



## **Campus Curricula Committee Meeting Agenda**

**March 1, 2016**

**12:30-2:00 p.m., 106B Parker Hall**

Continuation of the discussion of whether to count Business for Social Science credit

### **Review of submitted Course Change forms:**

- File #4298 English 3234: Myth & Folklore
- File #4271 Enterprise Resource Planning 4220: Introduction to Enterprise Decision Dashboard Prototyping
- File #320.1 Enterprise Resource Planning 6220: Data Modeling & Visualization Prototyping for Enterprise Decision Dashboards
- File #2471.1 Math 4098: Explorations in Pure Mathematics
- File #1965.1 Music 1141: Chamber Vocal Ensembles
- File #2583.1 Philosophy 3254: Symbolic Logic in Argumentation
- File #1786.1 Philosophy 4399: Topics in Philosophy

### **Review of submitted Degree Change forms:**

- File #142.28 Applied Mathematics: Applied Mathematics BS
- File #155.33 Electrical Engineering: Electrical Engineering BS

### **Review of submitted Experimental Course forms:**

- File #4297 Economics 5001.001: Experiential Entrepreneurship
- File #4275 Philosophy 3001.002: Asian Philosophy
- File #4302 SP&M S 3001.002: Advanced Speech for Non-Native Speakers of English

# Course Inventory Change Request

## New Course Proposal

Date Submitted: 01/25/16 4:02 pm

Viewing: **ENGLISH 3234 : Myth & Folklore**

File: 4298

Last edit: 01/25/16 4:09 pm

Changes proposed by: kswenson

Requested	Summer 2016
Effective Change Date	
Department	English and Technical Communication
Discipline	English (ENGLISH)
Course Number	3234
Title	Myth & Folklore
Abbreviated Course Title	Myth & Folklore

### Catalog

#### Description

This course traces the development of myth and folklore from Ancient Mesopotamia through nineteenth century Europe. Students will be challenged with three questions along the way: What do myth and folklore do? Why were they important to earlier societies? Is myth alive today?

#### Prerequisites

Eng 1120 and one semester of college literature.

#### Field Trip

#### Statement

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

#### Justification for new course:

This course has proven a popular and valuable draw for both English majors seeking

### In Workflow

1. **RENLISH 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. Ishelton
11. Peoplesoft

### Approval Path

1. 01/25/16 4:06 pm kswenson: Approved for RENGLISH Chair
2. 01/25/16 4:09 pm Kaylon Buckner (kleb6b): Approved for CCC Secretary
3. 01/26/16 10:50 am dewittp: Approved for Arts & Humanities DSCC Chair

an upper-level elective that transcends the American-British divide and non-majors who are interested in myth and folklore in the western tradition.

Semesters            SP13, SP16

previously  
offered as an  
experimental  
course

Co-Listed  
Courses:

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Course Reviewer  
Comments

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Key: 4298  
[Preview Bridge](#)

# Course Inventory Change Request

## New Course Proposal

Date Submitted: 02/02/16 8:53 am

Viewing: **ERP 4220 : Introduction to Enterprise Decision Dashboard Prototyping**

File: 4271

Last edit: 02/04/16 8:05 am

Changes proposed by: barryf

Requested            Fall 2016

Effective Change

Date

Department        Business and Information Technology

Discipline         Enterprise Resource Planning (ERP)

Course Number    4220

Title                Introduction to Enterprise Decision Dashboard Prototyping

Abbreviated        Intro Dashboard Prototyp

Course Title

Catalog

Description

Study design and implementation principles for enterprise decision dashboards utilizing data warehouse and databases to support visual analytics. SAP HANA & BW, Business Objects Dashboards, IBM Watson Analytics, SAS Visual Analytics, or similar tools are used for practical assignments.

Prerequisites

(ERP 2110 or ERP 5110) and one of ERP 5410, ERP 6444, or IS&T 6444.

Field Trip

Statement

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

Required for  
Majors            No

Elective for  
Majors            Yes

In Workflow

1. RINFSCTE Chair

2. CCC Secretary

3. Social Sciences  
DSCC Chair

4. Pending CCC  
Agenda post

5. CCC Meeting  
Agenda

6. Campus Curricula  
Committee Chair

7. FS Meeting  
Agenda

8. Faculty Senate  
Chair

9. Registrar

10. Ishelton

11. Peoplesoft

Approval Path

1. 02/03/16 11:43  
pm  
siauk: Approved  
for RINFSCTE  
Chair

2. 02/04/16 8:05 am  
Kaylon Buckner  
(kleb6b):  
Approved for CCC  
Secretary

3. 02/09/16 9:00 am  
barryf: Approved  
for Social  
Sciences DSCC  
Chair

Justification for  
new course:

Dual career course paired with ERP 6220.

This course, for undergrads, does not require the semester project that ERP 6220 requires and this course also has less homework.

We have had a number of undergraduate students request a course that covers the content of ERP 6220 and this will meet that need.

Semesters  
previously  
offered as an  
experimental  
course

Co-Listed  
Courses:

Course Reviewer  
Comments

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Key: 4271  
[Preview Bridge](#)

# Course Inventory Change Request

Date Submitted: 02/02/16 8:54 am

Viewing: **ERP 6220 : Data Modeling & Visualization Prototyping for Enterprise Decision Dashboards-Enterprise Performance Dashboard Prototyping**

File: 320.1

Last edit: 02/02/16 8:54 am

Changes proposed by: barryf

Catalog Pages referencing this course [Information Science and Technology](#)

Requested Effective Change Date  
Fall **2016** ~~2014~~

Department Business and Information Technology

Discipline Enterprise Resource Planning (ERP)

Course Number 6220

Title **Data Modeling & Visualization Prototyping for Enterprise Decision Dashboards-Enterprise Performance Dashboard Prototyping**

Abbreviated Course Title **Decision Dashboards**

Course Title ~~Dashboard Prototyping~~

Catalog Description

Study **how to integrate data modeling of implementation and visualization prototyping in design practices for enterprise performance management systems with a focus on dashboards, balanced scorecard, and implementation of enterprise decision dashboards for descriptive, predictive, and prescriptive analytics. value-based management. Assignments and project implementations use SAP HANA & BW, Design Studio, IBM Watson, and SAS Visual Analytics. Semester project prepared. SAP's BusinessObjects Ecelsius, Crystal Reports, BW, or similar tools will be used for project implementations.**

Prerequisites ERP **5110** and one of ~~5110~~; ERP **5410**, ERP 6444 or IS&T 6444.

Field Trip

In Workflow

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

Approval Path

1. 02/03/16 11:43 pm  
siauk: Approved for RINFSCTE Chair
2. 02/04/16 8:04 am  
Kaylon Buckner (kleb6b):  
Approved for CCC Secretary
3. 02/09/16 9:00 am  
barryf: Approved for Social Sciences DSCC Chair

## Statement

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

Required for  
Majors              No

Elective for  
Majors              **Yes**~~No~~

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Justification for  
change:              Course content expanded and ERP 4220 dual career course added at Introductory  
level.  
Title changed and description refined.  
Prerequisites expanded.

