following sequences:	3
		COMP SCI 1971 & COMP SCI 1981	
		COMP SCI 1972 & COMP SCI 1982	
		COMP SCI 1570 & COMP SCI 1580	
	16		15
Junior Year			
First Semester	Credits	Second Semester	Credits
CHEM 2310	3	CHEM 2319	1
CHEM 2510	4	CHEM 2320	3
CHEM 3430	3	CHEM 3420	3
STAT 3113 or 3115	3	CHEM 3459	2
ENGLISH 1160 or 3560	3	Electives	6
	16		15
Senior Year			
First Semester	Credits	Second Semester	Credits
CHEM 3510	4	CHEM 4010 or 4099	1
CHEM 4010 or 4099	1	CHEM 4297	3
CHEM 4610	3	Electives	12
CHEM 4810	3		
Electives	6		

17	16
Total Credits: 127	

Notes:

Grade Requirements: A minimum grade of "C" is required for each chemistry course counted towards the degree.

ROTC: Basic ROTC may be taken in the freshman and sophomore year, but does not count towards the degree.

Electives: There are **thirty-three (33)** ~~thirty-five (35)~~ hours of **electives, not to include Math courses that are prerequisite to calculus. ~~electives.~~** Twelve (12) hours must be 2xxx, 3xxx, 4xxx (or 5xxx or higher with permission) level in chemistry or another technical area with permission of department. Six (6) elective hours must be completed in the social sciences. Six (6) elective hours are required in the humanities. Three **(3)** of the humanities hours must be **literature.**

~~literature.~~

Chemistry Biochemistry Emphasis Area

Freshman Year			
First Semester	Credits	Second Semester	Credits
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	CHEM 1510	2
CHEM 1100	1	MATH 1224	5
CHEM 1110	1	MATH 1215	4
MATH 1208	5	BIO SCI 2213	3
ENGLISH 1120	3	BIO SCI 2219	1
MATH 1214	4	Electives	3
HISTORY 1200 , or 1300 , or 1310 , or POL SCI 1200	3		
	17		16
Sophomore Year			
First Semester	Credits	Second Semester	Credits
CHEM 2210	4	CHEM 2220	4
CHEM 2219	1	CHEM 2229	1
MATH 2222	4	CHEM 3410	3
PHYSICS 1135	4	PHYSICS 2135	4
Electives	3	Select one of the following sequences:	3

COMP SCI 1971 & COMP SCI 1981			
COMP SCI 1972 & COMP SCI 1982			
COMP SCI 1570 & COMP SCI 1580			
16		15	
Junior Year			
First Semester	Credits	Second Semester	Credits
CHEM 2310	3	CHEM 2319	1
CHEM 3430	3	CHEM 2320	3
CHEM 4610	3	CHEM 2510	4
CHEM 4619	2	CHEM 3420	3
STAT 3113 or 3115	3	CHEM 3459	2
ENGLISH 1160 or 3560	3	CHEM 4620	3
17		16	
Senior Year			
First Semester	Credits	Second Semester	Credits
CHEM 3510	4	CHEM 4010 or 4099	1
CHEM 4010 or 4099	1	CHEM 4297	3
CHEM 4810	3	Electives	12
BIO SCI 4323	3		
Electives	3		
14		16	
Total Credits: 127			

Notes:

Grade Requirements: A minimum grade of “C” is required for each chemistry course counted towards the degree.

ROTC: Basic ROTC may be taken in the freshman and sophomore years, but does not count towards the degree.

Electives: **There are twenty-one (21) hours of electives, not to include Math courses that are prerequisite to calculus.** ~~There are twenty-three (23) hours of electives.~~ Six (6) elective hours must be completed in the social sciences. Six (6) elective hours are required in the humanities. Three **(3)** of the humanities hours must be literature.

Polymer & Coatings Science Emphasis Area

Freshman Year			
First Semester	Credits	Second Semester	Credits
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	CHEM 1510	2
CHEM 1100	1	MATH 1221	5
CHEM 1110	1	MATH 1215	4
MATH 1208	5	Electives	6
MATH 1214	4		
ENGLISH 1120	3		
HISTORY 1200 , or 1300 , or 1310 , or POL SCI 1200	3		
	17		15
Sophomore Year			
First Semester	Credits	Second Semester	Credits
CHEM 2210	4	CHEM 2220	4
CHEM 2219	1	CHEM 2229	1
MATH 2222	4	CHEM 3410	3
PHYSICS 1135	4	PHYSICS 2135	4
Electives	3	Select one of the following sequences:	3
		COMP SCI 1971 & COMP SCI 1981	
		COMP SCI 1972 & COMP SCI 1982	
		COMP SCI 1570 & COMP SCI 1580	
	16		15
Junior Year			
First Semester	Credits	Second Semester	Credits
CHEM 2510	4	CHEM 3420	3
CHEM 3430	3	CHEM 3459	2
CHEM 4810	3	CHEM 4099	3
STAT 3113 or 3115	3	CHEM 4819	3
ENGLISH 1160 or 3560	3	CHEM 4850	3
		Electives	3

	16		14
Senior Year			
First Semester	Credits	Second Semester	Credits
CHEM 2310	3	CHEM 2319	1
CHEM 3510	4	CHEM 2320	3
CHEM 4610	3	CHEM 4297	3
PHYSICS 4523	3	Electives	10
Electives	4		
	17		17
Total Credits: 127			

Notes:

Grade Requirements: A minimum grade of “C” is required for each chemistry course counted towards the degree.

ROTC: Basic ROTC may be taken in the freshman and sophomore years, but does not count towards the degree.

Undergraduate Research: The undergraduate research CHEM 4099 must be done in Polymers and Coatings Science.

Electives: There are **twenty-three (23)** ~~twenty-five (25)~~ hours of **electives, not to include Math courses that are prerequisite to calculus.** ~~electives.~~ Six (6) elective hours must be completed in the social sciences. Six (6) elective hours are required in the humanities. Three **(3)** of the humanities hours must be literature.

Pre-medicine Emphasis Area

Freshman Year			
First Semester	Credits	Second Semester	Credits
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	CHEM 1510	2
CHEM 1100	1	MATH 1224	5
CHEM 1110	1	MATH 1215	4
MATH 1208	5	BIO SCI 1113	3
MATH 1214	4	BIO SCI 1219	2
HISTORY 1200 , or 1300 , or 1310 , or POL SCI 1200	3	ENGLISH 1120	3
	14		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits

CHEM 2210	4	CHEM 2220	4
CHEM 2219	1	CHEM 2229	1
MATH 2222	4	CHEM 3410	3
PHYSICS 1135	4	PHYSICS 2135	4
BIO SCI 2213	3	Select one of the following sequences:	3
BIO SCI 2219	1	COMP SCI 1971 & COMP SCI 1981	
		COMP SCI 1972 & COMP SCI 1982	
		COMP SCI 1570 & COMP SCI 1580	
	17		15
Junior Year			
First Semester	Credits	Second Semester	Credits
CHEM 3430	3	CHEM 2510	4
CHEM 4610	3	CHEM 3420	3
CHEM 4619	2	CHEM 4620	3
CHEM 4010 or 4099	1	STAT 3113 or 3115	3
BIO SCI 3333	3	BIO SCI 3343	3
BIO SCI 3339	1	BIO SCI 3349	1
ENGLISH 1160 or 3560	3		
	16		17
Senior Year			
First Semester	Credits	Second Semester	Credits
CHEM 2310	3	CHEM 2319	1
CHEM 3510	4	CHEM 2320	3
CHEM 3459	2	CHEM 4297	3
CHEM 4010 or 4099	1	Electives	8
CHEM 4810	3		
Electives	3		
	16		15
Total Credits: 127			

Notes:

Grade Requirements: A minimum grade of "C" is required for each chemistry course counted towards the degree.

ROTC: Basic ROTC may be taken in the freshman and sophomore years, but does not count towards the degree.

Electives: There are **eleven (11)** ~~thirteen (13)~~ hours of **electives, not to include Math courses that are prerequisite to calculus. Three** ~~electives. Three~~ (3) elective hours must be completed in the social sciences. Three (3) elective hours are required in the humanities, which must be literature.

Justification for request

We are realigning our degree requirements to currently offered math and physics "engineering" version courses, which are 4 credit hours less in total (1 credit hour each for 4 courses) than the original non-engineering version math and physics required courses. We are then dropping the total degree credit hours to 4 less than our historical number of degree hours, $131 - 4 = 127$ credit hours. The additional issue is that we do not want prerequisite math courses lower than calculus to be used to satisfy electives requirements.

Supporting Documents

Course Reviewer Comments

imorgan (04/19/17 11:28 am): I changed "Three" to "Three (3)" to match the style of the other requirements.

imorgan (04/19/17 11:29 am): Found one additional instance.

imorgan (04/19/17 11:29 am): clean-up

lahne (04/19/17 12:01 pm): update effective date to Fall 2017

Key: 16

Program Change Request

Date Submitted: 03/31/17 2:52 pm

Viewing: **CMP SC-BS : Computer Science BS**

File: 28.16

Last approved: 07/15/15 11:26 am

Last edit: 05/11/17 1:10 pm

Changes proposed by: tauritzd

Catalog Pages

Using this

Program

[Computer Science](#)

Start Term

Fall **2017** ~~2015~~

Program Code

CMP SC-BS

Department

Computer Science

Title

In Workflow

1. **RCOMPSCI 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. **kristyg**

Approval Path

1. 03/31/17 3:31 pm
Sajal Das (sdas):
Approved for
RCOMPSCI Chair
2. 04/06/17 11:19 am
Lahne Black
(lahne): Approved
for CCC Secretary
3. 04/18/17 8:24 am
srafer: Approved
for Engineering
DSCC Chair
4. 04/20/17 4:13 pm
Lahne Black
(lahne): Approved
for Pending CCC
Agenda post
5. 05/10/17 2:34 pm
Lahne Black
(lahne): Approved
for CCC Meeting

Agenda

6. 05/11/17 1:23 pm
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

History

- 1. [Aug 5, 2014](#) by [tauritzd](#)
- 2. [Aug 13, 2014](#) by [pantaleoa](#)
- 3. [Jun 19, 2015](#) by [tauritzd](#)
- 4. [Jul 15, 2015](#) by [pantaleoa](#)

Computer Science BS

Program Requirements and Description

Bachelor of Science
Computer Science

A minimum of 128 credit hours is required for a Bachelor of Science degree in computer science and an average of at least two grade points per credit hour must be obtained. These requirements for the B.S. degree are in addition to credit received for algebra, trigonometry, and basic ROTC.

The computer science curriculum requires twelve semester hours in humanities, exclusive of foreign language, and must include [ENGLISH 1160](#) or [ENGLISH 3560](#). A minimum of nine semester hours is required in social sciences, including either [HISTORY 1300](#), [HISTORY 1310](#), [HISTORY 1200](#), or [POL SCI 1200](#). Specific requirements for the bachelor degree are outlined in the sample program listed below.

All computer science majors must earn a "C" or better grade in all COMP SCI courses used to fulfill B.S. in computer science degree requirements as well as in [COMP ENG 2210](#), [COMP ENG 3150](#), and the required ethics elective.

Sample Course of Study

Freshman Year			
First Semester	Credits	Second Semester	Credits

COMP SCI 1010 ¹⁴	1	COMP SCI 1510	3
COMP SCI 1570	3	COMP SCI 1200	3
COMP SCI 1580	1	MATH 1224 ¹⁵	5
MATH 1214	4	Laboratory science course(s) ⁴	5
ENGLISH 1120	3	COMP SCI 1575	3
MATH 1208 ¹⁵	5	COMP SCI 1585	1
Humanities Elective ⁵	3	MATH 1215	4
		ENGLISH 1160 ¹³	3
		SP&M S 1185 ⁴	3
	15		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits
COMP SCI 2200	3	COMP SCI 2300	3
COMP SCI 2500	3	COMP ENG 2210 ¹²	3
PHYSICS 1135 ³	4	PHYSICS 2135 ³	4
Statistics Elective ⁶		MATH 3108 ⁷	3
Social Science Elective ²	3	Physics Elective ³	4
Literature Elective ⁵	3	STAT 3115 ⁶	3
Physics Elective ³	4	Literature Elective ⁵	3
SP&M S 1185 ⁴	3		
	13		16
Junior Year			
First Semester	Credits	Second Semester	Credits
COMP SCI 3100	3	COMP SCI 3500	3
COMP SCI 3500	3	COMP SCI 3600	3
COMP ENG 3150	3	COMP SCI 3800	3
COMP SCI 2200	3	Laboratory Science ¹	5
Free Elective ⁸	3	Sci/Eng Elective ¹⁰	3
History Elective ²	3	Social Science Elective ²	3
COMP SCI 3800	3	COMP SCI 3200	3
Ethics Elective ¹¹	3	ENGLISH 1160 ¹³	3
		COMP SCI 3100	3

15		17	
Senior Year			
First Semester	Credits	Second Semester	Credits
COMP SCI 4096	3	Cmp Sc Electives ⁹	9
Cmp Sc Electives ⁹	6	Sci/Eng Elective ¹⁰	3
Eng/Science Electives¹⁰	6	Ethics Elective¹⁴	3
Sci/Eng Elective ¹⁰	3	Free Elective ⁸	5
Free Elective ⁸	3		
15		17	
Total Credits: 125			

- ¹ Any science lecture-laboratory course or course pair totaling at least four hours credit. The laboratory is mandatory in all cases. These course(s) may be selected from: [CHEM 1310](#) and [CHEM 1319](#); [CHEM 1351](#); [BIO SCI 1113](#) and [BIO SCI 1219](#); [PHYSICS 1505](#) and [PHYSICS 1509](#); [GEOLOGY 1110](#) and [GEOLOGY 1119](#); [GEOLOGY 1120](#) and [GEOLOGY 1129](#); [BIO SCI 1223](#) and [BIO SCI 1229](#); [BIO SCI 2353](#) and [BIO SCI 2359](#).
- ² Any nine credit hours of social science courses approved on the list maintained on the computer science website. One course must satisfy the Missouri and U.S. Constitution requirement. [COMP SCI 4700](#) may be counted as a Social Science elective.
- ³ Either [PHYSICS 1135](#) or [PHYSICS 1111-PHYSICS 1119](#); either [PHYSICS 2135](#) or [PHYSICS 2111-PHYSICS 2119](#).
- ⁴ [SP&M S 1185](#) or [SP&M S 3283](#).
- ⁵ One literature and one humanities course approved on the list maintained on the computer science website.
- ⁶ One of [STAT 3113](#), [STAT 3115](#), [STAT 3117](#), or [STAT 5643](#).
- ⁷ [MATH 3103](#) or [MATH 3108](#).
- ⁸ Courses chosen from any field so that 128 hours are completed. These and only these courses may be taken pass/fail and only one course may be taken pass/fail each semester. Some courses such as algebra, trigonometry, [MATH 1214](#), [MATH 1215](#), [MATH 1221](#), [PHYSICS 1111](#), [PHYSICS 1119](#), [PHYSICS 1135](#), [PHYSICS 2135](#), [PHYSICS 2111](#), [PHYSICS 2119](#), [PHYSICS 1145](#), [PHYSICS 2145](#) and the first two years of ROTC do not count toward the free electives.
- ⁹ Fifteen hours of elective COMP SCI courses excluding [COMP SCI 2002](#), [COMP SCI 4700](#), COMP SCI 2001 - Domain Exploration and Innovation Methods, COMP SCI 3001 - Skill Development for Entrepreneurs and Innovators, COMP SCI 4001 - Advanced Domain Exploration and Innovation Methods, COMP SCI 4001 - Interpersonal Dynamics for Entrepreneurs and Innovators, and all COMP SCI x9xx courses. At least nine hours must be 5000-level or higher. At least nine hours must be lecture courses.
- ¹⁰ Any nine hours chosen from departments that offer a degree associated with either the Discipline Specific Curricula Committee for Sciences or the Discipline Specific Curricula Committee for Engineering, excluding computer science. These may not be [MATH 1208](#), [MATH 1214](#), [MATH 1215](#), [MATH 1221](#), [PHYSICS 1111](#), [PHYSICS 1119](#), [PHYSICS 1135](#), [PHYSICS 2135](#), [PHYSICS 2111](#), [PHYSICS 2119](#), [PHYSICS 1145](#), or [PHYSICS 2145](#).

