



**Campus Curricula Committee Meeting Agenda
December 5, 2018**

**9:00am - 10:30am, Bertelsmeyer 110H
(For Faculty Senate Meeting of January 24, 2019)**

Review of submitted Course Change forms:

File: 4219.8	ARCH ENG 4850: Building Electrical Systems
File: 2069.9	ARCH ENG 5820: Building Lighting Systems
File: 1195.7	CER ENG 3325: Ceramic Processing Lab II
File: 641.1	CIV ENG 3715: Fundamentals of Geotechnical Engineering
File: 98.1	CHEM ENG 1100: Computers And Chemical Engineering
File: 71.7	COMP ENG 5151: Digital Systems Design Laboratory
File: 569.1	PSYCH 4720: Psychology of Social Technology
File: 719.9	SYS ENG 6110: Optimization under Uncertainty

Review of submitted Degree Change forms:

File: 143.28	ARC ENG-BS: Architectural Engineering BS
File: 116.5	PHYSIC-MI: Physics Minor

Review of submitted Experimental Course forms:

File: 4579	CER ENG 4001.003: Industrial Traditional Ceramics
File: 4554	MATH 6001.004: Nonlinear Optimization in Machine Learning
File: 4578	MUSIC 2001.001: Music Appreciation: Music of Latin America
File: 4569	PET ENG 4001.005: Unconventional Petroleum Resource Development

Course Change Request

Date Submitted: 11/07/18 2:12 pm

Viewing: **ARCH ENG 4850 : Building Electrical Systems**

File: 4219.8

Last approved: 02/05/18 3:29 am

Last edit: 11/16/18 10:11 am

Changes proposed by: baur

Programs
referencing this
course

[ARC ENG-BS: Architectural Engineering BS](#)

Requested **Fall 2019** ~~08/14/2018~~

Effective Change

Date

Department Civil, Architectural, and Environmental Engineering

Discipline Architectural Engineering (ARCH ENG)

Course Number 4850

Title

Building Electrical Systems

Abbreviated Bldg Elect Syst

Course Title

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. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 11/12/18 4:59 am
Joel Burken
(burken):
Approved for
RCIVILEN Chair
2. 11/12/18 3:17 pm
Brittany Parnell
(ershenb):
Approved for CCC
Secretary

3. 11/16/18 10:11 am
Stephen Raper (sraper):
Approved for Engineering DSCC Chair
4. 11/20/18 12:08 pm
Brittany Parnell (ershenb):
Approved for Pending CCC Agenda post

History

1. Sep 21, 2015 by Stuart Baur (baur)
2. Feb 5, 2018 by baur (4219.5)

The design of interior and exterior building electrical systems, including power loads, branch circuits and switching. Work includes study of applicable NFPA 70 (NEC) and related building codes.

Prerequisites

Arch Eng 4800 and **Physics 2135**. ~~Arch Eng 4820~~

Field Trip

Statement

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

Total: 3

Required for **No Yes**

Majors

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

Justification for
change:

Change the Building Lighting Systems course form a required course to a tech elective course.

Semesters
previously
offered as an
experimental
course

This typically has an enrollment of 40 students.

Co-Listed
Courses:

Course Reviewer

Comments

sraper (11/13/18 11:45 am): changed to elective for majors.

sraper (11/16/18 10:11 am): added phy 2135 as prereq per DSCC input.

Key: 4219

[Preview Bridge](#)

Course Change Request

Date Submitted: 11/01/18 10:19 am

Viewing: **ARCH ENG 5820** ~~4820~~: **Building Lighting Systems**

File: 2069.9

Last approved: 03/29/18 3:35 am

Last edit: 11/16/18 10:12 am

Changes proposed by: baur

Programs
referencing this
course

[ARC ENG-BS: Architectural Engineering BS](#)

Requested **Fall 2019** ~~08/14/2018~~

Effective Change

Date

Department Civil, Architectural, and Environmental Engineering

Discipline Architectural Engineering (ARCH ENG)