Semesters  
previously  
offered as an  
experimental  
course

Co-Listed  
Courses:

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Course Reviewer  
Comments

# Course Inventory Change Request

Date Submitted: 02/07/16 3:23 pm

Viewing: **MATH 4098 : Explorations in Pure Mathematics** ~~Great Theorems In Mathematics~~

File: 2471.1

Last edit: 02/08/16 11:26 am

Changes proposed by: imorgan

Programs [AP MATH-BS: Applied Mathematics BS](#)  
referencing this course

Requested Effective Change Date  
Fall **2016** ~~2014~~

Department Mathematics & Statistics

Discipline Mathematics (MATH)

Course Number 4098

Title **Explorations in Pure Mathematics** ~~Great Theorems In Mathematics~~

Abbreviated Course Title  
**Exploration in Pure Math**  
~~Great Theorems In Math~~

Catalog Description

**Students interested in pure mathematics will be encouraged to use their entire mathematics background as a context for learning about some of the great theorems which have shaped the development of mathematics and solving novel problems in areas such as, but not limited to, analysis, algebra, number theory, set theory, topology, and finite mathematics.** ~~A study of some of the great theorems which have shaped the development of mathematics and solving novel problems in areas such as, but not limited to, analysis, algebra, number theory, set theory, topology, and finite mathematics. human civilization. History, the changing nature of mathematics, and the mathematical content of the theorems themselves, will all be addressed. Sources as close to the originals as possible will be used.~~

Prerequisites

**Senior standing; preceded or accompanied by Math 4209.** ~~Math 3109 and Senior standing.~~

Field Trip Statement

In Workflow

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

Approval Path

1. 02/08/16 11:19 am  
sclark: Approved for RMATHEMA Chair
2. 02/08/16 11:26 am  
Kaylon Buckner (kleb6b): Approved for CCC Secretary
3. 02/14/16 9:50 am  
imorgan: Approved for Sciences DSCC Chair



Credit Hours	LEC: <del>3</del> <sup>1</sup>	LAB: 0	IND: 0	RSD: 0	Total: <del>3</del> <sup>1</sup>
Required for Majors	No				
Elective for Majors	<del>Yes</del> <sup>No</sup>				

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Justification for change: This course change should be considered at the same time as the proposed degree change form for Applied Mathematics. This course currently is one of the three one-credit courses that constitute the capstone sequence. We plan to discontinue this sequence and use a menu of courses to satisfy the capstone requirement. We would like this course (which includes much of the material in the one-credit courses MATH 4096 and the current MATH 4098) to be one of the options on that menu.

Semesters previously offered as an experimental course

Co-Listed Courses:

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Course Reviewer Comments

# Course Inventory Change Request

Date Submitted: 01/14/16 2:49 pm

Viewing: **MUSIC 1141 : Chamber Vocal Ensembles**

File: 1965.1

Last edit: 01/14/16 2:52 pm

Changes proposed by: denises

Requested **Summer 2016** ~~Fall 2014~~

Effective Change

Date

Department Arts, Languages, & Philosophy

Discipline Music (MUSIC)

Course Number 1141

Title Chamber Vocal Ensembles

Abbreviated Chamber Vocal Ensembles

Course Title

Catalog

Description

**An SATB choral group. Audition required. Auditions are open to all who are interested and are held during class time the first week of classes. The members are selected by audition and organized into interest groups madrigal, pops ensemble, and chamber choir.**

Prerequisites

Field Trip

Statement

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

Required for      No

Majors

Elective for      No

Majors

Justification for

change:              Update per Lorie Francis

Semesters

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. Ishelton
11. Peoplesoft

Approval Path

1. 01/22/16 4:13 pm audram: Approved for RPHILOSO Chair
2. 01/22/16 4:20 pm Kaylon Buckner (kleb6b): Approved for CCC Secretary
3. 01/22/16 7:44 pm dewittp: Approved for Arts & Humanities DSCC Chair

previously  
offered as an  
experimental  
course

Co-Listed  
Courses:

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Course Reviewer **kleb6b (05/12/15 10:41 am)**: Rollback: The CCC felt that the prerequisite should  
Comments state that members are selected by audition. A description of the course needs to be  
included.  
**kleb6b (01/13/16 9:25 am)**: Rollback: Course description  
**kleb6b (01/14/16 2:47 pm)**: Rollback: Edit

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Key: 1965  
[Preview Bridge](#)

# Course Inventory Change Request

Date Submitted: 01/25/16 4:20 pm

Viewing: **PHILOS 3254 : Symbolic Logic in Argumentation**

File: 2583.1

Last edit: 01/25/16 4:20 pm

Changes proposed by: denises

Programs referencing this course	<a href="#">PHIL-BS: Philosophy BS</a>
Requested Effective Change Date	Fall <del>2014</del> <b>2016</b>
Department	Arts, Languages, & Philosophy
Discipline	Philosophy (PHILOS)
Course Number	3254
Title	Symbolic Logic in Argumentation
Abbreviated Course Title	Symbolic Logic

Catalog Description

An introduction to sentential and predicate **logic. logic with an emphasis on the latter. Focuses** ~~It will include metatheoretic discussions of both syntax and semantics with a focus~~ on various techniques used to examine logical relationships within an **artificial symbolic language, like truth tables, derivations, and models. artificial language. Includes metatheoretic discussions of syntax and semantics, and soundness and completeness.**

Prerequisites

**Comp Eng 2210, or Comp Sci 1200, or any 1000-level or higher Philosophy course.** ~~Any introductory 1000-level philosophy course.~~ **Philosophy Philos-1115** is recommended.

Field Trip Statement

Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0	Total: 3
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## In Workflow

1. **RPHILOS 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. Ishelton
11. Peoplesoft

## Approval Path

1. 01/26/16 9:06 am audram: Approved for RPHILOS Chair
2. 01/26/16 9:11 am Kaylor Buckner (kleb6b): Approved for CCC Secretary
3. 01/26/16 10:49 am dewittp: Approved for Arts & Humanities DSCC Chair

Required for  
Majors No

Elective for  
Majors **Yes**~~No~~

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Justification for  
change: To better reflect the course content.

Semesters  
previously  
offered as an  
experimental  
course

Co-Listed  
Courses:

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Course Reviewer  
Comments

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# Course Inventory Change Request

Date Submitted: 01/25/16 4:25 pm

Viewing: **PHILOS 4399 : Topics in ~~HA~~Philosophy**

File: 1786.1

Last edit: 02/12/16 10:53 am

Changes proposed by: denises

Requested Fall **2016** ~~2014~~

Effective Change

Date

Department Arts, Languages, & Philosophy

Discipline Philosophy (PHILOS)

Course Number 4399

Title Topics **in** ~~HA~~Philosophy

Abbreviated Topics **in** ~~HA~~Philosophy

Course Title

Catalog

Description

An intensive course designed for students with a special interest in philosophy. The content of the course may vary and the course may be repeated for additional credit.

Prerequisites

**Any 1000-level or higher** ~~An introductory (below 2000) level~~ Philosophy course.

Field Trip

Statement

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

Required for No

Majors

Elective for **Yes**~~No~~

Majors

Justification for change:

To better reflect the course content.

Semesters previously

In Workflow

1. **RPHILOS** 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. Ishelton
11. Peoplesoft

Approval Path

1. 01/26/16 9:07 am audram: Approved for RPHILOS Chair
2. 01/26/16 9:11 am Kaylor Buckner (kleb6b): Approved for CCC Secretary
3. 01/26/16 10:42 am dewittp: Approved for Arts & Humanities DSCC Chair

offered as an  
experimental  
course

Co-Listed  
Courses:

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Course Reviewer  
Comments

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Key: 1786  
[Preview Bridge](#)

## Program Change Request

Date Submitted: 02/07/16 3:47 pm

Viewing: **AP MATH-BS : Applied Mathematics BS**

File: 142.28

Last approved: 07/21/15 10:42 am

Last edit: 02/14/16 9:54 am

Changes proposed by: imorgan

Catalog Pages Using this Program	<a href="#">Mathematics</a>
Start Term	Fall <b>2016</b> <del>2015</del>
Program Code	AP MATH-BS
Department	Mathematics & Statistics
Title	Applied Mathematics BS

## Program Requirements and Description

### Bachelor of Science Applied Mathematics

A minimum of **128** ~~132~~ credit hours is required for a bachelor of science degree in applied mathematics. A minimum grade of "C" is required by the department in each course counted toward the math/stat requirement for the B.S. in applied mathematics. Moreover, the department requires that an average of at least two grade points per credit hour must be obtained for all courses taken within the department. These requirements for the B.S. degree are in addition to credit received for algebra, trigonometry, and basic ROTC.

The applied mathematics curriculum requires fifteen semester hours of technical electives, except where this requirement is reduced to compensate for extra requirements of emphasis areas, in addition to basic courses in chemistry or biology, physics, computer science, and economics. Two semesters of **language and communication**, ~~a foreign language~~, [ENGLISH 1160](#) or [ENGLISH 3560](#), **and** ~~and~~ either [HISTORY 1300](#), [HISTORY 1310](#), [HISTORY 1200](#), or [POL SCI 1200](#) are also required. Specific requirements for the bachelor's degree are outlined in the sample program below.