11	One of PHILOS 3225 , PHILOS 3235 , PHILOS 4340 , or PHILOS 4368 .
12	Laboratory not required.
13	ENGLISH 1160 or ENGLISH 3560 .
14	One of COMP SCI 1010 , BIO SCI 1201 , CHEM 1110 , PHYSICS 1101 , MATH 1101 , or FR ENG 1100 .
45	MATH 1214 may be taken instead of MATH 1208; MATH 1215 may be taken instead of MATH 1221

Justification for request

The Comp Sci faculty voted on March 30th 2017 to make the Data Structures Lab (Comp Sci 1585 effective August 2017) required, as well as to make our Intro to Computer Security (Comp Sci 3600) required instead of our Numerical Methods course (Comp Sci 3200) in accordance with ACM/IEEE curricula recommendations. This DC form effects those changes as well as updates the sample course of study to both reflect those changes and clean up issues such as ensuring that prerequisite courses are taken in the correct order and replacing the general calc & physics course requirements with their engineering equivalents.

Supporting Documents

Course Reviewer Comments

sraper (04/18/17 8:24 am): At CCC: In sophomore year, first semester. Change Stats 3115 with foot note to Stats Elective. For footnote change to "Choose one of Stat 3113, Stat 3115, Stat 3115, or Stat 5643." per email communications.

imorgan (05/05/17 9:53 am): Made some minor edits in consultation with Dr. Tauritz.

imorgan (05/09/17 10:50 am): Minor clean-up.

imorgan (05/11/17 1:04 pm): Minor edit.

imorgan (05/11/17 1:10 pm): minor edit

Program Change Request

Date Submitted: 03/08/17 11:29 am

Viewing: **CMP SC-MI : Computer Science Minor**

File: 29.9

Last approved: 07/15/15 11:27 am

Last edit: 04/10/17 2:19 pm

Changes proposed by: tauritzd

Catalog Pages

Using this

Program

[Computer Science](#)

Start Term	Fall 2017 2015
Program Code	CMP SC-MI
Department	Computer Science
Title	Computer Science Minor

Program Requirements and Description

Computer Science Minor Curriculum

A student with a minor in computer science must meet the following requirements:

1. A "C" or better grade in at least 18 credit hours of COMP SCI courses, excluding x9xx courses.
2. A "C" or better grade in at least 9 credit hours of COMP SCI courses at the 2000 or higher level.
3. A "C" or better grade in two of the following courses: [COMP SCI 3100](#), [COMP SCI 2200](#), [COMP SCI 3200](#), [COMP SCI 2300](#), [COMP SCI 2500](#), [COMP SCI 3500](#) and [COMP SCI 3800](#).
4. **At most 6 of the 18 credit hours can be transfer credits and transfer classes must show a "C" or better grade.**

~~A member of the computer science faculty will serve as the student's minor advisor. The student and his/her minor advisor will plan a course of study to meet the specific interests and needs of the student.~~

In Workflow

1. RCOMPSCI 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. kristyg

Approval Path

1. 03/08/17 11:53 am
Sajal Das (sdas):
Approved for
RCOMPSCI Chair
2. 03/08/17 2:35 pm
Kristy Giacomelli
(kristyg): Approved
for CCC Secretary
3. 04/10/17 2:19 pm
srafer: Approved
for Engineering
DSCC Chair
4. 04/10/17 2:22 pm
Kristy Giacomelli
(kristyg): Approved
for Pending CCC
Agenda post
5. 05/10/17 2:35 pm
Lahne Black
(lahne): Approved
for CCC Meeting
Agenda
6. 05/11/17 1:13 pm
Ilene Morgan
(imorgan):
Approved for

Justification for
request

History

1. Apr 28, 2014 by [tauritzd](#)
2. Aug 14, 2014 by [Lahne Black \(lahne\)](#)
3. Jul 15, 2015 by [pantaleoa](#)

The addition of requirement #5 is to correct the inadvertent dropping of this requirement during the last update of the COMP SCI minor. This correction was unanimously approved at the March 1st 2017 COMP SCI faculty meeting.

Supporting
Documents

Course Reviewer
Comments

sraper (04/10/17 2:19 pm): Removed original item # 4 per Daniel Tauritz email.

Program Change Request

Date Submitted: 04/09/17 2:25 pm

Viewing: **CR ENG-BS : Ceramic Engineering BS**

File: 149.21

Last approved: 07/15/15 9:19 am

Last edit: 04/18/17 8:39 am

Changes proposed by: smiller

Catalog Pages
Using this
Program
[Ceramic Engineering](#)

Start Term	Fall 2017 2015
Program Code	CR ENG-BS
Department	Materials Science & Engineering
Title	

In Workflow

1. **RMATSENG 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. **kristyg**

Approval Path

1. 04/09/17 7:47 pm
mjokeefe: Approved for RMATSENG Chair
2. 04/10/17 8:45 am
Kristy Giacomelli (kristyg): Approved for CCC Secretary
3. 04/18/17 8:40 am
srafer: Approved for Engineering DSCC Chair
4. 04/20/17 4:13 pm
Lahne Black (lahne): Approved for Pending CCC Agenda post
5. 05/10/17 2:40 pm
Lahne Black (lahne): Approved for CCC Meeting

Agenda

6. 05/11/17 1:14 pm
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

History

1. Oct 10, 2013 by
Lahne Black (lahne)
2. Apr 22, 2014 by
Lahne Black (lahne)
3. Aug 6, 2014 by
smiller
4. Jun 19, 2015 by
smiller
5. Jul 15, 2015 by
pantaleoa

Ceramic Engineering BS

Program Requirements and Description

Bachelor of Science Ceramic Engineering

Entering freshmen desiring to study ceramic engineering will be admitted to the Freshman Engineering Program. They will be permitted to state a ceramic 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 ceramic engineering a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. A student must maintain an average of at least two grade points per credit hour in ceramic engineering.

Each student's program of study must contain a minimum of 18 credit hours of course work from the humanities and the social sciences areas and should be chosen according to the following rules:

1. All students are required to take one history course and one economics course. The history course is to be selected from [HISTORY 1200](#), [HISTORY 1300](#), [HISTORY 1310](#), or [POL SCI 1200](#). The economics course may be either [ECON 1100](#) or [ECON 1200](#).

- Of the remaining hours, 12 credit hours must be taken in humanities or social sciences from the approved list of humanities and social science (HSS) courses posted on the undergraduate studies website (<http://ugs.mst.edu/>). Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 4000-level.
- Special topics, special problems courses and honors seminars are allowed only by petition to and approval by the student's department chair.

Freshman Year			
First Semester	Credits	Second Semester	Credits
FR ENG 1100	1	MET ENG 1210	3
CHEM 1310	4	MATH 1215	4
CHEM 1319	1	CHEM 1320	3
MATH 1214	4	PHYSICS 1135	4
ENGLISH 1120	3	H/SS Elective	3
H/SS Elective	3	MECH ENG 1720	3
	16		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits
CER ENG 2110	3	CER ENG 2120	3
CER ENG 2210	2	CER ENG 2325	2
CER ENG 2315	2	CER ENG 3230	3
MATH 2222	4	MATH 3304 ¹	3
PHYSICS 2135	4	H/SS Elective	3
		CIV ENG 2200	3
	15		17
Junior Year			
First Semester	Credits	Second Semester	Credits
CER ENG 3315	2	CER ENG 3325	2
CER ENG 3220	3	CER ENG 3410	3
CIV ENG 2210	3	PHYSICS 2305	3
CER ENG 3210	3	H/SS Elective	3
H/SS Elective	3	Technical Elective ²	2
Technical Elective ²	2	Advanced Chemistry Elective ³	3
		CER ENG 4410	3
	16		17
Senior Year			

First Semester	Credits	Second Semester	Credits
CER ENG 4096	3	CER ENG 4097	3
CER ENG 4310	3	CER ENG 4220	3
CER ENG 4250	3	CER ENG 4240	3
ENG MGT 1210	2	Statistics Elective ¹	3
Technical Elective ²	3	Technical Elective ²	3
H/SS Elective	3		
	15		15
Total Credits: 128			

Note 1: Students may substitute [MATH 1208](#) and [MATH 1221](#) for [MATH 1214](#) and [MATH 1215](#), respectively.

¹ All ceramic engineering students must take [MATH 3304](#) and one statistics course (3000-level or higher).

² Technical electives must be selected from upper level engineering and science courses with the advisor's approval.

³ All ceramic engineering students must select an advanced chemistry elective with the advisor's approval. The courses that can be considered are [CHEM 2210](#), [CHEM 2310](#), [CHEM 3410](#), [CHEM 4310](#), CHEM 4810, or [CHEM 3420](#).

~~⁴ All ceramic engineering students must select an advanced chemistry elective with the advisor's approval. The courses that can be considered are CHEM 2210, CHEM 2310, CHEM 3410, CHEM 4310, or CHEM 3420.~~

~~Note 2: Students may substitute CHEM 1320 for MET ENG 1210.~~ Specific Degree Requirements

1. Total number of hours required for a degree in ceramic engineering is 128.
2. The assumption is made that a student admitted in the department has completed 34 hours credit towards graduation. The academic program of students transferring from colleges outside Missouri S&T will be decided on a case-by-case basis.

~~The department requires a total of 18 credit hours of humanities and social science.~~

Justification for
request

Update curriculum, expand elective offerings

Supporting
Documents

Course Reviewer
Comments

sraper (04/18/17 8:39 am): Cer Eng 4220 is a four credit hour course. It needs to be

changed as the hours, and in the intro to "minimum" 129. Awaiting feedback from S. Miller. to see if new three hour tech elective can go back to 2 credit hours. Will bring findings to CCC meeting.

Key: 149

Program Change Request

New Program Proposal

Date Submitted: 04/06/17 9:47 pm

Viewing: **PROPOSED : Latin American
Studies for Technical Applications Minor**

File: 252

Last edit: 05/11/17 2:37 pm

Changes proposed by: audram

Start Term	Fall 2017
Program Code	PROPOSED
Department	Arts, Languages, & Philosophy
Title	

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. **kristyg**

Approval Path

1. 04/06/17 9:50 pm
Audra Merfeld-
Langston (audram):
Approved for
RPHILOSO Chair
2. 04/07/17 11:22 am
Kristy Giacomelli
(kristyg): Approved
for CCC Secretary
3. 04/07/17 11:39 am
Petra Dewitt
(dewittp): Approved
for Arts &
Humanities DSCC
Chair
4. 04/10/17 2:22 pm
Kristy Giacomelli
(kristyg): Approved
for Pending CCC
Agenda post
5. 05/10/17 9:05 am

- Kristy Giacomelli
(kristyg): Rollback
to Arts &
Humanities DSCC
Chair for CCC
Meeting Agenda
6. 05/11/17 2:37 pm
Petra Dewitt
(dewittp): Approved
for Arts &
Humanities DSCC
Chair
7. 05/17/17 8:31 am
Kristy Giacomelli
(kristyg): Approved
for Pending CCC
Agenda post
8. 05/17/17 8:31 am
Kristy Giacomelli
(kristyg): Approved
for CCC Meeting
Agenda
9. 05/17/17 11:17 am
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

Latin American Studies for Technical Applications Minor

Program Requirements and Description

The minor in Latin American Studies for Technical Applications is an interdisciplinary minor that allows students to develop deeper understanding of the cultures and languages of Latin America while simultaneously honing and implementing the technical skills they are acquiring in the courses needed for their majors. This minor aims to include students of all levels of Spanish language, including heritage and native speakers.

The minor requires 12 credit hours from an approved list of courses and at least two weeks (14 days) of experience in a Latin American country as part of an S&T-approved program. The lists for Areas 2 and 3 will grow as other faculty on campus develop courses as part of the minor. The minor also aims for breadth of knowledge. Therefore, courses from one area cannot count twice.

Area 1: Spanish Proficiency. To fulfill this, students must complete 6 hours of Spanish at the level of 1180 (Intermediate Spanish) or above. Courses that count towards this area include:

- SPAN 1180 Intermediate Spanish (4)
- SPAN 2000 Special Problems (0-6)
- SPAN 2001 Special Topics (3)
- SPAN 2110 Basic Spanish Conversation (2)
- SPAN 2160 Hispanic Culture (3)
- SPAN 2161 Contemporary Latin America (3)
- SPAN 2170 Masterpieces of Hispanic Literature (3)
- SPAN 2180 Intermediate Spanish Composition (3)
- SPAN 3000 Special Problems (0-6)
- SPAN 3001 Special Topics (3)
- SPAN 3100 Spanish Translation for Technical Applications
- SPAN 4000 Special Problems (0-6)
- SPAN 4001 Special Topics (3)
- SPAN 4302 Phonetics and Phonology of Spanish (3)
- SPAN 4311 Advanced Spanish Conversation (2)
- SPAN 4370 Survey of Spanish Literature (3)
- SPAN 4377 Spanish-American Novel and Short Story (3)

Area 2: Technical Applications in Latin America. Students must take one of the following courses, for a total of 3 credits. Other courses will be added to Area 2 as they are developed.