Course Number **5820** ~~4820~~

Title

Building Lighting Systems

Abbreviated Bldg Light Syst

Course Title

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. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 11/12/18 4:59 am
Joel Burken
(burken):
Approved for
RCIVILEN Chair
2. 11/12/18 3:19 pm
Brittany Parnell
(ershenb):
Approved for CCC
Secretary

3. 11/16/18 10:12 am
Stephen Raper (sraper):
Approved for Engineering DSCC Chair
4. 11/20/18 12:08 pm
Brittany Parnell (ershenb):
Approved for Pending CCC Agenda post

History

1. Sep 21, 2015 by baur (2069.1)
2. Mar 29, 2018 by baur (2069.5)

Design and specifications for interior and exterior building illumination systems. Work includes study of applicable NFPA 70 (NEC) and related building codes.

Prerequisites

Senior standing ~~Arch Eng 3804~~ and Physics 2135.

Field Trip

Statement

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

Required for **No** ~~Yes~~

Majors

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

Majors

Justification for
change:

The change will provide an opportunity for students to choose this course as an interest area instead of requiring them to take the class. This course will also serve the graduate certificate course being developed in the building systems engineering.

Semesters
previously
offered as an
experimental
course

ArchE 3805 typically has an enrollment of 40 students. Student enrollment numbers are expected to be similar.

Co-Listed
Courses:

Course Reviewer

Comments

sraper (11/13/18 11:43 am): changed to elective for majors.

sraper (11/16/18 10:12 am): added phy 2135 to prereq per DSCC request.

Key: 2069

[Preview Bridge](#)

Course Change Request

Date Submitted: 10/10/18 3:57 pm

Viewing: **CER ENG 3325 : Ceramic Processing Lab**

II

File: 1195.7

Last approved: 11/20/17 3:28 am

Last edit: 10/10/18 4:21 pm

Changes proposed by: smiller

Requested	Fall 2019 08/14/2018
Effective Change Date	
Department	Materials Science & Engineering
Discipline	Ceramic Engineering (CER ENG)
Course Number	3325
Title	Ceramic Processing Lab II
Abbreviated Course Title	Ceramic Process Lab II

Catalog Description

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. CAT entry
11. Peoplesoft

Approval Path

1. 10/10/18 4:06 pm
Greg Hilmas (ghilmas):
Approved for
RMATSENG Chair
2. 10/11/18 8:39 am
Brittany Parnell (ershenb):
Approved for CCC
Secretary

3. 11/09/18 9:01 am
Stephen Raper
(sraper):
Approved for
Engineering DSCC
Chair
4. 11/09/18 11:39
am
Brittany Parnell
(ershenb):
Approved for
Pending CCC
Agenda post

History

1. Nov 20, 2017 by
smiller (1195.1)

The second half of a two-semester sequence that gives students practical knowledge of the methods and techniques used in the fabrication of ceramics.

Prerequisites

A grade of "C" or better in Cer Eng 2325.

Field Trip

Statement

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

Justification for
change:

Lab has been reconfigured, and now is consistent with the proceeding lab course,
Cer Eng 3315

Semesters

previously
offered as an
experimental
course

Co-Listed

Courses:

Course Reviewer
Comments

Key: 1195

[Preview Bridge](#)

Course Change Request

Date Submitted: 11/07/18 2:00 pm

Viewing: **CIV ENG 3715 : Fundamentals of Geotechnical Engineering**

File: 641.1

Last edit: 11/13/18 11:42 am

Changes proposed by: baur

Programs

referencing this
course

[ARC ENG-BS: Architectural Engineering BS](#)

Other Courses

referencing this
course

In The Prerequisites:

[CIV ENG 3116 : Construction Materials, Properties And Testing](#)

[CIV ENG 4729 : Foundation Engineering](#)

[CIV ENG 5715 : Intermediate Soil Mechanics](#)

[CIV ENG 5716 : Geotechnical Earthquake Engineering](#)

[CIV ENG 5744 : Geosynthetics in Engineering](#)

[CIV ENG 6712 : Computer Modeling in Geotechnical Engineering](#)