Freshman Year			
First Semester	Credits	Second Semester	Credits
<a href="#">MATH 1101</a>	1	<del>MATH 1221</del> <sup>1</sup>	<b>5</b>
<a href="#">MATH 1208</a> or <a href="#">1214</a> <sup>1</sup>	4	<a href="#">MATH 1215</a> or <a href="#">1221</a> <sup>1</sup>	<b>4</b>
<a href="#">CHEM 1100</a>	1	Science Requirement <sup>5</sup>	5
<a href="#">ENGLISH 1120</a>	3	<a href="#">COMP SCI 1570</a> , or <a href="#">1970</a> <b>and</b> <a href="#">1980</a> , or <a href="#">1971</a> <b>and</b> <a href="#">1981</a> , or <a href="#">1972</a> <b>and</b> <a href="#">1982</a> <sup>12</sup>	3
Campus History Requirement <sup>2</sup>	3	<del>Foreign Language Requirement</del> <sup>3</sup>	<b>4</b>
<del>Foreign Language Requirement</del> <sup>3</sup>	<b>4</b>	<a href="#">Language and Communication Requirement</a> <sup>3</sup>	<b>3</b>

### In Workflow

1. [RMATHEMA Chair](#)
2. [CCC Secretary](#)
3. [Sciences DSCC Chair](#)
4. [Pending CCC Agenda post](#)
5. [CCC Meeting Agenda](#)
6. [Campus Curricula Committee Chair](#)
7. [FS Meeting Agenda](#)
8. [Faculty Senate Chair](#)
9. [Registrar](#)
10. [kristyg](#)

### Approval Path

1. 02/08/16 11:14 am sclark: Approved for RMATHEMA Chair
2. 02/08/16 11:25 am Kaylor Buckner (kleb6b): Approved for CCC Secretary
3. 02/14/16 10:01 am imorgan: Approved for Sciences DSCC Chair

### History

1. Apr 28, 2014 by imorgan
2. Apr 28, 2014 by lahne
3. Jun 13, 2014 by pantaleoa
4. Jun 13, 2014 by pantaleoa
5. Jul 21, 2015 by pantaleoa
6. Jul 21, 2015 by pantaleoa



<b>Language and Communication Requirement<sup>3</sup></b>	<b>3</b>	Basic ROTC (if elected) <sup>4</sup>	0
Basic ROTC (if elected) <sup>4</sup>	0		
	15		15
<b>Sophomore Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<u>MATH 2222</u> <sup>1</sup>	4	<u>MATH 3304</u> <sup>1</sup>	3
<u>MATH 3108</u> <sup>1</sup>	3	<u>MATH 3109</u> <sup>1</sup>	3
Statistics Requirement <sup>1,6,7</sup>	3	<u>ECON 1100</u> or <u>1200</u>	3
<del>PHYSICS 1114</del>	<del>4</del>	<del>PHYSICS 2111</del>	<del>4</del>
<del>PHYSICS 1119</del>	<del>4</del>	<del>PHYSICS 2119</del>	<del>4</del>
<b><u>PHYSICS 1135</u> or <u>1111</u> and <u>1119</u></b>	<b>4</b>	<b><u>PHYSICS 2135</u> or <u>2111</u> and <u>2119</u></b>	<b>4</b>
<u>ENGLISH 1160</u> <sup>13</sup>	3	COMP SCI Requirement <sup>7,8</sup>	3
Basic ROTC (if elected) <sup>4</sup>	0	Basic ROTC (if elected) <sup>4</sup>	0
	17		16
<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<u>MATH 4209</u> <sup>1</sup>	3	<u>MATH 4211</u> <sup>1</sup>	3
Literature	3	Literature	3
Electives-Math or Stat <sup>1,7,9</sup>	3	Electives-Math or Stat <sup>1,7,9</sup>	3
Electives-Technical <sup>10</sup>	3	Electives-Technical <sup>10</sup>	3
Electives	3	Electives	3
	15		15
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<del>MATH 4096</del> <sup>1,11</sup>	<del>4</del>	<del>MATH 4098</del> <sup>1,11</sup>	<del>4</del>
<del>MATH 4097</del> <sup>1,11</sup>	<del>4</del>	Electives-Math or Stat <sup>1,7,9</sup>	3
<b>Capstone Course</b> <sup>1,7,11</sup>	<b>3</b>	Electives-Technical <sup>10</sup>	3
Electives-Math or Stat <sup>1,7,9</sup>	3	Electives	11
Electives-Technical <sup>10</sup>	6		
Electives	6		
	18		17
Total Credits: 128			

<sup>1</sup> A minimum grade of "C" is required by the department in each course counted toward the math/stat requirement for the B.S. in applied mathematics. Moreover, the department requires that an average of at least two grade points per credit hour must be obtained for all courses taken within the department.

<sup>2</sup> May be met by HISTORY 1200, HISTORY 1300, HISTORY 1310, or POL SCI 1200.

<sup>3</sup> This requirement will be satisfied by either (1) six credits of Speech and Media Studies course work; or (2) a modern language approved by the advisor with competency at the level of second semester college/university course work or, with approval of the department, by completion of Level III of a foreign language in high school.

<sup>4</sup> Basic ROTC may be elected in the freshman and sophomore years, but is not creditable toward a degree. Up to six credit hours of advanced ROTC may be credited as free electives towards a degree.

<sup>5</sup> May be met by CHEM 1310 and CHEM 1319 or by BIO SCI 1113 and BIO SCI 1219.

<sup>6</sup> May be met by STAT 3115, STAT 3117, or STAT 5643.

<sup>7</sup> No course may be used to satisfy more than one degree requirement, except as otherwise noted.

<sup>8</sup> May be met by COMP SCI 1510, COMP SCI 1200 or COMP SCI 3200.

9	The student must choose two from the following five groups and then complete six hours in each of the chosen groups 1. <a href="#">MATH 5105</a> , <a href="#">MATH 5106</a> , <a href="#">MATH 5107</a> , <a href="#">MATH 5108</a> 2. <a href="#">MATH 5105</a> , <a href="#">MATH 5215</a> , <a href="#">MATH 4530</a> or <a href="#">MATH 5530</a> , <a href="#">MATH 5351</a> , <a href="#">MATH 5585</a> 3. <a href="#">MATH 5222</a> , <a href="#">MATH 5302</a> , <a href="#">MATH 5325</a> , <a href="#">MATH 5351</a> , <a href="#">MATH 5483</a> , <a href="#">MATH 5603</a> , <a href="#">MATH 5604</a> 4. <a href="#">STAT 5814</a> , <a href="#">STAT 5643</a> , <a href="#">STAT 5644</a> , <a href="#">STAT 5346</a> , <a href="#">STAT 5353</a> , <a href="#">STAT 5755</a> , <a href="#">STAT 5756</a> 5. <a href="#">COMP SCI 3200</a> , <a href="#">COMP SCI 5201</a> , <a href="#">COMP SCI 5202</a> , <a href="#">MATH 5603</a> , <a href="#">MATH 5604</a> , <a href="#">MATH 5737</a> , <a href="#">STAT 5260</a> , <a href="#">STAT 5346</a> , <a href="#">STAT 5755</a> , <a href="#">STAT 5756</a> , <a href="#">STAT 5814</a> .
10	Courses in chemistry, physics, mechanics, geology, computer science, economics or engineering approved by advisor. The general math curriculum requires 15 credit hours; actuarial science emphasis area, 12 credit hours; algebra/discrete math, 15 credit hours; computational math, 9 credit hours; statistics, 12 credit hours.
11	The capstone experience for all applied mathematics majors (other than students completing the secondary education emphasis area) consists of a course chosen from the following list: <a href="#">MATH 4098</a> (three credits), <a href="#">MATH 4099</a> or <a href="#">STAT 4099</a> (three credits), <a href="#">MATH 5107</a> , <a href="#">MATH 5215</a> , <a href="#">MATH 5603</a> , <a href="#">STAT 5346</a> , <a href="#">STAT 5353</a> , <a href="#">STAT 5755</a> , or <a href="#">STAT 5756</a> .
12	<a href="#">COMP SCI 1570</a> if not transferred in will require <a href="#">COMP SCI 1580</a> , requiring one extra credit hour which will count either towards technical electives or free electives.
13	May also be satisfied by <a href="#">ENGLISH 3560</a> .