- GEO ENG 5092 International Engineering and Design
- GEO ENG 2407 Geology and Engineering of Ancient and Modern Peru
- SPAN 3100 Spanish Translation for Technical Applications
- SP&MS 3235 Intercultural Communication, when the course is focused on Latin America
- GEO ENG 5556 Renewable Energy Systems, when the course is focused on Latin America
- CHEM ENG 5001 Special Topics (TBD)

Area 3: General Latin American Studies. Students must take one of the following, for a total of 3 credits. Other courses will be added to Area 3 as they are developed.

- ENGLISH 3001 / TCH COM 3001 Special Topics (Costa Rica in Text) (3)
- HIST 3001 Special Topics (History of Science & Technology in Latin America) (3)
- SPAN 2160 Hispanic Culture (3)
- SPAN 2161 Contemporary Latin America (3)

Area 4: Experience abroad in Latin America. Students must spend at least 14 days in a Latin American country as part of an S&T-approved program, such as faculty-led study abroad, a semester- or year-long program at partner

institutions, an internship, or EWB. This may be fulfilled via multiple trips to multiple locations within Latin America.

Justification for request

- * Fulfill award conditions of 2-year U.S. Department of Education grant, awarded to create this new minor.
- * Provide experiential learning opportunities for students via study abroad, which address both the experiential learning requirement as well as the university's commitment to double the number of students studying abroad by 2020.
- * Increase the Spanish-language skills areas of our students and faculty to better support current S&T endeavors, especially as they relate to coursework and service trips to Central and South America. Examples include Engineers Without Borders and Miner Challenge.
- * Enhance students' and faculty members' cultural knowledge of Latin America, as well as their intercultural competency, to better serve our university's mission, and especially our international efforts.
- * Increase opportunities for students to participate in internships in Latin America.
- * Increase students' technical knowledge, as it relates to their major discipline, in a way that will provide them with further experience with Latin America.
- * Build bridges and interdisciplinary, collaborative possibilities for students and faculty across CASB and CEC.
- * Create study and research opportunities for students and faculty with partner institutions in Latin America.
- * Provide students with recognition of their developing expertise in Latin America.
- * Create professional development opportunities for students and faculty.

Supporting Documents

[Provost Approval_LASTA Minor.pdf](#)

Course Reviewer Comments

kristyg (04/07/17 11:21 am): I have attached the documents for Dr. Merfeld-Langston

dewittp (04/07/17 11:38 am): Added Minor to the title.

kristyg (05/10/17 9:05 am): Rollback: Rollback per meeting discussion.

dewittp (05/10/17 9:56 am): Clarified Special Topics courses; corrected course

abbreviations. Unable to eliminate extra line space between SPAN 4302 and Span 4311, and between SP&M 3235 and GEO ENG 5556. Also not sure whether ChE is CHEM ENG 5001 and whether that Special Topics course exists. Left as is for now, will contact APL.

dewittp (05/11/17 2:37 pm): Updated Chem Eng 5001 after email conversations.

Key: 252

Program Change Request

Date Submitted: 03/13/17 11:00 am

Viewing: **MI ENG-BS : Mining Engineering BS**

File: 95.16

Last approved: 01/30/15 9:11 am

Last edit: 05/08/17 4:13 pm

Changes proposed by: cifarellit

Catalog Pages

Using this

Program

[Mining Engineering](#)

Start Term **Fall 2017** ~~8/1/2014~~

Program Code MI ENG-BS

Department Mining & Nuclear Engineering

Title

In Workflow

1. **RMINNUCL 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. **kristyg**

Approval Path

1. 03/13/17 1:00 pm
Braden lusk (blusk):
Approved for
RMINNUCL Chair
2. 03/15/17 3:25 pm
Kristy Giacomelli
(kristyg): Approved
for CCC Secretary
3. 04/10/17 3:57 pm
srafer: Approved
for Engineering
DSCC Chair
4. 04/10/17 4:00 pm
Kristy Giacomelli
(kristyg): Approved
for Pending CCC
Agenda post
5. 05/10/17 2:40 pm
Lahne Black
(lahne): Approved
for CCC Meeting

Agenda

6. 05/11/17 1:16 pm
 Ilene Morgan
 (imorgan):
 Approved for
 Campus Curricula
 Committee Chair

History

1. Apr 28, 2014 by
 Kwame Awuah-
 Offei (kabp3)
2. Jan 30, 2015 by
 Tina Alobaidan
 (cifarellit)

Mining Engineering BS

Program Requirements and Description

Bachelor of Science Mining Engineering

Entering freshmen desiring to study Mining Engineering will be admitted to the Freshman Engineering Program. They will, however, be permitted, if they wish, to state a Mining Engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Freshman Engineering program is on fundamental sciences and mathematics, 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. In addition, students who state the Mining Engineering preference are required to complete Mining Engineering 2126 during the first or second semester on campus.

For the Bachelor of Science degree in Mining Engineering a minimum of 128 credit hours is **required, although completion of an emphasis area may require up to 132 credits.** ~~required.~~ These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. A student must maintain at least two grade points per credit hour for all courses taken in the student's major department, and an average of at least two grade points per credit hour must be maintained in Mining Engineering.

Each student's program of study must contain a minimum of 21 credit hours of course work in general education and must be chosen according to the following rules:

1. All students are required to take one American **History** ~~history~~ course, **two** ~~one~~ economics **courses**, **one** ~~course~~, **one** humanities **course**, **ENGLISH 1120** and either **ENGLISH 1160**, **ENGLISH 3560** or **TCH COM 1600**. ~~course and ENGLISH 1120.~~ The history course is to be selected from [HISTORY 1200](#) , [HISTORY 1300](#) , [HISTORY 1310](#) , or [POL SCI 1200](#) . The economics **courses must** ~~course may~~ be either [ECON 1100](#) or **ECON 1200**, and **ECON 3512** . ~~ECON 1200.~~ The

humanities course must be selected from **"The Approved List of Humanities and Social Science Courses the approved lists for Engineering Degrees"**, maintained by the Office of Undergraduate Studies.

2. ~~art, English, foreign languages, music, philosophy, speech and media studies, or theater.~~ The Of the remaining **three** hours, six credit hours must be taken from **"The Approved List of Humanities in humanities or social sciences at the 2000-level or above and Social Science Courses for Engineering Degrees"**. must be selected from the approved lists. Each of these courses must have as a prerequisite one of the humanities or social sciences courses already taken. **Foreign Foreign** language courses can be considered to be one of these courses. (Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 4000 or 5000 level.)
3. ~~Some departments list specific requirements; e.g., a psychology course, a literature course, and/or a second semester of economics. Selections should be made to ensure that these requirements are met.~~ Special topics, special problems courses and honors seminars are allowed only by petition to and approval by the student's department chairman.

The Mining 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
MATH 1214	4	MATH 1215	4
General Education Elective^{1,4}	3	PHYSICS 1135	4
GEO ENG 1150	3	MECH ENG 1720	3
CHEM 1310	4	MIN ENG 1912	2
CHEM 1319	1	MIN ENG 2126	1
CHEM 1100	1	GEOLOGY 2611	3
FR ENG 1100	1	General Education Elective^{1,2}	3
HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3	GEO ENG 1150	3
ENGLISH 1120	3		
	17		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits
MATH 2222	4	MATH 3304	3
GEOLOGY 3310	3	CHEM 3410	3
GEOLOGY 3319	4	General Education Elective^{1,4}	3
MIN ENG 2925	2	MIN ENG 2412	3
MIN ENG 3912	3	MECH ENG 2527	3
General Education Elective^{1,3}	3	MECH ENG 2350	2

MIN ENG 3913	3	PHYSICS 2135	4
CIV ENG 2200	3	MECH ENG 2340	3
ECON 1100 or 1200	3		
	18		15
Junior Year			
First Semester	Credits	Second Semester	Credits
MIN ENG 3913	3	MIN ENG 4522	3
STAT 3113 or 3115	3	MIN ENG 4113	3
General Education Elective^{1,5}	3	MIN ENG 4932	3
NUC ENG 3221 or CIV ENG 3330	3	MIN ENG 4512	3
MIN ENG 4932	3	MIN ENG 4933	3
CIV ENG 2210	3	MIN ENG 4823	3
CIV ENG 3330	3	ENGLISH 1600, or 1160, or 3560	3
MIN ENG 3412	3		
ECON 3512	3		
GEOLOGY 3310	3		
	18		15
Senior Year			
First Semester	Credits	Second Semester	Credits
MIN ENG 5612	3	MIN ENG 4742	3
MIN ENG 4912	3	MIN ENG 4097	4
MIN ENG 4824	2	Technical Elective ^{1,2,3,4,5,6}	3
General Education Elective^{1,6}	3	General Education Elective^{1,7}	3
MIN ENG 4096	3	H/SS Elective	3
MIN ENG 4113	3		
H/SS Elective	3		
	15		13
Total Credits: 128			

¹ **Explosives Engineering Emphasis:** [MIN ENG 5622](#) (Blasting Tech) and either [MIN ENG 4001](#) (Special Topics Explosives), [MIN ENG 4099](#) (Undergraduate Research in Explosives), [MIN ENG 4823](#) (Rock Mechanics) or [MIN ENG 4922](#) (Tunneling/Construction) have to be taken as Technical Electives.

² **Quarrying Emphasis:** Two of [CIV ENG 3116](#) (Construction Materials); [MIN ENG 4212](#) (Advanced Aggregate and

Quarrying); and [MIN ENG 4412](#) (Aggregate Materials) have to be taken as Technical Electives.

3 **Coal Emphasis:** Two of [MIN ENG 4322](#) (Coal Mine Development and Production), [MIN ENG 4414](#) (Mine Plant Management) or an approved substitute course must be taken as Technical Electives.

4 **Mining and the Environment Emphasis:** [GEO ENG 5235](#) (Environmental Geological Engineering) and [GEO ENG 5233](#) (Risk Assessment in Environmental Studies), or approved substitute courses have to be taken as Technical Electives.

5 **Mining Health and Safety Emphasis:** [MIN ENG 3002](#) (Mine Rescue), [ENG MGT 4330](#) (Human Factors), or other approved substitute courses must be taken as Technical Electives.

6 **Sustainable Development Emphasis:** [POL SCI 3310](#) (Public Policy Analysis), [ECON 4440](#) (Environmental and Natural Resource Economics), or other approved substitute courses must be taken as Technical Electives.

~~7 **Sustainable Development Emphasis:** [POL SCI 3310](#) (Public Policy Analysis), [ECON 4440](#) (Environmental and Natural Resource Economics), or other approved substitute courses must be taken as Technical Electives.~~

~~8 Mining courses in *italics* are offered every semester.~~

Graduating Mining Engineers Examination

Mining engineering students must complete the **Fundamentals of Engineering Graduating Mining Engineers (GME)** Examination prior to graduation as a senior assessment requirement. A passing grade ~~on this examination~~ is **not** required to earn a B.S. **degree in mining engineering; however it is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process. Students must sign a release form giving the University access to their Fundamentals of Engineering Examination score.**

~~degree in mining engineering. The GME Exam ination comprises the Surface Mining Engineering (SME) and Underground Mining Engineering (UME) Examinations. The SME Exam focuses on MIN ENG 3912 Materials Handling In Mines, MIN ENG 2914 Surface Mine Design, [MIN ENG 3412](#) [Course MIN ENG 3412 Not Found](#), MIN ENG 5612 Principles of Explosives Engineering, MIN ENG 4933 Surface Mining Methods And Equipment, and MIN ENG 4824 Soils and Overburden Materials for Mining Engineering. The UME Exam focuses on MIN ENG 2924 Underground Mine Design, MIN ENG 3512 Mining Industry Economics, MIN ENG 4912 Mine Power And Drainage, MIN ENG 4932 Underground Mining Methods And Equipment, and MIN ENG 4823 Rock Mechanics. Mining engineering students are required to pass the GME Exam in order to graduate. The GME Exam will be graded with Pass or Fail designation. A mark below 50% will be assigned a failing grade and a mark of 85% or above will be a Pass with Distinction. Graduating seniors will have two opportunities to complete the GME requirement. However, students who fail these two attempts can register and complete the examination after completing the required 128 credits in Mining Engineering.~~ **Mining Health and Safety Emphasis**

Junior and Senior Years		
MIN ENG 3002	Mine Rescue (or approved substitute course in lieu of Technical Elective.)	3
ENG MGT 4330	Human Factors (or approved substitute course in lieu of Technical Elective.)	3

Sustainable Development Emphasis

Junior and Senior Years		
POL SCI 3300	Principles Of Public Policy (or approved substitute course in lieu of Technical Elective.)	3
ECON 4440	Environmental And Natural Resource Economics (or approved substitute course in lieu of Technical Elective.)	3

Quarrying Engineering Emphasis

Senior Year		
CIV ENG 3116	Construction Materials, Properties And Testing (in lieu of Technical Elective.)	3
MIN ENG 4212	Advanced Aggregate and Quarrying (in lieu of Technical Elective.)	3

Explosives Engineering Emphasis

Junior and Senior Years		
Choose one of the following courses in lieu of Technical Elective in Junior Year:		
A three-credit hour explosives engineering (EXP ENG) course		
MIN ENG 4922	Tunneling & Underground Construction Techniques	
or MIN ENG 5922	Advanced Tunneling & Underground Construction Techniques	
GEO ENG 5471	Rock Engineering	
In lieu of Technical Elective in Senior Year:		
EXP ENG 5622	Blasting Design And Technology	

Coal Emphasis

Junior and Senior Years		
MIN ENG 4322	Coal Mine Development And Production (in lieu of Technical Elective.)	3
MIN ENG 4414	Mine Plant Management (or approved substitute course in lieu of Technical Elective.)	2

Mining and the Environment Emphasis

Junior and Senior Years		
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ENV ENG 5640	Environmental Law And Regulations	3
GEO ENG 5233	Risk Assessment In Environmental Studies (or approved substitute course in lieu of Technical Elective.)	3

Justification for request

1. DELETE footnote 1.

- Justification. We have simplified our guidance on general education credits and this footnote is no longer necessary.

2. ADD English 1120 to first Semester freshman year (DELETE same class from 2nd semester Freshman year)

- Justification. More closely aligns with what FE enrolls them in.

3. ADD Geo Eng 1150 Intro to Physical Geology to 2nd Semester Freshman year (DELETE the same course from 1st semester freshman year)

- Justification. More closely aligns with what FE enrolls them in.

4. INCREASE Min Eng 1912 credit hours from 1 to 2 in freshman year 2nd semester

- Justification. More mining material can be covered to set students up for upper level mining classes.

5. DELETE Geo Eng 2611 Mineralogy and Petrology from 2nd Semester freshman year

- To keep credit hours at 128, a single course will be created 'Mineral Identification and Exploration' that will combine current Min and Pet with Exploration. This is a sophomore class.

6. REPLACE 'General Education Elective' with HSS history 1200, 1300, 1310 or Pol Sci 1200. In 1st semester freshman year.