## Emphasis Areas at the Bachelor of Science Level<sup>10 12</sup>

### Actuarial Science Emphasis Area<sup>10 12</sup>

Required courses:

<a href="#">STAT 5643</a>	Probability And Statistics	3
<a href="#">STAT 5644</a>	Mathematical Statistics	3
<a href="#">ECON 1100</a>	Principles Of Microeconomics	3
<a href="#">ECON 1200</a>	Principles Of Macroeconomics	3
<a href="#">ECON 2200</a>	Intermediate Macroeconomic Theory	3
<a href="#">MATH 5737</a>	Financial Mathematics	3
And six hours from:		6
<a href="#">STAT 5814</a>	Applied Time Series Analysis	
<a href="#">STAT 5346</a>	Regression Analysis	
<a href="#">STAT 5353</a>	Statistical Data Analysis	
<a href="#">STAT 5755</a>	Statistical Models in Actuarial Science	
<a href="#">STAT 5756</a>	Statistical Models for Life Contingencies	

In addition, the student must pass the first actuarial science exam. Note that the capstone requirement is included in, not separate from, this list of courses.

### Algebra/Discrete Mathematics Emphasis Area<sup>10 12</sup>

Required courses:

<a href="#">MATH 5105</a>	Modern Algebra I	3
<a href="#">MATH 5106</a>	Modern Algebra II	3
or <a href="#">MATH 6105</a>	Finite Fields And Applications	
<a href="#">MATH 5107</a>	Combinatorics And Graph Theory (Satisfies Capstone requirement)	3
<a href="#">MATH 5108</a>	Linear Algebra II	3
<a href="#">STAT 5643</a>	Probability And Statistics	3
Select one of the following:		3
<a href="#">STAT 5644</a>	Mathematical Statistics	
<a href="#">COMP SCI 2200</a>	Theory of Computer Science	
<a href="#">COMP SCI 3200</a>	Introduction To Numerical Methods	
<a href="#">COMP SCI 5200</a>	Analysis Of Algorithms	

### Computational Mathematics Emphasis Area<sup>10 12</sup>

Required courses:

<a href="#">STAT 5353</a>	Statistical Data Analysis (Satisfies Capstone requirement)	3
<a href="#">STAT 5346</a>	Regression Analysis	3
<a href="#">COMP SCI 3200</a>	Introduction To Numerical Methods	3
Select three of the following:		
<a href="#">MATH 5302</a>	Intermediate Differential Equations	3
<a href="#">MATH 5325</a>	Partial Differential Equations	3
<a href="#">MATH 5603</a>	Methods of Applied Mathematics	3
<a href="#">MATH 5604</a>	<b>Introduction to Numerical Methods for Differential Equations</b>	<b>3</b>
Select one of the following:		
<a href="#">COMP SCI 5201</a>	Object-Oriented Numerical Modeling I	3
<del>COMP SCI 5202</del>	<del>Object-Oriented Numerical Modeling II</del>	
<del>MECH ENG 5307</del>	<del>Vibrations I</del>	
<a href="#">COMP SCI 5402</a>	<b>Data Mining &amp; Machine Learning</b>	<b>3</b>
<a href="#">MECH ENG 5139</a>	<b>Computational Fluid Dynamics</b>	<b>3</b>
<a href="#">AERO ENG 5139</a>	<b>Computational Fluid Dynamics</b>	<b>3</b>
<a href="#">MECH ENG 5212</a>	<b>Introduction to Finite Element Analysis</b>	<b>3</b>
<a href="#">AERO ENG 5212</a>	<b>Introduction to Finite Element Analysis</b>	<b>3</b>
<a href="#">MECH ENG 5830</a>	<b>Applied Computational Methods</b>	<b>3</b>
<a href="#">AERO ENG 5830</a>	<b>Applied Computational Methods</b>	<b>3</b>

## Applied Analysis Emphasis Area 12

Required:

<a href="#">COMP SCI 3200</a>	Introduction To Numerical Methods	3
and two of groups 3, 4, and 5 under Mathematics and Statistics electives (plus the Capstone requirement) must be satisfied,		
and choose Technical Electives and Free Electives to satisfy one of the following two options:		

## Engineering Option

Required courses:

<a href="#">CIV ENG 2200</a>	Statics	3
<a href="#">CIV ENG 2210</a>	Mechanics Of Materials	3
Select one of the following:		
<a href="#">MECH ENG 2350</a>	Engineering Mechanics-Dynamics	
<a href="#">MECH ENG 2360</a>	Dynamics	
Select three of the following:		
9		
Courses, which have any of the listed courses as prerequisites, may also be used to fulfill this requirement.		
<a href="#">AERO ENG 3613</a>	Aerospace Mechanics I	
<a href="#">AERO ENG 5313</a>	Intermediate Dynamics of Mechanical and Aerospace Systems	
<a href="#">AERO ENG 5614</a>	Spaceflight Mechanics	
<a href="#">CHEM ENG 2100</a>	Chemical Engineering Material & Energy Balances	
<a href="#">CHEM ENG 2110</a>	Chemical Engineering Thermodynamics I	
<a href="#">ELEC ENG 2800</a>	Electrical Circuits	
<a href="#">MECH ENG 3313</a>	Machine Dynamics	
<a href="#">MECH ENG 2519</a>	Thermodynamics	
or <a href="#">MECH ENG 2527</a>	Thermal Analysis	

<a href="#">MECH ENG 5131</a>	Intermediate Thermofluid Mechanics *
<a href="#">NUC ENG 3103</a>	Interactions Of Radiation With Matter
<a href="#">NUC ENG 4203</a>	Reactor Physics I
<a href="#">PET ENG 4621</a>	Fundamentals Of Petroleum Reservoir Simulation
<a href="#">CIV ENG 3330</a>	Engineering Fluid Mechanics
or <a href="#">NUC ENG 3221</a>	Reactor Fluid Mechanics
or <a href="#">MECH ENG 3131</a>	Thermofluid Mechanics I
<a href="#">CIV ENG 5207</a>	Computer Methods of Structural Analysis
<a href="#">CIV ENG 5333</a>	Intermediate Hydraulic Engineering
<a href="#">ELEC ENG 5370</a>	Introduction To Neural Networks & Applications
<a href="#">MECH ENG 5307</a>	Vibrations I
<a href="#">MECH ENG 5211</a>	Introduction To Continuum Mechanics
<a href="#">MECH ENG 5234</a>	Stability of Engineering Structures *
<a href="#">MECH ENG 5254</a>	Variational Formulations Of Mechanics Problems
<a href="#">GEO ENG 4115</a>	Statistical Methods in Geology and Engineering
<a href="#">GEOPHYS 3211</a>	Introduction To Geophysical Data Analysis
<a href="#">GEOPHYS 3221</a>	Potential Field Theory

\* Courses with an asterisk (\*) are co-listed in more than one department.

### Physics Option

Required courses:

<a href="#">PHYSICS 2311</a>	Modern Physics I	3
<a href="#">PHYSICS 3311</a>	Modern Physics II	3
And take at least nine additional hours of physics courses at the 2000 level or above.		9

Note that the requirements for a minor in physics will be satisfied with this option.

### Secondary Education Emphasis Area

You may earn a B.S. degree in applied mathematics from Missouri S&T and certification to teach at the secondary level in the schools of Missouri with this 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 Missouri S&T campus.

Students interested in this emphasis area should consult with the advisor for mathematics education majors in the mathematics and statistics department.

In order to successfully complete this emphasis area, students must ~~have at least a 22 ACT~~, maintain a cumulative GPA of at least **2.75, 2.5**, and attain at least a **3.0 2.5** GPA in all mathematics 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 the 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 **128 132**-credit hours. The required courses and a sample four-year program are provided below. (A minimum grade of "C" is required by the department in all mathematics and statistics courses counted toward this degree. No course may be used to satisfy more than one degree **requirement, except as otherwise noted.) requirement.)**

Freshman Year			
First Semester	Credits	Second Semester	Credits
<a href="#">MATH 1101</a>	1	<del>MATH 1224</del>	<b>5</b>
<a href="#">MATH 1208</a> or <a href="#">1214</a>	<b>4</b>	<a href="#">MATH 1215</a> or <a href="#">1221</a>	<b>4</b>
<a href="#">CHEM 1100</a>	<b>1</b>	<a href="#">BIO SCI 1113</a>	3
<a href="#">ENGLISH 1120</a>	3	<a href="#">BIO SCI 1219</a> (Science Lab Requirement) <sup>1</sup>	2
<a href="#">HISTORY 1300</a> or <a href="#">1310</a>	3	<a href="#">PSYCH 1101</a>	3

<a href="#">COMP SCI 1570, or 1970 and 1980, or 1971 and 1981<sup>5</sup></a>	3	<a href="#">EDUC 1040</a>	2		
<a href="#">EDUC 1040</a>	2	<a href="#">EDUC 1164</a>	2		
<a href="#">EDUC 1104</a>	2	<a href="#">EDUC 1174</a>	2		
	16		16		
<b>Sophomore Year</b>					
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>		
<a href="#">MATH 2222</a>	4	<a href="#">MATH 3304</a>	3		
<a href="#">MATH 3108</a>	3	<a href="#">MATH 3109</a>	3		
<a href="#">PHYSICS 1114</a>	4	<a href="#">ENGLISH 1160</a>	3		
<a href="#">PHYSICS 1119</a>	4	<a href="#">PHYSICS 2111</a>	4		
<a href="#">PSYCH 3314</a>	3	<a href="#">PHYSICS 2119</a>	4		
<a href="#">EDUC 1104</a>	2	<a href="#">SP&amp;M S 1185</a>	3		
<a href="#">PHYSICS 1135 or 1111 and 1119</a>	4	<a href="#">PHYSICS 2135 or 2111 and 2119</a>	4		
<a href="#">COMP SCI 1570, or 1970 and 1980, or 1971 and 1981, or 1972 and 1982<sup>5</sup></a>	3	<a href="#">PSYCH 3311</a>	3		
<a href="#">SP&amp;M S 1185</a>	3				
	17		16		
<b>Junior Year</b>					
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>	<b>Summer Semester</b>	<b>Credits</b>
<a href="#">MATH 4209</a>	3	<a href="#">MATH 4211</a>	3	<a href="#">EDUC 2216</a>	3
<a href="#">STAT 3115, or 3117, or 5643</a>	3	<a href="#">MATH 4530</a>	3		
<a href="#">EDUC 1164</a>	2	<a href="#">PSYCH 4310</a>	3		
<a href="#">EDUC 1174</a>	2	<a href="#">EDUC 3280</a>	6		
<a href="#">PSYCH 2300</a>	3	Fine Art Elective <sup>2</sup>	3		
<a href="#">ECON 1100 or 1200</a>	3	<a href="#">PSYCH 2300 or EDUC 2102</a>	3		
<a href="#">EDUC 2216</a>	3				
<a href="#">ENGLISH 3170</a>	3				
	15		18		0
<b>Senior Year</b>					
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>		
<a href="#">MATH 4096<sup>3</sup></a>	4	<a href="#">MATH 4098</a>	4		
<a href="#">MATH 4097<sup>3</sup></a>	4	<a href="#">EDUC 4298</a> & <a href="#">EDUC 4299<sup>3</sup></a>	13		
Electives-Math or Stat <sup>4</sup>	6				
<a href="#">EDUC 2254</a>	3				
<a href="#">PSYCH 4310 or EDUC 4310</a>	3				
<a href="#">POL SCI 1200</a>	3				
Literature	3				
<a href="#">Electives</a>	2				
	17		13		
Total Credits: 128					

<sup>1</sup> May be met by [BIO SCI 1219](#) or [CHEM 1319](#), but if [CHEM 1319](#) is used, one extra hour must be attained in any elective area to fulfill the 128 total hour requirement.

<sup>2</sup> Any three-hour course from the areas of foreign language, music, theater, philosophy or art.

<sup>3</sup> Student Teaching satisfies the capstone requirement for students completing this emphasis area.

- 4 Any two three-hour courses from the following list with the approval of the mathematics education advisor. [MATH 5302](#), [MATH 5105](#), [MATH 5106](#), [MATH 5107](#), [MATH 5108](#), [MATH 5215](#), [MATH 5222](#), [MATH 5325](#), [MATH 5351](#), [MATH 5483](#), [MATH 5585](#), [STAT 5643](#), [STAT 5644](#), [STAT 5346](#), [STAT 5353](#), [COMP SCI 3200](#), [COMP SCI 5201](#), [COMP SCI 5202](#), [MATH 5737](#).
- 5 [COMP SCI 1570](#) if not transferred in will require [COMP SCI 1580](#), requiring one extra credit hour which will count either towards technical electives or free electives.

## Statistics Emphasis Area<sup>10</sup>

Required courses:

<a href="#">STAT 5643</a>	Probability And Statistics	3
<a href="#">STAT 5644</a>	Mathematical Statistics	3
<a href="#">STAT 5346</a>	Regression Analysis	3
<a href="#">STAT 5353</a>	Statistical Data Analysis (Satisfies Capstone requirement)	3
Select two of the following:		6
<a href="#">BIO SCI 2223</a>	General Genetics	3
<a href="#">COMP SCI 3200</a>	Introduction To Numerical Methods	3
<del>ENG MGT 5714</del>	<del>Statistical Process Control</del>	
<a href="#">COMP SCI 5402</a>	<a href="#">Data Mining &amp; Machine Learning</a>	3
<a href="#">STAT 5260</a>	<a href="#">Statistical Data Analysis Using SAS</a>	3
<a href="#">STAT 5814</a>	<a href="#">Applied Time Series Analysis</a>	3
And complete either A or B:		6
(A) Complete the following 2 courses:		
<a href="#">MATH 5215</a>	Introduction To Real Analysis	3
<a href="#">MATH 5351</a>	Introduction To Complex Variables	3
(B) Complete 6 hours from:		
<a href="#">MATH 5107</a>	Combinatorics And Graph Theory	3
<a href="#">MATH 5108</a>	Linear Algebra II	3
<a href="#">MATH 5603</a>	Methods of Applied Mathematics	3

**Note:** It is not required that students complete an emphasis area to obtain the bachelor of science degree in applied mathematics. The emphasis area requirements often specify most, if not all, of the electives in mathematics, statistics and computer science as well as many technical or free electives.

Justification for request

Since two required mathematics and two required physics courses have transitioned (or are transitioning) from 5-credit to 4-credit offerings, we are reducing the total credits from 132 to 128 to reflect that. The intention is for the "electives" to bring the total number of credits to 128; the exact count of elective credits might vary slightly depending on the students' choices in calculus, physics, and language/communication.

The most significant other change is the elimination of the required capstone courses 4096, 4097, and 4098 and the replacement by a "menu" of courses from which students select an option to satisfy the capstone requirement. The department felt that the change will benefit both the students and the faculty. Most of the other changes reflect new or modified offerings.

The changes in the Secondary Education emphasis area were made in consultation with staff from the Education program. For instance, Educ 2251 was replaced by Engl 3170 based on DESE requirements. The order of other courses was changed based on information about preferred course sequencing and which semester (fall, spring) courses are likely to be offered.

Supporting

Documents

Course Reviewer **sclark (02/08/16 11:13 am)**: Slight edit.

Comments **imorgan (02/14/16 9:54 am)**: Traded two courses based on feedback from Teacher Education.