- Justification. Removed footnote and simplifying curriculum.

7. MOVE calculus to the top of the list for first semester freshman year

- Justification. Important class at the top.

8. DELETE Geology 3319 Structural Geology Lab from the 1st semester of the sophomore year.

- Justification: Lab experience in structural geology not required for mining engineering students. Interested mining students could take this course as an elective.

9. ADD Civ Eng 2200 Engineering Statics in 1st semester of sophomore year.

- Justification: Civ Eng 2200 is a prerequisite for Civ Eng 2210, which is required in the 1st semester of the junior year. This addition fixes a problem created in the old curriculum where students were not required to take the prerequisite for a required

course.

10. ADD Min Eng 3931 Mineral Identification and Exploration to 1st Semester Sophomore year (DELETE Mining Exploration from 1st semester Junior year)

- Justification. Rock ID will be covered in this lab and is more suitable to come before Structural Geology.

11. REPLACE 'General Education Elective' with HSS Econ 1100 or 1200 Macro/Micro in 1st semester sophomore year.

- Justification. Removed footnote and simplifying curriculum.

12. ADD Mech Eng 2350 Engineering Mechanics-Dynamics in 2nd semester of sophomore year.

13. DELETE Mech Eng 2340 Statics and Dynamics from 2nd semester of sophomore year.

- Justification: Since Civ Eng 2200 is now required for mining engineers, Mech Eng 2340 is no longer necessary since Statics is already taught. The addition of Mech Eng 2350 (Dynamics) makes up for the Dynamics aspects. This also meets the prerequisite for Civ Eng 3330 Engineering Fluid Mechanics.

14. ADD Min Eng 3412 Principles of Mineral Processing to 2nd semester of sophomore year. (DELETE the same course from 1st semester of junior year.)

- Justification: Introduce an essential mining engineering course in the sophomore year so students can build on the knowledge later.

15. REPLACE Chem 3410 Chemical Thermodynamics with Mech Eng 2527 Thermal Analysis in Second Semester Sophomore Year.

- Justification: more availability in class.

16. PERMIT Stat 3115 as an alternative to Stat 3113.

- Justification: Both courses meet the needs of mining engineering students. This provides our students flexibility without many substitution and waiver forms.

17. ADD Min Eng 4932 U/G Mining Methods & Equipment to 1st semester of junior year. (DELETE the same course from 2nd semester of junior year.)

- Justification: Better distribution of mining engineering courses.

18. ADD Geo 3310 to 1st semester of junior year. (DELETE the same course from 1st semester of sophomore year.)

- Justification: Come after Mineral ID

19. PERMIT Nuc Eng 3221 as an alternative to Civ Eng 3330 in the 1st semester of junior year.

- Justification: Both courses meet the needs of mining engineering students. This also

brings teaching capacity to MNE department.

20. REPLACE 'General education elective' with HSS Econ 3512 Mining Industry Economics in 1st semester of junior year.

- Justification: mining econ approved as HSS but advised to put econ on curriculum to pass through easier...

21. ADD Min Eng 4512 to 2nd Semester Junior year.

- Justification: used to be an HSS. No longer approved and adding as required mining class.

22. ADD English 1600, 1160 or 3560 to Second Semester Junior Year. Remove 'General Education Elective' from second semester sophomore year.

23. DELETE MIN ENG 4824 Soils and Overburden Materials for Mining Engineering.

- Justification. To keep total credit hours down to 128.

24. ADD Min Eng 4113 Mine Atmosphere Control to 1st semester Senior Year. DELETE same class from 2nd semester Junior Year.

Supporting

Documents

Course Reviewer

Comments

sraper (09/07/16 9:51 am): Rollback: Mining Eng 4512 cannot be a General Ed Elective even though co-list with Econ. Foot note 1,6. Issues with footnotes in general with tech electives and Gen Ed sharing same footnotes.

smetg6 (09/07/16 11:20 am): Rollback: Rolling back per Engineering DSCC Chair notes

btlf7c (03/02/17 9:38 am): Rollback: This was rejected on the basis of the previous mess with ECON. We did get that problem solved with the committees on campus. Now we can push this change through with the rest. I actually knew this was sitting here, and i was just waiting for the curriculum approval by the department before moving forward. I didn't want two changes going through at once to the degree program. I suppose it does make sense for us to start with this as the basis for all of the changes you need to make!

btlf7c (03/13/17 11:32 am): 1

sraper (04/10/17 3:57 pm): Mining Eng 3412 in Second Semester, Sophomore year should be Mining Eng 2412. HSS electives should have footnote. Foot note 7 should be deleted. A general note needs to be added, or footnotes 1 - 6 should have a statement

indicating these emphasis areas will require an additional 3 credit hours to obtain the emphasis. Reason for these is that I am not quite sure how to make these changes in the system.

imorgan (05/08/17 3:59 pm): Fixed some details.

imorgan (05/08/17 4:13 pm): Completed clean-up pending change of Min Eng 1912 from 1 to 2 credits, which we will try to expedite onto the May CCC agenda.

Key: 95

Program Change Request

Date Submitted: 04/09/17 8:22 pm

Viewing: **MI ENG-MS : Mining Engineering MS**

File: 169.7

Last approved: 07/23/15 4:16 pm

Last edit: 05/10/17 2:45 pm

Changes proposed by: pworsey

Catalog Pages

Using this

Program

[Mining Engineering](#)

Start Term	Fall 2017 2015
Program Code	MI ENG-MS
Department	Mining & Nuclear Engineering
Title	

In Workflow

1. **RMINNUCL 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. **kristyg**

Approval Path

1. 04/10/17 6:43 am
Braden lusk (blusk):
Approved for
RMINNUCL Chair
2. 04/10/17 8:45 am
Kristy Giacomelli
(kristyg): Approved
for CCC Secretary
3. 04/18/17 8:42 am
srafer: Approved
for Engineering
DSCC Chair
4. 04/20/17 4:12 pm
Lahne Black
(lahne): Approved
for Pending CCC
Agenda post
5. 05/10/17 2:47 pm
Lahne Black
(lahne): Approved
for CCC Meeting

Agenda

6. 05/11/17 1:20 pm
 Ilene Morgan
 (imorgan):
 Approved for
 Campus Curricula
 Committee Chair

History

1. Apr 28, 2014 by Kwame Awuah-Offei (kabp3)
2. Aug 5, 2014 by pantaleoa
3. Jul 23, 2015 by pantaleoa

Mining Engineering MS

Program Requirements and Description

The mining engineering program in the department of mining and nuclear engineering offers the graduate certificate, master of engineering (M.E.), master of science (M.S.), doctor of philosophy (Ph.D.) and doctor of engineering (D.E.) degrees in mining engineering. The M.S. **with thesis** and Ph.D. degrees require research components for program completion. The core research strengths include surface mining methods and heavy mining machinery, mine ventilation and mine atmospheric control, explosives engineering, sustainable development and mine optimization, rock mechanics and ground control, minerals, coal and materials processing, minerals and energy economics, and underground mining methods and equipment. Graduate students in any of these programs must consult the graduate degree requirements in mining engineering, the graduate catalog of Missouri S&T and their respective advisors.

The graduate certificate program requires **12** ~~15~~ credit hours in core courses. Students must have a minimum cumulative GPA of 3.00/4.00 to receive the graduate certificate in mining engineering. The ME program requires a minimum of 30 credit hours, offered via distance (online). The required credit hours include 15 core credit hours, 12 credit hours in technical electives and 3 credit hours for a semester **project**. ~~project. The M.S.~~ **The mining engineering program offers an M.S. degree with thesis for onsite students and an M.S. by coursework option for distance students. The M.S. degree with thesis option** requires a minimum of 30 credit hours, including the required research for the thesis. The program requirements must include a minimum of 6 credit hours of 6000-level **lecture** courses, 6 credit hours of courses outside the major field, and 6 credit hours for **thesis** ~~thesis~~ research. M.S. candidates must pass a final oral examination of the thesis to complete the **program**. ~~program. The Ph.D.~~ **The M.S. degree by coursework option requires a minimum of 30 credit hours, including a minimum of 9 credit hours of 6000-level lecture courses and 3 credit hours for a semester project. The Ph.D.** program requires a minimum of 3 years of full-time study beyond the bachelor's degree, including research work for the dissertation. Ph.D. candidates must complete at least 15 credit hours of

course work at Missouri S&T and are required to pass the qualifying, comprehensive and final oral examinations of the Ph.D. program. The D.E. degree requires a minimum of 3 years of full-time study beyond the bachelor's degree, including research work for the dissertation. D.E. students must pass the qualifying, comprehensive and final oral examinations and must also satisfy an engineering internship requirement.

Major Research Areas

The eight research major areas include (i) surface mining methods and heavy mining machinery; (ii) mine ventilation and mine atmospheric control; (iii) explosives engineering; (iv) sustainable development and mine optimization; (v) rock mechanics and ground control; (vi) mineral, coal and materials processing; (vii) minerals and energy economics; and (viii) underground mining methods and equipment. **Surface mining methods and heavy mining machinery research** focuses on surface mining, formation excavation, heavy machinery imaging and integration, mine safety and health, machine and component health, equipment vision, intelligent mining systems and stochastic processes and risks simulation. Specific research frontiers include (i) mining methods, design and production systems; (ii) formation failure dynamics, machine-formation interactions; (iii) kinematics, dynamics and virtual prototype simulation; (iv) machine health and longevity; (v) augmented equipment vision; (vi) machine vibrations and operator health; (vii) tire durability management; (viii) intelligent excavation; (ix) machine automation; (x) random fields and stochastic processes; (xi) numerical, parametric and stochastic simulation.

Mine ventilation and mine atmospheric control research focuses on mine ventilation network modeling and planning, diesel particulate matter (DPM), mine dust control, mine fire simulation and firefighting. Specific research frontiers include (i) ventilation network simulation, (ii) DPM discharge dissipation modeling and control strategies, (iii) spontaneous combustion modeling, firefighting and emergency planning; and (iv) computational fluid dynamics modeling of particulate matter. **Explosives engineering research** focuses on improvements in commercial explosives and blasting agents, mining-related uses of explosives, explosives safety, blast-resistant structures, barriers to blast, fragments, and ballistic penetration, and explosive-driven pulsed power. Specific research frontiers include (i) design, evaluation, analysis, and test; (ii) barrier concepts, standoff distance analysis, barrier design and test; (iii) design, evaluation, analysis, and test of explosive-driven pulsed power generator concepts and power conditioning systems.

Sustainable development and mine optimization research focuses on reserve estimation and ore control, production scheduling and optimization, and critical materials sustainability assessment and modeling. Specific research frontiers include (i) geostatistics, ore (dig) outline optimization; (ii) mixed integer LP formulations, computational efficiency, discrete event simulation, optimization, energy efficiency modeling; (iii) mining applications of life cycle assessment, life cycle sustainability assessment, social acceptance modeling, global critical material supply chain sustainability modeling, reclaimed mine land stray-gas hazards. **Rock Mechanics and ground control** research focuses on ground control, acoustic emission/microseismic, geophysical methods in mines, and non-destructive testing. Specific research frontiers include (i) pillar design, mine support, rockburst, slope stability; (ii) monitoring design, location methods, error analysis; (iii) geotomography, in-seam seismic method, void detection; and (iv) integrity of structures and monitoring of aging infrastructure.

Minerals, coal and materials processing research focuses on mineral processing, tailings management, polymer science, nanotechnology, interfacial science, colloidal interactions in aqueous systems, clays, coal-based fuels, ultrafine and submicron grinding, slurry rheology, carbon separation and synthetic fuels. **Minerals and energy economics research** focuses on supply and use of minerals and energy in society, minerals and energy markets and electricity markets, minerals and energy and economic growth, economics of minerals and energy infrastructure, minerals and energy policy, minerals and energy derivatives, minerals and energy demand forecast, elasticity of supply and demand in minerals and energy markets, climate change and climate policy, and

sustainable minerals and energy development. **Underground mining methods and equipment research** focuses on mass mining, machine design and automation, underground mine support, machine vibration, novel mining methods, numerical modeling, virtual prototype simulation and computational fluid dynamics.

Major Research Facilities

Mining, minerals and explosives engineering research initiatives are carried out in world-class environments at Missouri S&T. Major research facilities include the following:

- [Energetic Materials Research Center](#)
 - [Experimental Mine](#)
 - [Mineral Processing Laboratory](#)
 - [Rock Mechanics and Explosives Research Center](#)
 - [Rock Mechanics Laboratory](#)
 - [Virtual Surface Mining Simulator](#)
 - [High Pressure Waterjet Laboratory](#)
-

Justification for request

The mining engineering program wishes to phase out the Masters of Engineering (M.E.) and replace it with a Master of Science (M.S.) by coursework option for distance students. The M.E. degree is now rare and most distance masters degrees are Master of Science (M.S.). The M.E. is looked on as a peculiarity and not mainstream and inferior to the M.S. We think this will increase the marketability of the program. Offering the M.E. has been a detriment to our distance students in certain cases. The M.S. by coursework option will comply with existing minimum master's standards.

Our strategy is as follows:

Once the M.S. by coursework option for distance students is approved, we will replace the M.E. with the new program. Existing M.E. students will be given the option to transfer to the M.S. by coursework option and once the last remaining M.E. candidate has graduated or transferred we will then move to deactivate the M.E. program. We see this as one of our major strategies in increasing our distance enrolment, with the requested changes to the catalog description.

The graduate certificate program was also changed to 12 credit hours, as in the current catalog (which is correct).

Supporting Documents

Course Reviewer

Comments

lahne (05/10/17 2:45 pm): .

Key: 169

Program Change Request

Date Submitted: 04/09/17 2:20 pm

Viewing: **MT ENG-BS : Metallurgical Engineering BS**

File: 90.24

Last approved: 03/27/17 2:47 pm

Last edit: 05/10/17 2:50 pm

Changes proposed by: smiller

Catalog Pages
Using this
Program
[Metallurgical Engineering](#)

In Workflow

1. **RMATSENG 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. **kristyg**

Start Term	Fall 2017
Program Code	MT ENG-BS
Department	Materials Science & Engineering
Title	

Approval Path

1. 04/09/17 7:47 pm
mjokeefe: Approved for RMATSENG Chair
2. 04/10/17 8:45 am
Kristy Giacomelli (kristyg): Approved for CCC Secretary
3. 04/18/17 8:45 am
srafer: Approved for Engineering DSCC Chair
4. 04/20/17 4:12 pm
Lahne Black (lahne): Approved for Pending CCC Agenda post
5. 05/10/17 2:50 pm
Lahne Black (lahne): Approved for CCC Meeting

Agenda

6. 05/11/17 1:21 pm
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

History

1. Oct 8, 2013 by
Lahne Black (lahne)
2. Apr 28, 2014 by
Lahne Black (lahne)
3. Aug 14, 2014 by
Lahne Black (lahne)
4. Aug 20, 2014 by
pantaleoa
5. Aug 20, 2014 by
pantaleoa
6. Aug 20, 2014 by
pantaleoa
7. Jul 21, 2015 by
pantaleoa
8. Mar 7, 2016 by
smiller
9. Mar 27, 2017 by
smiller

Metallurgical Engineering BS

Program Requirements and Description

Bachelor of Science Metallurgical Engineering

Entering freshmen desiring to study metallurgical engineering will be admitted to the Freshman Engineering Program. They will be permitted to state a metallurgical 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 metallurgical engineering a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. A student must maintain an average of at least two

grade points per credit hour in metallurgical engineering.