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Key: 142

[Preview Bridge](#)

## Program Change Request

Date Submitted: 01/20/16 9:19 pm

Viewing: **EL ENG-BS : Electrical Engineering BS**

File: 155.33

Last approved: 08/13/14 4:24 pm

Last edit: 01/20/16 9:19 pm

Changes proposed by: watkins

Catalog Pages Using this Program	<a href="#">Electrical Engineering</a>
Start Term	Fall 2016-8/1/2014
Program Code	EL ENG-BS
Department	Electrical and Computer Engineering
Title	Electrical Engineering BS

## Program Requirements and Description

### Bachelor of Science Electrical Engineering<sup>1</sup>

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

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

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:

- All students are required to take one American history course, one economics course, one humanities or social sciences course, and [ENGLISH 1120](#). 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](#). The humanities or social sciences course must be selected from the approved lists for art, English, foreign languages, music, philosophy, speech and media studies, or theater.
- Depth requirement. Three credit hours must be taken in humanities or social sciences at the 2000-level or above and must be selected from the approved list. This course must have as a prerequisite one of the humanities or social sciences courses already taken. Foreign language courses numbered 1180 will be considered to satisfy this requirement. Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 4000-level. All courses taken to satisfy the depth requirement must be taken after graduating from high school.
- The remaining two courses are to be chosen from the list of approved humanities/social sciences courses and may include one communications course in addition to [ENGLISH 1120](#).
- Any specific departmental requirements in the general studies area must be satisfied.
- Special topics and special problems and honors seminars are allowed only by petition to and approval by the student's department chairman.

The Electrical Engineering program at Missouri S&T is characterized by its focus on the scientific basics of engineering and its innovative application; indeed, the underlying theme of this educational program is the application of the scientific basics to engineering practice through attention to problems and needs of the public. The necessary interrelations among the various topics, the engineering disciplines, and the other professions as they naturally come together in the solution of real world problems are emphasized as research, analysis, synthesis, and design are presented and discussed through classroom and laboratory instruction.

### In Workflow

- RELECENG Chair
- CCC Secretary
- Engineering DSCC Chair
- Pending CCC Agenda post
- CCC Meeting Agenda
- Campus Curricula Committee Chair
- FS Meeting Agenda
- Faculty Senate Chair
- Registrar
- kristyg

### Approval Path

- 01/21/16 9:14 am  
Daryl Beetner  
(daryl): Approved for RELECENG Chair
- 01/21/16 9:20 am  
Kaylon Buckner  
(kleb6b): Approved for CCC Secretary
- 02/12/16 12:00 pm  
srafer: Approved for Engineering DSCC Chair

### History

- Aug 6, 2014 by  
Watkins (watkins)
- Aug 13, 2014 by  
pantaleoa



## Free Electives Footnote:

Students are required to take five hours of free electives in consultation with their academic advisor. Credits which do not count towards this requirement are deficiency courses (such as algebra and trigonometry), and extra credits in required courses. Any courses outside of engineering and science must be at least three credit hours.

Freshman Year			
First Semester	Credits	Second Semester	Credits
<a href="#">FR ENG 1100</a> <sup>2</sup>	1	<a href="#">MECH ENG 1720</a>	3
<a href="#">CHEM 1310</a>	4	<a href="#">MATH 1215</a> <sup>3</sup>	4
<a href="#">CHEM 1319</a>	1	<a href="#">PHYSICS 1135</a> <sup>3,4</sup>	4
<a href="#">MATH 1214</a> <sup>3</sup>	4	<a href="#">ECON 1100 or 1200</a>	3
<a href="#">HISTORY 1200</a> , or <a href="#">1300</a> , or <a href="#">1310</a> , or <a href="#">POL SCI 1200</a>	3	Elective-Hum or Soc Sci (any level) <sup>5</sup>	3
<a href="#">ENGLISH 1120</a>	3		
	16		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits
<a href="#">ELEC ENG 2100</a> <sup>3,6,7</sup>	3	<a href="#">ELEC ENG 2200</a> <sup>3,6,7,10</sup>	3
<a href="#">ELEC ENG 2101</a> <sup>3,6</sup>	1	<a href="#">ELEC ENG 2201</a> <sup>3,6,7</sup>	1
<a href="#">MATH 2222</a> <sup>3</sup>	4	<a href="#">ELEC ENG 2120</a> <sup>3,7,9</sup>	3
<a href="#">COMP ENG 2210</a> <sup>3,6,8</sup>	3	<a href="#">MATH 3304</a> <sup>3</sup>	3
<a href="#">COMP ENG 2211</a> <sup>3,6</sup>	1	Engineering Science Elective <sup>11</sup>	3
<a href="#">PHYSICS 2135</a> <sup>3,4</sup>	4	<a href="#">COMP SCI 1570</a>	3
		<a href="#">COMP SCI 1580</a> <sup>12</sup>	1
	16		17
Junior Year			
First Semester	Credits	Second Semester	Credits
<a href="#">ELEC ENG 3100</a> <sup>3,6,9,10</sup>	3	<a href="#">ELEC ENG 3600</a> <sup>3,9</sup>	4
<a href="#">ELEC ENG 3101</a> <sup>3,6,9,10</sup>	1	El Eng Elective A <sup>10,14,19</sup>	3
<a href="#">ELEC ENG 3320</a>	3	<a href="#">ELEC ENG 3430</a>	3
<a href="#">ELEC ENG 3321</a>	1	<a href="#">ELEC ENG 3431</a>	1
<a href="#">SP&amp;M S 1185</a> <sup>13</sup>	3	<a href="#">STAT 3117</a> <sup>12</sup>	3
<a href="#">MATH 3108</a>	3	<del>ENGLISH 3560</del> <sup>13</sup>	3
		<b>Communication Elective</b> <sup>13</sup>	<b>3</b>
	14		17
Senior Year			
First Semester	Credits	Second Semester	Credits
El Eng Power Elective <sup>3,6,9,15</sup>	3	El Eng Elective C <sup>10,14</sup>	3
El Eng Power Elective Lab <sup>3,6,9,15</sup>	1	El Eng Elective E <sup>17,19</sup>	3
El Eng Elective B <sup>10,14</sup>	3	<a href="#">ELEC ENG 4097</a>	3
El Eng Elective D <sup>10,16,19</sup>	3	Elective-Hum or Soc Sci (upper level) <sup>5</sup>	3
<a href="#">ELEC ENG 4096</a> <sup>3</sup>	1	Free Elective <sup>18</sup>	3
Free Elective <sup>18</sup>	2		
Elective-Hum or Soc Sci (any level) <sup>5</sup>	3		
	16		15
Total Credits: 128			

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

1	The minimum number of hours required for a degree in Electrical Engineering is 128.
2	Students that transfer after their freshman year are not required to enroll in <a href="#">FR ENG 1100</a> .
3	A minimum grade of "C" must be attained in <a href="#">MATH 1214</a> , <a href="#">MATH 1215</a> , <a href="#">MATH 2222</a> , and <a href="#">MATH 3304</a> , <a href="#">PHYSICS 1135</a> and <a href="#">PHYSICS 2135</a> (or their equivalents), <a href="#">ELEC ENG 2100</a> , <a href="#">ELEC ENG 2101</a> , <a href="#">ELEC ENG 2120</a> , <a href="#">ELEC ENG 2200</a> , <a href="#">ELEC ENG 2201</a> , <a href="#">ELEC ENG 3320</a> , <a href="#">ELEC ENG 3321</a> , <a href="#">ELEC ENG 3430</a> , <a href="#">ELEC ENG 3431</a> , <a href="#">ELEC ENG 3100</a> , <a href="#">ELEC ENG 3101</a> , and <a href="#">ELEC ENG 3600</a> , the ELEC ENG power elective ( <a href="#">ELEC ENG 3500</a> and <a href="#">ELEC ENG 3501</a> or <a href="#">ELEC ENG 3540</a> and <a href="#">ELEC ENG 3541</a> ), <a href="#">ELEC ENG 4096</a> and <a href="#">COMP ENG 2210</a> and <a href="#">COMP ENG 2211</a> . Also, students may not enroll in other courses that use these courses as prerequisites until the minimum grade of "C" is attained.
4	Students may take <a href="#">PHYSICS 1111</a> and <a href="#">PHYSICS 1119</a> in place of <a href="#">PHYSICS 1135</a> . Students may take <a href="#">PHYSICS 2111</a> and <a href="#">PHYSICS 2119</a> in place of <a href="#">PHYSICS 2135</a> .
5	All electives must be approved by the student's advisor. Students must comply with the general education requirements with respect to selection and depth of study. These requirements are specified in the current catalog.
6	Students who drop a lecture course prior to the last week to drop a class must also drop the corequisite lab.
7	Students must earn a passing grade on the ELEC ENG Advancement Exam I (associated with <a href="#">ELEC ENG 2100</a> ) before they enroll in <a href="#">ELEC ENG 2120</a> or <a href="#">ELEC ENG 2200</a> and <a href="#">ELEC ENG 2201</a> .
8	Students must earn a passing grade on the COMP ENG Advancement Exam (associated with <a href="#">COMP ENG 2210</a> ) before they enroll in any course with <a href="#">COMP ENG 2210</a> and/or <a href="#">COMP ENG 2211</a> as prerequisites.
9	Students must earn a passing grade on the ELEC ENG Advancement Exam II (associated with <a href="#">ELEC ENG 2120</a> ) before they enroll in <a href="#">ELEC ENG 3500</a> , <a href="#">ELEC ENG 3540</a> , <a href="#">ELEC ENG 3501</a> , <a href="#">ELEC ENG 3541</a> , <a href="#">ELEC ENG 3320</a> , <a href="#">ELEC ENG 3321</a> , <a href="#">ELEC ENG 3430</a> , <a href="#">ELEC ENG 3431</a> , <a href="#">ELEC ENG 3100</a> , <a href="#">ELEC ENG 3101</a> , or <a href="#">ELEC ENG 3600</a> , or other courses with <a href="#">ELEC ENG 2120</a> as a prerequisite.
10	Students must earn a passing grade on the ELEC ENG Advancement Exam III (associated with <a href="#">ELEC ENG 2200</a> ) before they enroll in <a href="#">ELEC ENG 3100</a> and <a href="#">ELEC ENG 3101</a> or other courses with <a href="#">ELEC ENG 2200</a> as a prerequisite.
11	Students must take <a href="#">MECH ENG 2340</a> , <a href="#">MECH ENG 2519</a> , <a href="#">MECH ENG 2527</a> , <a href="#">PHYSICS 2305</a> , <a href="#">PHYSICS 2311</a> , <a href="#">PHYSICS 2401</a> , <a href="#">NUC ENG 3103</a> , <a href="#">CHEM 2210</a> , <a href="#">BIO SCI 2213</a> , or <a href="#">BIO SCI 2223</a> . The following pairs of course are substitutions: <a href="#">CIV ENG 2200</a> and <a href="#">MECH ENG 2350</a> or <a href="#">ENG MGT 2110</a> and <a href="#">ENG MGT 3310</a> .
12	Students may replace <a href="#">STAT 3117</a> with <a href="#">STAT 3115</a> or <a href="#">STAT 5643</a> . Students may replace <a href="#">COMP SCI 1580</a> with ELEC ENG 3001 Circuits and Systems Laboratory.
13	Students must take English 3560 or English 1160. Students may replace SpMS 1185 with the ROTC sequence of Mil Army 4250 and 4500 or Mil Air 4110 and 4120.
14	ELEC ENG Electives A, B, and C must be chosen from ELEC ENG 56XX, <a href="#">ELEC ENG 3500</a> , <a href="#">ELEC ENG 3540</a> , <a href="#">ELEC ENG 3410</a> , <a href="#">ELEC ENG 3250</a> , <a href="#">ELEC ENG 3340</a> , <a href="#">ELEC ENG 3440</a> , <a href="#">ELEC ENG 3120</a> , and <a href="#">COMP ENG 3150</a> . Only one ELEC ENG 56XX course may be used.
15	The ELEC ENG Power Elective may be satisfied with <a href="#">ELEC ENG 3500</a> and <a href="#">ELEC ENG 3501</a> or <a href="#">ELEC ENG 3540</a> and <a href="#">ELEC ENG 3541</a> .
16	ELEC ENG Elective D must be a 4XXX-level or above ELEC ENG or COMP ENG course with at least a 3-hour lecture component. <a href="#">ELEC ENG 4000</a> , ELEC ENG 5000, <a href="#">COMP ENG 4000</a> , COMP ENG 5000, <a href="#">ELEC ENG 4099</a> , <a href="#">COMP ENG 4099</a> , ELEC ENG 4096, <a href="#">COMP ENG 4096</a> , <a href="#">ELEC ENG 4097</a> , <a href="#">COMP ENG 4097</a> , ELEC ENG 5070, COMP ENG 5070, ELEC ENG 58XX, and COMP ENG 58XX may not be used for Elective D.
17	ELEC ENG Elective E may be any 3XXX-level or above ELEC ENG or COMP ENG course except <a href="#">ELEC ENG 3002</a> , ELEC ENG 38XX, <a href="#">ELEC ENG 4096</a> , <a href="#">ELEC ENG 4097</a> , and ELEC ENG 5070 and <a href="#">COMP ENG 3002</a> , COMP ENG 38XX, <a href="#">COMP ENG 4000</a> , <a href="#">COMP ENG 4096</a> , <a href="#">COMP ENG 4097</a> , and COMP ENG 5070.
18	Students are required to take five hours of free elective in consultation with their academic advisors. Credits that do not count toward this requirement are deficiency courses (such as algebra and trigonometry) and extra credits from courses meeting other requirements. Any courses outside of engineering and science must be at least three credit hours. ELEC ENG 28XX, ELEC ENG 38XX, <a href="#">ELEC ENG 4096</a> , <a href="#">ELEC ENG 4097</a> , COMP ENG 28XX, COMP ENG 38XX, <a href="#">COMP ENG 4096</a> and <a href="#">COMP ENG 4097</a> may not be used for free electives. No more than one credit hour of <a href="#">ELEC ENG 3002</a> or <a href="#">COMP ENG 3002</a> may be applied to the BS degree for free electives.
19	Students that pursue an optional degree emphasis area have restricted options for EI Eng Electives A, D, and E.

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

## Emphasis Areas for Electrical Engineering

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

A declared emphasis area is not required. A student may choose to obtain an Electrical Engineering degree without a formal emphasis or may choose to obtain an

Electrical Engineering degree with a declared emphasis in one or more of the emphasis areas of electrical engineering. A major change request is required to add the emphasis area option to the degree program.

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

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

Circuits and Electronics		
<a href="#">ELEC ENG 3120</a>	Electronics II	3
ELEC ENG 41XX and ELEC ENG 51XX Courses		
Communications and Signal Processing		
<a href="#">ELEC ENG 3410</a>	Digital Signal Processing	3
<a href="#">ELEC ENG 3440</a>	Digital Communications II	3
ELEC ENG 44XX and ELEC ENG 54XX Courses		
Computer Engineering		
ELEC ENG 3410, COMP ENG 3XXX-level or above Courses (Excluding COMP ENG 3000, COMP ENG 4000, COMP ENG 5000, COMP ENG 3002, COMP ENG 4096, COMP ENG 4097, and COMP ENG 5070) See the COMP ENG degree program for details on COMP ENG areas.		
Controls and Systems		
<a href="#">ELEC ENG 3340</a>	Controllers For Factory Automation	3
ELEC ENG 43XX and ELEC ENG 53XX Courses		
Electromagnetics		
ELEC ENG 46XX and ELEC ENG 56XX Courses		
Optics and Devices		
<a href="#">ELEC ENG 3250</a>	Electronic And Photonic Devices	3
ELEC ENG 42XX and ELEC ENG 52XX Courses		
Power and Energy		
<a href="#">ELEC ENG 3500</a>	Electromechanics	3
<a href="#">ELEC ENG 3540</a>	Power System Design And Analysis	3
<a href="#">ELEC ENG 5150</a>	Photovoltaic Systems Engineering	3
<a href="#">ELEC ENG 5520</a>	Power Electronics	3
<a href="#">ELEC ENG 5521</a>	Power Electronics Laboratory	2
ELEC ENG 45XX and ELEC ENG 55XX Courses		

Justification for request

The writing/communication elective wording change addresses an ABET concern about the Technical Writing requirement allowing a substitution of a course that did not have engineering-related technical content. The curriculum change provides communications options to students directly, which is more consistent with other engineering Bachelor of Science programs on campus and eliminates the implication that the requirement must include a higher level of engineering-related content. Few of the other programs on campus require both a writing course and a speech course; most require either a

writing or a speech course (English 3120, English 3560, or Sp&MS 1185). The change was approved by the ECE faculty for both the EE and CpE degree programs.