The metallurgical engineering curriculum contains a required number of hours in humanities and social sciences as specified by the Engineering Accreditation Commission of ABET. Each student's program of study must contain a minimum of 18 credit hours of course work from the humanities and the social sciences areas and should be chosen according to the following rules:

1. All students are required to take one American history course and one economics course. The history course is to be selected from [HISTORY 1200](#), [HISTORY 1300](#), [HISTORY 1310](#), or [POL SCI 1200](#). The economics course may be either [ECON 1100](#) or [ECON 1200](#).
2. Of the remaining hours, six credit hours must be taken in humanities or social sciences from the approved list of humanities and social science (HSS) courses posted on the undergraduate studies website (<http://ugs.mst.edu/>). Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 4000 level.)
3. Special topics, special problems courses and honors seminars are allowed only by petition to and approval by the student's department chair.

Freshman Year			
First Semester	Credits	Second Semester	Credits
FR ENG 1100	1	MET ENG 1210²	3
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	MATH 1215	4
MATH 1214	4	PHYSICS 1135	4
ENGLISH 1120	3	Hum/Soc Sci Elective ¹	3
Hum/Soc Sci Elective ¹	3	MECH ENG 1720	3
	16		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits
PHYSICS 2135	4	CER ENG 3230	3
MATH 2222	4	CIV ENG 2210	3
MET ENG 2110	3	MET ENG 2125	2
CIV ENG 2200	3	MET ENG 3130	3
Hum/Soc Sci Elective ¹	3	MET ENG 3420	3
		MET ENG 3425	1
		Hum/Soc Sci Elective¹	3
	17		15
Junior Year			
First Semester	Credits	Second Semester	Credits
MET ENG 3320	3	ENG-MGT 1100	4
MATH 3304²	3	ENG-MGT 1210	2

MET ENG 3120	3	MET ENG 3225	1
MET ENG 3125	2	MET ENG 3220	3
MET ENG 4420	3	CER ENG 3410	3
Communication Elective ¹	3	Core Elective ⁴	3
		Core Elective I⁵	3
		Out of Department Technical Elective³	3
		Hum/Soc Sci Elective¹	3
	17		16
Senior Year			
First Semester	Credits	Second Semester	Credits
MET ENG 4096	3	MET ENG 4097	3
Statistics Course ²	3	Hum/Soc Sci Elective ¹	3
MET ENG 4350	3	Technical Elective ⁵	3
Core Elective⁴	3	Free Elective ⁶	3
Technical Elective ⁵	3	Core Elective⁴	3
Technical Elective⁶	3		
	15		15
Total Credits: 128			

¹ Eighteen hours of required H/SS electives of which three hours must be history ([HISTORY 1200](#), [HISTORY 1300](#), [HISTORY 1310](#), or [POL SCI 1200](#)), three hours of economics ([ECON 1100](#) or [ECON 1200](#)) and three hours communications ([ENGLISH 1160](#), [ENGLISH 3560](#), or [SP&M S 1185](#))

² All metallurgical engineering students must take [MATH 3304](#) and one statistics course ([STAT 3113](#) or [STAT 3115](#))

³ [CHEM ENG 5320](#), [CHEM 2210](#) or [CHEM 2310](#) or [CHEM 3410](#) or CHEM 4810, [ELEC ENG 2100](#) & [ELEC ENG 2101](#) or [ELEC ENG 2800](#), [GEOLOGY 2610](#), [MATH 5603](#) or [MATH 5325](#), [MECH ENG 5212](#) or [MECH ENG 5220](#) or [MECH ENG 5229](#) or [MECH ENG 5236](#) or [MECH ENG 5238](#) or [MECH ENG 5282](#), [MIN ENG 2412](#), [PHYSICS 2305](#) or [PHYSICS 2311](#), STAT 5120 or STAT 5346 or STAT 5353.

⁴ Metallurgical Core Electives (9 hours): Core Elective I - Introduction to Particulate Materials ([MET ENG 5150](#)) or Corrosion And Its Prevention ([MET ENG 4230](#)), Core Elective II - Steelmaking ([MET ENG 4450](#)) or Steels And Their Treatment ([MET ENG 4320](#)), Core Elective III - Intro to ICME (CER ENG 4410) or Phase Equilibria (CER ENG 3220) or Refractories (CER ENG 5250) or Chemistry and Inherent Properties of Polymers (CHEM 4810).

⁵ Technical Electives (MET ENG or approved listing)

⁶ Free Electives (3 hours)-algebra, trigonometry, basic ROTC, and courses considered remedial excluded

~~⁷ Free Electives (3 hours)-algebra, trigonometry, basic ROTC, and courses considered remedial excluded~~

Justification for
request

Update curriculum, expand elective offerings

Supporting
Documents

Course Reviewer

Comments

sraper (04/18/17 8:45 am): Mining Eng 3412 should correct with approved CC Form.

lahne (05/10/17 2:50 pm): edited footnote #3 to correct course number change

Key: 90

Program Change Request

Date Submitted: 03/22/17 1:13 pm

Viewing: **PSYCH-BA : Psychology BA**

File: 192.15

Last approved: 07/21/15 2:31 pm

Last edit: 03/22/17 1:13 pm

Changes proposed by: weidnern

Catalog Pages
Using this
Program
[Psychology](#)

Start Term	Fall 2017 2015
Program Code	PSYCH-BA
Department	Psychological Science
Title	

In Workflow

1. **RPSYCHOL 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. **kristyg**

Approval Path

1. 03/23/17 11:21 am
murray: Approved
for RPSYCHOL
Chair
2. 03/24/17 12:00 pm
Kristy Giacomelli
(kristyg): Approved
for CCC Secretary
3. 03/24/17 1:10 pm
Barry Flachsbart
(barryf): Approved
for Social Sciences
DSCC Chair
4. 04/10/17 2:22 pm
Kristy Giacomelli
(kristyg): Approved
for Pending CCC
Agenda post
5. 05/10/17 2:53 pm
Lahne Black
(lahne): Approved

for CCC Meeting
Agenda

6. 05/11/17 1:21 pm
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

History

1. Aug 4, 2014 by nstone
2. Mar 20, 2015 by nstone
3. Jun 19, 2015 by nstone
4. Jul 21, 2015 by pantaleoa

Psychology BA

Program Requirements and Description

Bachelor of Arts Psychology

A minimum of 120 credit hours is required for a bachelor of arts degree in psychology and an average of at least two grade points per credit hour must be obtained. The psychology B.A. curriculum requires 23 hours of basic skills and concepts. That is, 6 hours of English Composition, 6 hours of western civilization, and 11-16 hours of foreign language. 12 semester hours in humanities must be taken with at least one course taken in each of the three areas of literature (English and American), philosophy, and fine arts (art, music and theater), but not to include studio and performance offerings. A minimum of 12 semester hours is required in social sciences in at least two of the following three areas: economics, political science, and history. A minimum of 12 hours of math and science are required and a minimum of 34 hours are required in psychology. Up to 12 credit hours of advanced ROTC may be credited toward the degree. Specific requirements for the bachelor of arts degree are outlined in the sample program listed below.

1. [ENGLISH 1120](#) and one additional three hour composition course (6 hours).
2. Western civilization ([HISTORY 1100](#) and [HISTORY 1200](#)) (6 hours).
3. Foreign languages for at least 3 semesters of basic study in French, German, Russian, Spanish or an approved substitute; or one year of basic study in a foreign language in either French, German, Russian, Spanish, or an approved substitute , and a humanities or social sciences course taught in a foreign country and employing the language of that country; or one year of basic study in each of two of the foreign languages of French, German, Russian or Spanish or an approved substitute (11-16

hours).

4. Sciences. At least one course taken in biological (biological sciences) and physical (chemistry, geology and geophysics, physics) sciences. At least one statistics course. A laboratory course is required (and a lab offered in engineering also may count at the discretion of the student's major advisor) toward the total requirement (12 hours).
5. Humanities and fine arts. Courses used to satisfy this requirement must include one course in each of the three areas of literature (English or American), philosophy, and fine arts (art, music or theater), but not to include studio and performance offerings (12 hours).
6. Social Sciences. At least two of the following social science areas are to be included: economics, political science, or history (12 hours).
- 7.

Psychology Courses (34 hours)		
Required:*		
General Skills Courses:		
<u>PSYCH 1100</u>	Introduction to Psychology	1
<u>PSYCH 1101</u>	General Psychology	3
<u>PSYCH 2200</u>	Research Methods	4
Content Courses:		
<u>PSYCH 3310</u>	Developmental Psychology	3
<u>PSYCH 4400</u>	Cognitive Psychology	3
<u>PSYCH 4501</u>	Abnormal Psychology	3
<u>PSYCH 4600</u>	Social Psychology	3
And one of the following 2 courses:		
<u>PSYCH 4410</u>	Neuroscience	3
<u>PSYCH 4411</u>	Sensation and Perception	3
Capstone Course:		
Select three credit hours from the Capstone courses:		
<u>PSYCH 3110</u>	History Of Psychology	3
<u>PSYCH 4010</u>	Seminar	0-6
<u>PSYCH 4099</u>	Undergraduate Research	0-6
<u>PSYCH 4200</u>	Tests and Measurements	3
<u>PSYCH 4590</u>	Health Psychology	3
<u>PSYCH 4994</u>	Psychology in Media	3
<u>PSYCH 4992</u>	Cross-Cultural Psychology	3
<u>PSYCH 4993</u>	Psychology of Gender	3
<u>PSYCH 4990</u>	Internship	0-6

***These required courses total 26 hours.**

Elective Courses:

Select an additional 8 hours of psychology electives to complete the 34 hour degree requirement.

8. ~~Psychology (34 hours): Introduction to Psychology (PSYCH 1100), General Psychology (PSYCH 1101), and capstone course (PSYCH 3110, PSYCH 4200, PSYCH 4990, PSYCH 4010, PSYCH 4993, PSYCH 4590, PSYCH 4994, PSYCH 4992, or PSYCH 4099, 3 hours credit). Three additional courses from each of the following two areas of psychology: Sensation and perception, cognitive, learning, neuroscience, developmental, abnormal, social, or personality. Educational, adolescent, human-computer interaction, industrial, human factors, clinical, group dynamics, or organizational. Electives from psychology to complete the 34 hour major requirement.~~ Major-field requirements: A cumulative grade point average of 2.0 must be earned in all course work taken in the major field. Upper-class (3000-4000-level) courses completed with grades of "D" may not be included in the **course work for major field without the major field without approval of the approval of chair of the chair of the** department. At least nine hours of upper-class work in the major field must be completed in residence at Missouri S&T.
9. Minor: A minor will be selected from any discipline other than the major with the approval of the student's advisor. A total of at least 15 hours is required for the minor, but may include **courses courses**, which also satisfy other requirements. At least nine hours must be beyond the introductory level. A cumulative grade point average of 2.0 must be earned in all course work required in the minor field. At least six hours of work in the minor field must be completed in residence at Missouri S&T.
10. Basic ROTC may be elected in the freshman and sophomore years, but is not creditable toward a degree. Up to 12 credit hours of advanced ROTC may be credited toward a degree.
11. Elective Credits: In consultation with his/her advisor, each student will elect sufficient additional courses to complete a minimum of 120 credit hours.

Emphasis Areas

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

Human Resources/Personnel		
PSYCH 4700	Industrial Psychology	3
PSYCH 4600	Social Psychology	3
PSYCH 4601	Group Dynamics	3
PSYCH 4602	Organizational Psychology	3
Human Services		
PSYCH 3311	Psychological & Educational Development Of The Adolescent	3
or PSYCH 3310	Developmental Psychology	
PSYCH 4501	Abnormal Psychology	3
PSYCH 4500	Personality Theory	3
PSYCH 4510	Clinical Psychology	3
Cognitive Neuroscience		
PSYCH 4411	Sensation and Perception	3
PSYCH 3400	Theories Of Learning	3

or PSYCH 4501	Abnormal Psychology	
PSYCH 4400	Cognitive Psychology	3
PSYCH 4410	Neuroscience	3
Usability of Technology		
PSYCH 2300	Educational Psychology	3
PSYCH 3720	Web Design And Development	3
PSYCH 4710	Human Factors	3
PSYCH 4720	Human-Computer Interaction	3
Psychology of Leadership		
PSYCH 4600	Social Psychology	3
or PSYCH 4603	Social Influence: Science and Practice	
PSYCH 4610	Psychology of Leadership in Organizations	3
PSYCH 4993	Psychology of Gender	3
or PSYCH 4601	Group Dynamics	
PSYCH 4602	Organizational Psychology	3

Bachelor of Arts Psychology (Secondary Education Emphasis Area)

You may earn a B.A. degree in psychology from Missouri S&T and certification to teach at the secondary level in the schools of Missouri with the secondary education emphasis area program. This program can be completed in four academic years and student teaching is arranged with public schools within 30 miles of the Rolla campus.

Students interested in this emphasis area should consult with the advisor for the secondary education emphasis area in the department of psychological science.

In order to successfully complete this emphasis area, students must have at least 22 on the ACT, maintain a cumulative GPA of at least 2.5, and attain at least a 2.5 GPA in ~~all~~ psychology **courses taken.** ~~courses.~~ Current Missouri S&T or transfer students who wish to pursue this emphasis area must meet both of these GPA requirements to be accepted into the program. Students must also meet all requirements listed under the teacher education program in this catalog. Students who do not meet all the teacher certification requirements will not be eligible for the secondary education emphasis area, even if they have completed all course work.

A degree with this emphasis area requires 128 credit hours. The required courses are provided below.

Communications Skills: 9 semester hours		
ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3

SP&M S 1185	Principles Of Speech	3
Humanities: 12 semester hours		
Art, Music, or Theatre course		3
Philosophy course		3
Literature course		3
One additional humanities from the above course groups, Foreign Language, or Etymology		3
Social Sciences: 18 semester hours		
HISTORY 1300	American History To 1877	3
or HISTORY 1310	American History Since 1877	
POL SCI 1200	American Government	3
POL SCI 2760	Course POL SCI 2760 Not Found	3
or POL SCI 2210	Course POL SCI 2210 Not Found	
or POL SCI 3300	Principles Of Public Policy	
or POL SCI 3760	The American Presidency	
POL SCI 3211	American Political Parties	3
or POL SCI 3300	Principles Of Public Policy	
or POL SCI 3760	The American Presidency	
or POL SCI 3763	Contemporary Political Thought	
PSYCH 1101	General Psychology	3
ECON 1100	Principles Of Microeconomics	3
or ECON 1200	Principles Of Macroeconomics	
Geography		3
Natural Science/Mathematics: 13 semester hours		
One course in Physics, Chemistry or Geology		3-4
Mathematics		3
BIO SCI 1113	General Biology	3
STAT 1115	Statistics For The Social Sciences I	3
Professional Requirements: 26 semester hours		
EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization & Adm For Elementary & Secondary Teachers	2
EDUC 2216	Course EDUC 2216 Not Found	3
EDUC 2251	Historical Foundation Of American Education	3
EDUC 3216	Teaching Reading in Content Area	3

EDUC 3280	Teaching Methods And Skills In The Content Areas	6
EDUC 4298	Student Teaching Seminar	1
PSYCH 2300	Educational Psychology	3
PSYCH 3311	Psychological & Educational Development Of The Adolescent	3
PSYCH 4310	Psychology Of The Exceptional Child	3
Clinical Experience: 16 semester hours		
EDUC 1104	Teacher Field Experience	2
EDUC 1164	Aiding Elementary, Middle And Secondary Schools	2
EDUC 4299	Student Teaching	12
Psychology Degree Requirements: 17 semester hours		
PSYCH 1100	Introduction to Psychology	1
PSYCH 2200	Research Methods	4
PSYCH 3400	Theories Of Learning	3
PSYCH 3310	Developmental Psychology	3
PSYCH 4501	Abnormal Psychology	3
or PSYCH 4500	Personality Theory	
PSYCH 4600	Social Psychology	3
Certification: 17 semester hours		
9 hours of American History from the following:		
HISTORY 3320	Colonial America	
HISTORY 3325	Revolutionary America, 1754-1789	
HISTORY 3340	Age Of Jefferson And Jackson	
HISTORY 3345	Civil War And Reconstruction	
HISTORY 3360	Recent United States History	
HISTORY 3425	History Of The Old South	
HISTORY 3426	History Of The Modern South	
HISTORY 3430	Course HISTORY 3430 Not Found	
HISTORY 3480	History Of Baseball	
HISTORY 3440	20th Century Americans In Combat	
HISTORY 3442	The United States in Vietnam	
HISTORY 3761	U.S. Diplomatic History to World War II	
HISTORY 4435	History of the American West	

8 hours of World History from the following:

HISTORY 1100	Early Western Civilization
HISTORY 1200	Modern Western Civilization
HISTORY 2220	Making Of Modern Britain
HISTORY 2222	The Making Of Modern France
HISTORY 2224	Making Of Modern Russia
HISTORY 2210	European Diplomatic History 1814 - Present
HISTORY 2660	Course HISTORY 2660 Not Found
HISTORY 3120	Ancient Greece
HISTORY 3130	Medieval History I
HISTORY 3135	Medieval History II
HISTORY 3140	History Of Renaissance Thought
HISTORY 3230	Europe In The Age Of The French Revolution And Napoleon
HISTORY 3235	Foundations Of Contemporary Europe 1815-1914
HISTORY 3240	Contemporary Europe
HISTORY 3660	Modern East Asia

Justification for request

We have voted to change the required courses in our curriculum. In our current curriculum, the only required courses are Introduction to Psychology, General Psychology, and Research Methods. Because of this, it is currently possible for students to graduate from our program without have a breadth of knowledge across the field of psychology. For example, it is possible that students may have never taken important content courses that every psychology major should take, such as social psychology, cognitive psychology, developmental psychology, abnormal psychology, and a biological psychology (sensation and perception or neuroscience). These different content areas are not only considered the core of psychology knowledge, but they are the content areas on the Major Field Test and the Psychology GRE. Our proposed changes to the major are to make the courses listed above required for our majors, so students will not have holes in their base of psychology knowledge upon completion of their psychology degree. These changes bring our curriculum more in line with our department's Student Learning Outcomes, the recommendations of the

American Psychological Association, and psychology departments across the nation. In addition, students still have 11 additional psychology electives outside of the proposed required courses, so they will still have the freedom to take courses that interest them or give them a depth of knowledge in a particular content area.

Supporting

Documents

Course Reviewer

Comments

barryf (10/21/16 8:58 pm): Rollback: Correct changed course numbers that showed up as "Course Not Found"

murray (10/25/16 11:31 am): I corrected class numbers. - S. Murray

murray (10/25/16 11:34 am): Change Pol Sci classes

barryf (10/25/16 3:22 pm): Rollback: CourseLeaf put courses in wrong category.

kristyg (02/21/17 9:59 am): Rollback: I am rolling this back so that Nathan can make the requested changes from Susan Murray.

kristyg (03/13/17 4:23 pm): Rollback: Rollback per email.

barryf (03/22/17 10:44 am): Rollback: Unable to make minor editing changes.

Key: 192

Program Change Request

Date Submitted: 03/22/17 1:19 pm

Viewing: **PSYCH-BS : Psychology BS**

File: 193.17

Last approved: 07/21/15 2:38 pm

Last edit: 03/22/17 1:19 pm

Changes proposed by: weidnern

Catalog Pages

Using this

Program

[Psychology](#)

Start Term	Fall 2017 2015
Program Code	PSYCH-BS
Department	Psychological Science
Title	

In Workflow

1. **RPSYCHOL 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. **kristyg**

Approval Path

1. 03/23/17 11:21 am
murray: Approved for RPSYCHOL Chair
2. 03/24/17 12:00 pm
Kristy Giacomelli (kristyg): Approved for CCC Secretary
3. 03/24/17 1:10 pm
Barry Flachsbarth (barryf): Approved for Social Sciences DSCC Chair
4. 04/10/17 2:22 pm
Kristy Giacomelli (kristyg): Approved for Pending CCC Agenda post
5. 05/10/17 2:53 pm
Lahne Black (lahne): Approved

for CCC Meeting
Agenda

6. 05/11/17 1:21 pm
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

History

1. May 6, 2014 by nstone
2. Jul 8, 2014 by pantaleoa
3. Jul 8, 2014 by pantaleoa
4. Mar 20, 2015 by nstone
5. Jun 19, 2015 by nstone
6. Jul 21, 2015 by pantaleoa

Psychology BS

Program Requirements and Description

Bachelor of Science Psychology

A minimum of 124 credit hours is required for a bachelor of science degree in psychology and a cumulative grade point average of 2.0 must be obtained. These requirements for the B.S. degree are in addition to credit received for basic ROTC.

The psychology bachelor of science curriculum requires six hours of English composition; 23 hours of math, science and computer science; and twelve semester hours in humanities. Specific requirements for the bachelor degree are outlined in the sample program listed below.

1. [ENGLISH 1120](#) and [ENGLISH 1160](#) (entering students will normally take [ENGLISH 1120](#) either semester of the first year.) (6 hours)
2. A total of 23 hours in biological, physical, (chemistry, geology and geophysics, and physics), and mathematical (mathematics/statistics and computer science or information science & technology) sciences, to include [COMP SCI 1570](#) and [COMP SCI 1580](#); or [COMP SCI 1970](#) and [COMP SCI 1980](#); or [COMP SCI 1971](#) and [COMP SCI 1981](#); or [COMP SCI 1972](#)

- and [COMP SCI 1982](#); or [IS&T 1551](#) and at least one course taken in the biological and one in the physical sciences. Of the biological and physical science offerings, at least one must be a laboratory course. Engineering courses may, at the discretion of the student's major advisor, also count toward this total requirement. (23 hours)
3. 12 hours in humanities and fine arts (literature, philosophy, art, music, or theater). Foreign language courses may count toward fulfilling this requirement. Courses used to satisfy this requirement must be taken in at least two humanities areas. (12 hours)
 4. 12 hours in at least two social sciences fields outside the major area (economics or history or political science). A course in Modern Western Civilization ([HISTORY 1200](#)), American History To 1877 ([HISTORY 1300](#)) or American History Since 1877 ([HISTORY 1310](#)), or American Government ([POL SCI 1200](#)) must be taken to satisfy the requirement of the state of Missouri (the "Williams Law"), and this course may count toward fulfilling the social sciences requirement. (12 hours)
 5. Minor: A minor will be selected from any discipline other than the major with the approval of the student's advisor. A total of at least 15 hours is required for the minor, but may include **courses** ~~courses~~, which also satisfy other requirements. At least nine hours must be beyond the introductory level.
 6. Basic ROTC may be elected in the freshman and sophomore years, but is not creditable toward a degree. Six credit hours of advanced ROTC may be credited toward a degree.
 7. Elective Credits: In consultation with his/her advisor, each student will elect sufficient additional courses to complete a minimum of 124 credit hours which may include [MATH 1160](#) and one of [MATH 1120](#) or [MATH 1140](#).
 - 8.

Psychology Courses (34 hours)		
Required:*		
General Skills Courses:		
PSYCH 1100	Introduction to Psychology	1
PSYCH 1101	General Psychology	3
PSYCH 2200	Research Methods	4
Content Courses:		
PSYCH 3310	Developmental Psychology	3
PSYCH 4400	Cognitive Psychology	3
PSYCH 4501	Abnormal Psychology	3
PSYCH 4600	Social Psychology	3
And one of the following 2 courses:		
PSYCH 4410	Neuroscience	3
PSYCH 4411	Sensation and Perception	3
Capstone Course:		
Select three credit hours from the following Capstone courses:		
PSYCH 3110	History Of Psychology	3
PSYCH 4010	Seminar	0-6
PSYCH 4099	Undergraduate Research	0-6
PSYCH 4200	Tests and Measurements	3
PSYCH 4590	Health Psychology	3

<u>PSYCH 4994</u>	Psychology in Media	3
<u>PSYCH 4992</u>	Cross-Cultural Psychology	3
<u>PSYCH 4993</u>	Psychology of Gender	3
<u>PSYCH 4990</u>	Internship	0-6
*These required courses total 26 hours.		
Elective Courses:		
Select an additional 8 hours of psychology electives to complete the 34 hour degree requirement.		

9. ~~Psychology Requirements: Introduction to Psychology (PSYCH 1100), General Psychology (PSYCH 1101), Research Methods (PSYCH 2200) and Capstone course PSYCH 3110, PSYCH 4200, PSYCH 4990, PSYCH 4010, PSYCH 4993, PSYCH 4500, PSYCH 4994, PSYCH 4992, or PSYCH 4099, 3 hours credit). Three additional courses from each of the following two areas of Psychology: Sensation and perception, cognitive, learning, neuroscience, developmental, abnormal, social, or personality. Educational, adolescent, human-computer interaction, industrial, human factors, clinical, group dynamics, or organizational. Electives from psychology to complete a requirement of 34 hours.~~ A cumulative grade point average of 2.0 must be earned in all course work taken in the major field. Upper class (3000-level and above) courses completed with grades of "D" may not be included in the **course work for major field without** the **major field without approval of** the **approval of adviser** and the **adviser and chair of** the **chair of the** department concerned.

Emphasis Areas

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

Human Resources/Personnel		
<u>PSYCH 4700</u>	Industrial Psychology	3
<u>PSYCH 4600</u>	Social Psychology	3
<u>PSYCH 4601</u>	Group Dynamics	3
<u>PSYCH 4602</u>	Organizational Psychology	3
Human Services		
<u>PSYCH 3311</u>	Psychological & Educational Development Of The Adolescent	3
or <u>PSYCH 3310</u>	Developmental Psychology	
<u>PSYCH 4501</u>	Abnormal Psychology	3
<u>PSYCH 4500</u>	Personality Theory	3
<u>PSYCH 4510</u>	Clinical Psychology	3
Cognitive Neuroscience		
<u>PSYCH 4411</u>	Sensation and Perception	3
<u>PSYCH 3400</u>	Theories Of Learning	3
or <u>PSYCH 4501</u>	Abnormal Psychology	

PSYCH 4400	Cognitive Psychology	3
PSYCH 4410	Neuroscience	3
Usability of Technology		
PSYCH 2300	Educational Psychology	3
PSYCH 3720	Web Design And Development	3
PSYCH 4710	Human Factors	3
PSYCH 4720	Human-Computer Interaction	3
Psychology of Leadership		
PSYCH 4600	Social Psychology	3
or PSYCH 4603	Social Influence: Science and Practice	
PSYCH 4610	Psychology of Leadership in Organizations	3
PSYCH 4993	Psychology of Gender	3
or PSYCH 4601	Group Dynamics	
PSYCH 4602	Organizational Psychology	3

Bachelor of Science Psychology (Secondary Education Emphasis Area)

You may earn a B.S. degree in psychology from Missouri S&T and certification to teach at the secondary level in the schools of Missouri with the secondary education emphasis area program. This program can be completed in four academic years and student teaching is arranged with public schools within 30 miles of the Rolla campus.

Students interested in this emphasis area should consult with the advisor for the secondary education emphasis area in the department of psychological science.

In order to successfully complete this emphasis area, students must have at least 22 on the ACT, maintain a cumulative GPA of at least 2.5, and attain at least a 2.5 GPA in ~~all~~ psychology **courses taken.** ~~courses.~~ Current Missouri S&T or transfer students who wish to pursue this emphasis area must meet both of these GPA requirements to be accepted into the program. Students must also meet all requirements listed under the teacher education program in this catalog. Students who do not meet all the teacher certification requirements will not be eligible for the secondary education emphasis area, even if they have completed all course work.

A degree in this emphasis area requires 136 credit hours. The required courses are provided below.