The speech ROTC change will allow a 6-credit hour course sequence in Army and Air Force ROTC at the senior level to replace the 3-credit-hour, lower-level speech requirement and would not change our writing requirement. The proposal is strongly supported by the commanders of the S&T Army ROTC and Air Force ROTC Departments and was approved by the ECE faculty for both the EE and CpE degree programs.

Other:

An Electromagnetics option is added for EE Electives ABC and the prohibition of using CpE 4099 for EE Elective E is removed. These changes formalize a policy of the department regarding these electives.

#### Supporting Documents

Course Reviewer **lahne (10/28/14 9:13 am)**: Rollback: .

Comments **kleb6b (11/03/14 2:10 pm)**: Rollback: Please address footnote 13 Student must take English 3560 or English 1160.

**daryl (01/16/16 5:40 pm)**: Rollback: As requested.

# Course Inventory Change Request

## New Experimental Course Proposal

Date Submitted: 01/15/16 12:01 pm

Viewing: **ECON 5001.001 : Experiential Entrepreneurship**

File: 4297

Last edit: 02/12/16 10:40 am

Changes proposed by: marcys

Requested	Fall 2016
Effective Change Date	
Department	Economics
Discipline	Economics (ECON)
Course Number	5001
Topic ID	001
Experimental Title	Experiential Entrepreneurship
Experimental Abbreviated Course Title	Experiential Eship
Instructors	Bonnie Bachman

### Experimental Catalog Description

Students work in multidisciplinary engineering/science/social science teams mentored by experienced entre/intrapreneurs to generate innovative ideas and transform them into models for economically viable tech companies. Experiential learning is emphasized in live customer discovery, domain exploration, prototyping and validation.

### Prerequisites

Senior or graduate standing.

### Field Trip Statement

Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0	Total: 3
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### In Workflow

1. RECONOMI 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. Ishelton
11. Peoplesoft

### Approval Path

1. 01/15/16 12:12 pm gelles: Approved for RECONOMI Chair
2. 01/15/16 12:17 pm Kaylon Buckner (kleb6b): Approved for CCC Secretary
3. 02/02/16 8:46 am barryf: Approved for Social Sciences DSCC Chair

Justification for  
new course:

This course is a required course for student entrepreneurial leads entering the newly awarded NSF I-Corps™ Site program (Dr. Bachman is PI for this new innovation and entrepreneurship center on campus). The I-Corps Site program will be rolled out to the UM System as well, where this course will be a shared course between campuses. This course is also the fifth required course in a proposed sequence of courses for the Technical Innovation and Entrepreneurship campus minor (special program) which is supported by 18 full-time tenured or tenure-track professors across 24 degree programs. It is modeled on the entrepreneurship and innovation curriculum first developed by Stanford University and subsequently became known as the NSF I-Corps curriculum and is now taught all over the world. This course was developed with assistance (two grants-2014 and 2015) from Epicenter, the National Science Center for Engineering Pathways to Innovation, funded by NSF and directed by Stanford University. Novel in its content and experiential learning approach, it is team taught and has a wide variety of external mentors such as entrepreneurs, intrapreneurs, venture capitalists, incubator directors and small business development directors that coach students throughout the semester. It leverages our students' traditional, technical strengths with a learning process where students have the freedom to develop knowledge and skills from direct experiences outside the typical academic framework while working in interdisciplinary teams.

The development of this course, Experiential Entrepreneurship, is also part of the International Affairs Study Abroad faculty grant and program for South Africa and Oman.

The campus Strategic Plan calls for more entrepreneurial content in the curriculum and this course helps meet those goals. Further, this course is in alignment with the Accreditation Board for Engineering and Technology (ABET), which requires students to demonstrate specific abilities in both technical and non-technical skills (e.g., address real-world problems, perceive opportunities, lead others, work in multidisciplinary teams, communicate effectively, react and adapt with flexibility in uncertain times and deal well with risk and failure).

Comments from students who have taken the CompSci 5001 course (precursor to the proposed Econ 5001/co-listed EngMgt 5001) include:

"Can you build a program like this class (CompSci 5001) and I-Corps where we get to work on our projects and experience the whole process of understanding customer context, needs and opportunities, and how to be creative, design the right thing, and how to build it so it solves real problems?"

"We aren't Silicon Valley where this is everyday stuff, but we're eager to learn. Can you give us the opportunity to do great things while learning a lot and developing the skills we need to have an impact in today's world?"

"Can we have more than one class that helps us learn how to take our ideas out of the labs and find out if they can make it to the marketplace?"

Although CS 5001 has been taught successfully 2 times (Fall 2014 and Fall 2015), Computer Science will not be making this a numbered course, nor offer it and therefore, to keep this course alive, two other departments (Economics and Engineering Management) will be team teaching it going forward.

Semester(s) previously taught      Taught as CS 5001 in FS20014 and FS2015 with different prereqs and course description.

Co-Listed Courses:              ENG MGT 5001 - Special Topics

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Course Reviewer  
Comments

## Course Inventory Change Request

### New Experimental Course Proposal

Date Submitted: 01/22/16 4:02 pm

Viewing: **PHILOS 3001.002 : Asian Philosophy**

File: 4275

Last edit: 01/22/16 4:21 pm

Changes proposed by: denises

Requested Fall 2016

Effective Change

Date

Department Arts, Languages, & Philosophy

Discipline Philosophy (PHILOS)

Course Number 3001

Topic ID 002

Experimental Asian Philosophy

Title

Experimental Asian Philosophy

Abbreviated

Course Title

Instructors Andrea Taylor

Experimental

Catalog

Description

This course will serve as an introduction to the foundational philosophical figures and themes in Asia. (Confucianism, Daoism, Hinduism, Buddhism, Shintoism)

Prerequisites

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Justification for new course: Expansion of the Philosophy curriculum.

Semester(s) previously taught

#### In Workflow

1. RPHILOS 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. 01/22/16 4:08 pm audram:

Approved for RPHILOS Chair

2. 01/22/16 4:21 pm Kaylon Buckner (kleb6b):

Approved for CCC Secretary

3. 01/22/16 7:43 pm dewittp:

Approved for Arts & Humanities

DSCC Chair



Co-Listed

Courses:

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Course Reviewer **lance (12/10/15 10:56 am):** Rollback: coordinate with Audra when the Fall schedule

Comments is put together . . .

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Key: 4275

[Preview Bridge](#)

# Course Inventory Change Request

## New Experimental Course Proposal

Date Submitted: 02/11/16 3:16 pm

Viewing: **SP&M S 3001.002 : Advanced Speech for Non-Native Speakers of English**

File: 4302

Last edit: 02/12/16 8:26 am

Changes proposed by: denises

Requested	Fall 2016
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	Speech & Media Studies (SP&M S)
Course Number	3001
Topic ID	002
Experimental Title	Advanced Speech for Non-Native Speakers of English
Experimental Abbreviated Course Title	Advanced Speech
Instructors	Lance Haynes, Lucy Sutcliffe

Experimental Catalog Description

Advanced public speaking for non-native speakers of English with emphasis on classroom communication. Especially recommended for aspiring GTAs.

Prerequisites

Field Trip Statement

Credit Hours	LEC: 3	LAB: 0	IND: 0	RSD: 0	Total: 3
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Justification for new course: To improve non-native graduate students' spoken English, in conjunction with the GTA workshop.

### 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. Registrar

### Approval Path

1. 02/12/16 8:07 am audram: Approved for RPHILOSO Chair
2. 02/12/16 8:26 am Kaylor Buckner (kleb6b): Approved for CCC Secretary
3. 02/12/16 10:50 am dewittp: Approved for Arts & Humanities DSCC Chair

Semester(s)  
previously taught

Co-Listed  
Courses:

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Course Reviewer  
Comments

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Key: 4302

[Preview Bridge](#)