Communications Skills: 9 semester hours		
ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
SP&M S 1185	Principles Of Speech	3
Humanities: 12 semester hours		

Art, Music, or Theatre course	3
Philosophy course	3
Literature course	3
One additional humanities from the above course groups, Foreign Language, or Etymology	3-4
Social Sciences: 18 semester hours	
HISTORY 1300 American History To 1877	3
or HISTORY 1310 American History Since 1877	
POL SCI 1200 American Government	3
POL SCI 2760 Course POL SCI 2760 Not Found	3
or POL SCI 2210 Course POL SCI 2210 Not Found	
or POL SCI 3300 Principles Of Public Policy	
or POL SCI 3760 The American Presidency	
POL SCI 3211 American Political Parties	3
or POL SCI 3300 Principles Of Public Policy	
or POL SCI 3760 The American Presidency	
or POL SCI 3763 Contemporary Political Thought	
PSYCH 1101 General Psychology	3
ECON 1100 Principles Of Microeconomics	3
or ECON 1200 Principles Of Macroeconomics	
Geography	3
HISTORY 2110 World Regional Geography	3
Natural Sciences/Mathematics: 21 semester hours	
One course in Physics, Chemistry or Geology	3-4
Mathematics	3
BIO SCI 1113 General Biology	3
STAT 1115 Statistics For The Social Sciences I	3
COMP SCI 1570 Introduction To Programming & COMP SCI 1580 and Introduction To Programming Laboratory	3-4
or COMP SCI 1970 Basic Scientific Programming & COMP SCI 1980 and Computer Programming Laboratory	
or COMP SCI 1971 Introduction To Programming Methodology & COMP SCI 1981 and Programming Methodology Laboratory	
or COMP SCI 1972 Introduction to MATLAB Programming & COMP SCI 1982 and MATLAB Programming Laboratory	

5-6 additional hours of Math &/or Science courses		5-6
Professional Requirements: 26 semester hours		
EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization & Adm For Elementary & Secondary Teachers	2
EDUC 2216	Course EDUC 2216 Not Found	3
EDUC 2251	Historical Foundation Of American Education	3
EDUC 3216	Teaching Reading in Content Area	3
EDUC 3280	Teaching Methods And Skills In The Content Areas	6
EDUC 4298	Student Teaching Seminar	1
PSYCH 2300	Educational Psychology	3
PSYCH 3311	Psychological & Educational Development Of The Adolescent	3
PSYCH 4310	Psychology Of The Exceptional Child	3
Clinical Experience: 16 semester hours		
EDUC 1104	Teacher Field Experience	2
EDUC 1164	Aiding Elementary, Middle And Secondary Schools	2
EDUC 4299	Student Teaching	12
Psychology Degree Requirements: 17 semester hours		
PSYCH 1100	Introduction to Psychology	1
PSYCH 2200	Research Methods	4
PSYCH 3400	Theories Of Learning	3
PSYCH 3310	Developmental Psychology	3
PSYCH 4501	Abnormal Psychology	3
or PSYCH 4500	Personality Theory	
PSYCH 4600	Social Psychology	3
Certification: 17 semester hours		
9 hours of American History from the following:		
HISTORY 3320	Colonial America	
HISTORY 3325	Revolutionary America, 1754-1789	
HISTORY 3340	Age Of Jefferson And Jackson	
HISTORY 3345	Civil War And Reconstruction	
HISTORY 3360	Recent United States History	
HISTORY 3425	History Of The Old South	

HISTORY 3426	History Of The Modern South
HISTORY 3430	Course HISTORY 3430 Not Found
HISTORY 3480	History Of Baseball
HISTORY 3440	20th Century Americans In Combat
HISTORY 3442	The United States in Vietnam
HISTORY 3761	U.S. Diplomatic History to World War II
HISTORY 4435	History of the American West
8 hours of World History from the following:	
HISTORY 1100	Early Western Civilization
HISTORY 1200	Modern Western Civilization
HISTORY 2220	Making Of Modern Britain
HISTORY 2222	The Making Of Modern France
HISTORY 2224	Making Of Modern Russia
HISTORY 2210	European Diplomatic History 1814 - Present
HISTORY 2660	Course HISTORY 2660 Not Found
HISTORY 3120	Ancient Greece
HISTORY 3130	Medieval History I
HISTORY 3135	Medieval History II
HISTORY 3140	History Of Renaissance Thought
HISTORY 3230	Europe In The Age Of The French Revolution And Napoleon
HISTORY 3235	Foundations Of Contemporary Europe 1815-1914
HISTORY 3240	Contemporary Europe
HISTORY 3660	Modern East Asia

Justification for request

We have voted to change the required courses in our curriculum. In our current curriculum, the only required courses are Introduction to Psychology, General Psychology, and Research Methods. Because of this, it is currently possible for students to graduate from our program without have a breadth of knowledge across the field of psychology. For example, it is possible that students may have never taken important content courses that every psychology major should take, such as social psychology, cognitive psychology, developmental psychology, abnormal psychology,

and a biological psychology (sensation and perception or neuroscience). These different content areas are not only considered the core of psychology knowledge, but they are the content areas on the Major Field Test and the Psychology GRE. Our proposed changes to the major are to make the courses listed above required for our majors, so students will not have holes in their base of psychology knowledge upon completion of their psychology degree. These changes bring our curriculum more in line with our department's Student Learning Outcomes, the recommendations of the American Psychological Association, and psychology departments across the nation. In addition, students still have 11 additional psychology electives outside of the proposed required courses, so they will still have the freedom to take courses that interest them or give them a depth of knowledge in a particular content area.

Supporting Documents

Course Reviewer Comments

barryf (10/21/16 8:59 pm): Rollback: Fix changed course numbers that showed up as "Course Not Found"

kristyg (02/21/17 9:59 am): Rollback: I am rolling this back so that Nathan can make the requested changes from Susan Murray.

kristyg (03/13/17 4:23 pm): Rollback: Rollback per email.

barryf (03/22/17 10:44 am): Rollback: Unable to make minor editing changes.

Key: 193

Experimental Course

Viewing: **CIV ENG 5001.001 : Wind Engineering**

File: 4405.5

Last approved: 05/12/17 12:51 pm

Last edit: 05/10/17 2:55 pm

Requested Fall 2017

Effective Change

Date

Department Civil, Architectural, and Environmental Engineering

Discipline Civil Engineering (CIV ENG)

Course Number 5001

Topic ID 001

Experimental Wind Engineering

Title

Experimental Wind Engineering

Abbreviated

Course Title

Instructors Dr. Grace Yan

History

1. May 12, 2017 by
Jody Seely (seelyj)

Experimental

Catalog

Description

Introduction of wind engineering to advanced undergraduate and entry-level graduate students through structural engineering and atmospheric science fundamentals.

Prerequisites

A grade of "C" or better in Civ Eng 3201.

Field Trip
Statement

Credit Hours

LEC: 3.0

LAB: 0

IND: 0

RSD: 0

Total: 3.0

Justification for
change:

Semester(s)
previously taught

Co-Listed
Courses:

Course Reviewer
Comments

Key: 4405

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 03/02/17 8:33 am

Viewing: **CIV ENG 6001.005 : Soil Mechanics for Unsaturated Soils**

File: 4404

Last edit: 05/10/17 2:56 pm

Changes proposed by: seelyj

Requested Fall 2017

Effective Change

Date

Department Civil, Architectural, and Environmental Engineering

Discipline Civil Engineering (CIV ENG)

Course Number 6001

Topic ID 005

Experimental

Title

Soil Mechanics for Unsaturated Soils

Experimental Soil Mech Unsat Soils

Abbreviated

Course Title

Instructors Dr. Xiong Zhang

Experimental

Catalog

Description

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. **Registrar**

Approval Path

1. 03/24/17 3:14 pm
Joel Burken
(burken):
Approved for
RCIVILEN Chair
2. 03/24/17 4:14 pm
Kristy Giacomelli
(kristyg):
Approved for CCC
Secretary
3. 04/10/17 11:44
am
sraper: Approved
for Engineering
DSCC Chair

4. 04/10/17 2:22 pm
Kristy Giacomelli
(kristyg):
Approved for
Pending CCC
Agenda post
5. 05/10/17 2:56 pm
Lahne Black
(lahne): Approved
for CCC Meeting
Agenda
6. 05/11/17 9:49 am
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

This is an extension of saturated soil mechanics to solve problems in which soils cannot be considered as saturated such as compacted soils, and expansive and collapsible soils in arid or semi-arid regions. Coverage of unsaturated water flow, consolidation, shear strength, and constitutive modelling of unsaturated soils and their applications.

Prerequisites

CE 3715 or other introductory courses in soil mechanics. CE 6715 is not required but strongly recommended.

Field Trip

Statement

Credit Hours

LEC: 3.0

LAB: 0

IND: 0

RSD: 0

Total: 3.0

Justification for
new course:

New faculty member would like to expand on the knowledge students obtain in CE3715 Fundamental of Geotechnical Engineering, CE5715 Intermediate Soil Mechanics, and CE6715 Advanced Soil Mechanics.

Semester(s)
previously taught

Co-Listed
Courses:

Course Reviewer

Comments

sraper (04/10/17 11:44 am): Changed course description according to faculty submission and cleaned up prereqs.

Key: 4404

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 03/10/17 12:50 pm

Viewing: **CIV ENG 6001.006 : Understanding Rheology of Cement-Based Materials**

File: 4412

Last edit: 05/10/17 2:57 pm

Changes proposed by: seelyj

Requested	Spring 2018
Effective Change	
Date	
Department	Civil, Architectural, and Environmental Engineering
Discipline	Civil Engineering (CIV ENG)
Course Number	6001
Topic ID	006
Experimental Title	Understanding Rheology of Cement-Based Materials
Experimental Abbreviated Course Title	Rheol Cement-Bsd Mtrs
Instructors	Dr. Dimitri Feys

Experimental Catalog Description

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. Registrar

Approval Path

- 1. 03/24/17 3:15 pm
Joel Burken (burken):
Approved for RCIVILEN Chair
- 2. 03/24/17 4:15 pm
Kristy Giacomelli (kristyg):
Approved for CCC Secretary
- 3. 04/10/17 2:18 pm
sraeper: Approved for Engineering DSCC Chair
- 4. 04/10/17 2:22 pm
Kristy Giacomelli

(kristyg):

Approved for

Pending CCC

Agenda post

5. 05/10/17 2:57 pm

Lahne Black

(lahne): Approved

for CCC Meeting

Agenda

6. 05/11/17 9:50 am

Ilene Morgan

(imorgan):

Approved for

Campus Curricula

Committee Chair

This class focuses on physical and chemical observations in the field of suspension rheology and how they can be employed to explain the rheological behavior of fresh cement-based materials: cement-paste, mortar and concrete.

Prerequisites

Field Trip

Statement

Credit Hours	LEC: 3.0	LAB: 0	IND: 0	RSD: 0
Total: 3.0				

Justification for

new course:

This class can be considered as an advanced class in cement-based materials rheology, as it uses concepts of two other graduate level classes (CE 6001: Principles of rheology and CE 6001: Rheology and Self-Consolidating Concrete) to explain why these materials show specific behavior. It focuses also on recently observed complex problems in literature. With this class, graduate students should be able to distinguish different aspects affecting the rheology of cement-based materials, and

they should be able to independently plan, execute and interpret the measurements, without the interference of the research advisor.

Semester(s)
previously taught

Co-Listed
Courses:

Course Reviewer

Comments

sraper (04/10/17 2:18 pm): deleted "graduate level" from course description and removed "permission of instructor" from prereq statement.

Key: 4412

Experimental Course

Viewing: **COMP ENG 6001.001 : Advanced Computational Intelligence**

File: 4419.6

Last approved: 05/12/17 12:51 pm

Last edit: 05/11/17 9:47 am

Requested Fall 2017

Effective Change

Date

Department Electrical and Computer Engineering

Discipline Computer Engineering (COMP ENG)

Course Number 6001

Topic ID 001

Experimental Advanced Computational Intelligence
Title

Experimental AdvCompIntell
Abbreviated
Course Title

Instructors Wunsch

History

1. May 12, 2017 by
Steven Corns
(cornss)

Experimental Catalog Description

Advanced topics in computational intelligence, including application areas in evolutionary computation, neural networks, and fuzzy systems. Students will conduct challenging research projects involving advanced concept implementation, statistical analysis and paper writing.

Prerequisites

A grade of "C" or better in one of Sys Eng 5211, Elec Eng 5310, or Comp Eng 5310.

Field Trip
Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Justification for
change:

Semester(s)
previously taught
Spring 2017

Co-Listed

Courses:

SYS ENG 6001.001 - Advanced Computational Intelligence

ELEC ENG 6001.003 - Advanced Computational Intelligence

Course Reviewer
Comments

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 03/13/17 12:01 pm

Viewing: **COMP SCI 5001.001 : Introduction to Deep Learning**

File: 4410

Last edit: 05/10/17 2:59 pm

Changes proposed by: tauritzd

Requested Fall 2017

Effective Change

Date

Department Computer Science

Discipline Computer Science (COMP SCI)

Course Number 5001

Topic ID 001

Experimental
Title

Introduction to Deep Learning

Experimental Intro to Deep Learning

Abbreviated

Course Title

Instructors Ricardo Morales

Experimental

Catalog

Description

In Workflow

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

Approval Path

1. 03/13/17 3:30 pm
Sajal Das (sdas):
Approved for
RCOMPSCI Chair
2. 03/15/17 3:25 pm
Kristy Giacomelli
(kristyg):
Approved for CCC
Secretary
3. 04/10/17 2:20 pm
sraper: Approved
for Engineering
DSCC Chair
4. 04/10/17 2:23 pm
Kristy Giacomelli
(kristyg):

Approved for
 Pending CCC
 Agenda post
 5. 05/10/17 2:59 pm
 Lahne Black
 (lahne): Approved
 for CCC Meeting
 Agenda
 6. 05/11/17 9:51 am
 Ilene Morgan
 (imorgan):
 Approved for
 Campus Curricula
 Committee Chair

This course introduces reinforcement learning and artificial neural networks as the foundations for deep learning and covers deep learning architectures, including deep neural networks, convolutional deep neural networks, deep belief networks and recurrent neural networks. Students will implement course concepts in intensive programming assignments.

Prerequisites

A grade of "C" or better in both COMP SCI 2500 and MATH 3108.

Field Trip

Statement

None

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

Justification for

new course:

Deep learning is a state-of-the-art topic (think of Google's deep learning AlphaGo beating the Go world champion in 2016) and there is strong student demand for a specialized deep learning course. The COMP SCI faculty agree that this important and timely topic is currently not covered by our curriculum and needs to be added.

Semester(s)
previously taught
n/a

Co-Listed
Courses:

Course Reviewer
Comments

Key: 4410

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 03/13/17 12:01 pm

Viewing: **COMP SCI 5001.002 : Introduction to Machine Learning**

File: 4409

Last edit: 05/10/17 3:01 pm

Changes proposed by: tauritzd

Requested Fall 2017

Effective Change

Date

Department Computer Science

Discipline Computer Science (COMP SCI)

Course Number 5001

Topic ID 002

Experimental
Title

Introduction to Machine Learning

Experimental Intro Machine Learning

Abbreviated
Course Title

Instructors Zhaozheng Yin

Experimental
Catalog
Description

In Workflow

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

Approval Path

1. 03/13/17 3:31 pm
Sajal Das (sdas):
Approved for
RCOMPSCI Chair
2. 03/15/17 3:25 pm
Kristy Giacomelli
(kristyg):
Approved for CCC
Secretary
3. 04/10/17 2:21 pm
sraper: Approved
for Engineering
DSCC Chair
4. 04/10/17 2:23 pm
Kristy Giacomelli
(kristyg):

Approved for
 Pending CCC
 Agenda post
 5. 05/10/17 3:01 pm
 Lahne Black
 (lahne): Approved
 for CCC Meeting
 Agenda
 6. 05/11/17 9:51 am
 Ilene Morgan
 (imorgan):
 Approved for
 Campus Curricula
 Committee Chair

This course introduces foundational theories and techniques in machine learning. Topics will include basics of machine learning, learning theory, support vector machine, decision trees and ensemble methods. Students will implement course concepts in intensive programming assignments.

Prerequisites

A grade of "C" or better in all of Comp Sci 2500, Math 3108, and one of Stat 3113, Stat 3115, Stat 3117 or Stat 5643.

Field Trip

Statement

None

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

Justification for

new course:

Machine learning is quickly increasing in importance, but currently is covered as part of a course focused primarily on data mining (COMP SCI 5402). Students have expressed great interest in a stand-alone course and the faculty agree that this is needed.

Semester(s)
previously taught
n/a

Co-Listed
Courses:

Course Reviewer
Comments

Key: 4409

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 02/13/17 9:27 am

Viewing: **ELEC ENG 5001.005 : Design and Innovation for Engineers**

File: 4397

Last edit: 04/10/17 2:25 pm

Changes proposed by: martins

Requested Fall 2017

Effective Change

Date

Department Electrical and Computer Engineering

Discipline Electrical Engineering (ELEC ENG)

Course Number 5001

Topic ID 005

Experimental

Title

Design and Innovation for Engineers

Experimental Design Innovation Engrs

Abbreviated

Course Title

Instructors Dr. Ian Ferguson

Experimental

Catalog

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. Registrar

Approval Path

1. 02/22/17 7:08 pm
Daryl Beetner
(daryl): Approved
for RELECENG
Chair
2. 02/27/17 10:06
am
Kristy Giacomelli
(kristyg):
Approved for CCC
Secretary
3. 03/14/17 2:51 pm
sraper: Approved
for Engineering
DSCC Chair

4. 04/10/17 2:22 pm
Kristy Giacomelli
(kristyg):
Approved for
Pending CCC
Agenda post
5. 05/10/17 3:02 pm
Lahne Black
(lahne): Approved
for CCC Meeting
Agenda
6. 05/11/17 9:52 am
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

The course will review design, innovation, and entrepreneurship, with a focus on design, from an engineering perspective and the ability to reduce concepts and ideas to practice. The course will help the student appreciate and understand the contributions that various engineering disciplines and others make in successfully completing a project.

Prerequisites

Junior or above standing.

Field Trip

Statement

N/A

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Justification for

new course:

The creative process in design and innovation can only be successful if they can be reduced to some type of practice or product. This course will provide the student

with a toolkit to be successful in the arena. Case studies will be used to understand the methods and constraints associated with realistic design practices. The student will understand how non-engineering factors affect success.

Create co-list: COMP ENG 5001

Semester(s)

previously taught

N/A

Co-Listed

Courses:

Course Reviewer

Comments

sraper (03/14/17 2:51 pm): prereq edit as suggested by DSCC

Key: 4397

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 03/27/17 2:52 pm

Viewing: **ELEC ENG 6001.003 : Advanced Computational Intelligence**

File: 4418

Last edit: 05/11/17 9:46 am

Changes proposed by: cornss

Requested	Fall 2017
Effective Change Date	
Department	Electrical and Computer Engineering
Discipline	Electrical Engineering (ELEC ENG)
Course Number	6001
Topic ID	003
Experimental Title	Advanced Computational Intelligence
Experimental Abbreviated Course Title	AdvComplIntell
Instructors	Wunsch, Corns

Experimental Catalog Description	
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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. Registrar

Approval Path

- 1. 03/27/17 4:25 pm
Daryl Beetner (daryl): Approved for RELECENG Chair
- 2. 03/28/17 9:25 am
Kristy Giacomelli (kristyg): Approved for CCC Secretary
- 3. 04/10/17 3:46 pm
sraper: Approved for Engineering DSCC Chair
- 4. 04/10/17 3:46 pm
Kristy Giacomelli

(kristyg):

Approved for

Pending CCC

Agenda post

5. 05/10/17 3:04 pm

Lahne Black

(lahne): Approved

for CCC Meeting

Agenda

6. 05/11/17 9:48 am

Ilene Morgan

(imorgan):

Approved for

Campus Curricula

Committee Chair

Advanced topics in computational intelligence, including application areas in evolutionary computation, neural networks, and fuzzy systems. students will conduct challenging research projects involving advanced concept implementation, statistical analysis and paper writing.

Prerequisites

A grade of "C" or better in one of Sys Eng 5211, Elec Eng 5310, or Comp Eng 5310.

Field Trip

Statement

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

Justification for

new course:

Co-list course with Systems Engineering - SYS ENG 6001

Co-list course with Computer Engineering - COMP ENG 6001

Semester(s)

previously taught

Spring 2017

Co-Listed

Courses:

Course Reviewer

Comments

Key: 4418

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 02/24/17 3:18 pm

Viewing: **ENGLISH 3001.004 : Costa Rica in Text**

File: 4401

Last edit: 05/11/17 9:39 am

Changes proposed by: kswenson

Requested Fall 2017

Effective Change

Date

Department English and Technical Communication

Discipline English (ENGLISH)

Course Number 3001

Topic ID 004

Experimental

Title

Costa Rica in Text

Experimental Costa Rica in Text

Abbreviated

Course Title

Instructors Dolan, Northcut

Experimental

Catalog

Description

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. **Registrar**

Approval Path

1. 02/24/17 3:19 pm
Kristine Swenson (kswenson):
Approved for RENG LISH Chair
2. 02/27/17 10:06 am
Kristy Giacomelli (kristyg):
Approved for CCC Secretary
3. 02/27/17 7:36 pm
Petra Dewitt (dewittp):
Approved for Arts

& Humanities

DSCC Chair

4. 03/14/17 10:13
am

Kristy Giacomelli
(kristyg):

Approved for

Pending CCC

Agenda post

5. 05/10/17 3:20 pm

Lahne Black

(lahne): Approved
for CCC Meeting

Agenda

6. 05/11/17 9:39 am

Ilene Morgan

(imorgan):

Approved for

Campus Curricula

Committee Chair

Three-week study abroad trip in Costa Rica (late May-early June) in which students conduct primary research on environmental rhetoric. Assignments include analytical projects based on interviews, visual evidence, archival research, and first-hand observations.

Prerequisites

English 1120.

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Justification for

new course:

This course is to be part of the new LASTA minor. Dolan and Northcut were awarded a \$5000 CERTI grant to develop it for the minor.

Create co-list: TCH COM 2411 - Costa Rica in Text

Semester(s)

previously taught

N/A

Co-Listed

Courses:

Course Reviewer

Comments

imorgan (05/11/17 9:39 am): When the co-list is created, it should also be for TCH COM 3001.

Key: 4401

Experimental Course

Viewing: **GEO ENG 5001.002 : Research Methods in Groundwater and Surface Water**

File: 4399.3

Last approved: 05/17/17 1:57 pm

Last edit: 05/17/17 1:43 pm

Requested Fall 2017

Effective Change

Date

Department Geosciences and Geological and Petroleum
Engineering

Discipline Geological Engineering (GEO ENG)

Course Number 5001

Topic ID 002

Experimental Research Methods in Groundwater and Surface Water
Title

Experimental Water Research Methods
Abbreviated
Course Title

Instructors Katherine Grote

History

1. May 17, 2017 by
Katherine Grote
(grotekr)

Experimental Catalog Description

Students will conduct research experiments that address water quality or quantity issues in Missouri. Topics will include literature review, experimental design, site selection, field techniques/data acquisition, laboratory methods, data analysis, and dissemination of results. Statistical analysis of results will be emphasized.

Prerequisites

Geo Eng 1150; cumulative GPA of at least 3.0 or consent of instructor.

Field Trip**Statement**

Field trips will be required.

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

**Justification for
change:**

**Semester(s)
previously taught
none**

**Co-Listed
Courses:**

**Course Reviewer
Comments**

Key: 4399

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 02/16/17 5:18 pm

Viewing: **PET ENG 6001.006 : Advanced Digital Applications in Petroleum Engineering**

File: 4398

Last edit: 05/10/17 3:10 pm

Changes proposed by: sahc55

Requested	Fall 2017
Effective Change Date	
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	6001
Topic ID	006
Experimental Title	Advanced Digital Applications in Petroleum Engineering
Experimental Abbreviated Course Title	Advanced Dig Petr Apps
Instructors	Steven Hilgedick

Experimental Catalog Description	
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In Workflow

- 1. **RGEOENG Chair**
- 2. **CCC Secretary**
- 3. **Engineering DSCC Chair**
- 4. **Pending CCC Agenda post**
- 5. **CCC Meeting Agenda**
- 6. **Campus Curricula Committee Chair**
- 7. **Registrar**

Approval Path

- 1. 02/16/17 5:19 pm
Francisca Oboh-Ikuenobe (ikuenobe):
Approved for RGEOENG Chair
- 2. 02/21/17 3:12 pm
Kristy Giacomelli (kristyg):
Approved for CCC Secretary
- 3. 03/14/17 2:53 pm
srafer: Approved for Engineering DSCC Chair

4. 04/10/17 2:22 pm
Kristy Giacomelli
(kristyg):
Approved for
Pending CCC
Agenda post
5. 05/10/17 3:10 pm
Lahne Black
(lahne): Approved
for CCC Meeting
Agenda
6. 05/11/17 9:54 am
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

Applications of Windows-based Visual Basic solutions to petroleum engineering problems including, selected topics in Reservoir, Drilling, and Production Engineering and well logging, each of which highlight new methods in Visual Basic. Course also includes advanced methods for research applications.

Prerequisites

Field Trip Statement

Credit Hours	LEC: 3.0	LAB: 0	IND: 0	RSD: 0
Total: 3.0				

Justification for new course:

This course will be offered along with Pet Eng 4111, and offer grad students a chance to learn Visual Basic coding beyond Pet Eng 4111, geared toward applications in

current and future research topics. Course will also increase the 6xxx level offerings for students required to be enrolled in 3.0 credit hours during the summer semester.

Semester(s)

previously taught

NA (Pet Eng 4111 was previously taught in SS 2016)

Co-Listed

Courses:

Course Reviewer

Comments

sraper (02/24/17 9:09 am): Changed effective date. Is no prereqs appropriate?

Potential edits in catalog description.

sraper (03/14/17 2:53 pm): Edits as suggested by DSCC for improved clarity.

Key: 4398

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 04/11/17 1:25 pm

Viewing: **PET ENG 6001.005 : Flow Through Porous Media**

File: 4422

Last edit: 05/11/17 9:54 am

Changes proposed by: reflori

Requested	Summer 2017
Effective Change Date	
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	6001
Topic ID	005
Experimental Title	Flow Through Porous Media
Experimental Abbreviated Course Title	Flow Porous Media
Instructors	R Flori
Experimental Catalog 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. **Registrar**

Approval Path

- 1. 04/11/17 1:44 pm
Francisca Oboh-Ikuenobe (ikuenobe): Approved for RGEOSENG Chair
- 2. 04/13/17 2:32 pm
Lahne Black (lahne): Approved for CCC Secretary
- 3. 04/18/17 8:46 am
sraپر: Approved for Engineering DSCC Chair
- 4. 04/20/17 4:12 pm
Lahne Black

- (lahne): Approved
for Pending CCC
Agenda post
5. 05/10/17 12:42
pm
Lahne Black
(lahne): Approved
for CCC Meeting
Agenda
6. 05/11/17 9:54 am
Ilene Morgan
(imorgan):
Approved for
Campus Curricula
Committee Chair

Detailed description of porous media and its properties, mathematical description of steady, pseudosteady, and transient flow through media with various geometries.

Prerequisites

Pet Eng 3520.

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Justification for

new course:

Most petroleum engineering departments have this important course. We used to have it years ago, but it was lost. We're restoring it to our catalog.

Semester(s)

previously taught

Co-Listed

Courses:

Course Reviewer

Comments

Key: 4422

Course Inventory Change Request

New Experimental Course Proposal

Date Submitted: 04/11/17 12:48 pm

Viewing: **PET ENG 6001.007 : Numerical Methods for Reservoir Simulation**

File: 4420

Last edit: 05/11/17 9:55 am

Changes proposed by: reflori

Requested	Fall 2017
Effective Change Date	
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	6001
Topic ID	007
Experimental Title	Numerical Methods for Reservoir Simulation
Experimental Abbreviated Course Title	Num Methods for Res Sim
Instructors	Peyman Heidari

Experimental Catalog Description	
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In Workflow

- 1. **RGEOENG Chair**
- 2. **CCC Secretary**
- 3. **Engineering DSCC Chair**
- 4. **Pending CCC Agenda post**
- 5. **CCC Meeting Agenda**
- 6. **Campus Curricula Committee Chair**
- 7. **Registrar**

Approval Path

- 1. 04/11/17 1:43 pm
Francisca Oboh-Ikuenobe (ikuenobe): Approved for RGEOENG Chair
- 2. 04/13/17 2:32 pm
Lahne Black (lahne): Approved for CCC Secretary
- 3. 04/18/17 8:43 am
sraper: Approved for Engineering DSCC Chair
- 4. 04/20/17 4:12 pm
Lahne Black

(lahne): Approved
for Pending CCC
Agenda post

5. 05/10/17 3:12 pm

Lahne Black

(lahne): Approved
for CCC Meeting
Agenda

6. 05/11/17 9:55 am

Ilene Morgan

(imorgan):

Approved for
Campus Curricula
Committee Chair

Step-by-step process of building a reservoir simulator, including formulation of the governing equations, numerical methods to solve partial differential equations, spacial and temporal discretization, numerical solution of systems of equations, testing of the reservoir simulator, sensitivity analysis, qualitative and quantitative analysis, coding.

Prerequisites

Pet Eng 4621.

Field Trip

Statement

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

Justification for

new course:

Petroleum Engineering needs additional graduate level courses, especially in this area involving programming, numerical analysis, and the details of building a reservoir simulator.

Semester(s)

previously taught

First time offered. Years ago S&T had this course, but it fell out of the catalog at some point.

Co-Listed

Courses:

Course Reviewer

Comments

lahne (04/06/17 11:40 am): Rollback: This course must be successfully offered twice as an experimental course (i.e. PET ENG 5001) before it is eligible for a permanent number. Please edit the form to change the catalog number from 5641 to an experimental number.

lahne (04/11/17 8:41 am): Rollback: This course must be successfully offered twice as an experimental course (i.e. PET ENG 5001) before it is eligible for a permanent number. Please edit the form to change the catalog number from 5641 to an experimental number.

Key: 4420