[CIV ENG 6714 : Measurement Of Soil Properties](#)

[CIV ENG 6760 : Inca Civilization Geotechnical Engineering Practices](#)

[GEO ENG 5235 : Environmental Geological Engineering](#)

[GEO ENG 6407 : Inca Civilization Geotechnical Engineering Practices](#)

[GEO ENG 6782 : Surface Waves \(MASW\) and Ground](#)

In Workflow

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

Approval Path

1. 11/12/18 4:58 am
Joel Burken
(burken):
Approved for
RCIVILEN Chair
2. 11/12/18 3:21 pm
Brittany Parnell
(ershenb):
Approved for CCC
Secretary

[Penetrating Radar \(GPR\)](#)

[MIN ENG 4922 : Tunneling & Underground Construction Techniques](#)

[MIN ENG 6842 : Advanced Rock Mechanics](#)

[MIN ENG 6843 : Dynamic Rock Mechanics](#)

Requested **Fall 2019** ~~08/14/2018~~
 Effective Change
 Date
 Department Civil, Architectural, and Environmental Engineering
 Discipline Civil Engineering (CIV ENG)
 Course Number 3715
 Title Fundamentals of Geotechnical Engineering
 Abbreviated Geotechnical Engineering
 Course Title

3. 11/16/18 10:13
 am
 Stephen Raper
 (sraper):
 Approved for
 Engineering DSCC
 Chair
 4. 11/20/18 12:08
 pm
 Brittany Parnell
 (ershenb):
 Approved for
 Pending CCC
 Agenda post

Catalog

Description

Analysis of geotechnical systems including soil classification, index properties, permeability, compressibility and shear strength. Basic geotechnical engineering design principles as they apply to civil constructed facilities, such as analysis of foundations and earth structures. Laboratory determination of the basic properties of soils.

Prerequisites

Geo Eng 1150 or **Geology 1110**; ~~Arch Eng 2103~~; Civ Eng 2210; and preceded or accompanied by Civ Eng 3330.

Field Trip

Statement

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

Required for Majors	Yes No
Elective for Majors	No

Justification for
change:

By substituting GEO 1110 for Basic Science Elective will simplify the science requirements, the subject matter easily applies to the soil mechanics (CE 3715) and allow students more opportunity to meet the prereq. requirements in a timely manner.

Semesters
previously
offered as an
experimental
course

Co-Listed
Courses:

Course Reviewer
Comments

sraper (11/13/18 11:42 am): changed to required for majors.

Key: 641

[Preview Bridge](#)

Course Change Request

A deleted record cannot be edited

Course Deactivation Proposal

Date Submitted: 10/09/18 10:40 am

Viewing: **CHEM ENG 1100 : Computers And Chemical Engineering**

File: 98.1

Last edit: 10/30/18 8:37 am

Changes proposed by: jcwang

Programs
referencing this
course

[CH ENG-BS: Chemical Engineering BS](#)

Requested	Summer 2019 08/01/2014
Effective Change Date	
Department	Chemical and Biochemical Engineering
Discipline	Chemical Engineering (CHEM ENG)
Course Number	1100
Title	Computers And Chemical Engineering
Abbreviated Course Title	Che Computing

Catalog
Description

In Workflow

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

Approval Path

1. 10/30/18 2:13 am
Muthanna Al-Dahhan
(aldahhanm):
Approved for
RCHEMENG Chair
2. 10/30/18 8:37 am
Brittany Parnell
(ershenb):

Approved for CCC
Secretary

3. 11/09/18 9:00 am

Stephen Raper

(sraper):

Approved for

Engineering DSCC

Chair

4. 11/09/18 12:51

pm

Brittany Parnell

(ershenb):

Approved for

Pending CCC

Agenda post

Introduction to chemical engineering, both its intellectual and professional opportunities. Students are introduced to computer programming and software packages while performing meaningful chemical engineering calculations.

Prerequisites

Field Trip

Statement

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

Required for	No
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Majors

Elective for	No
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Majors

Justification for
change:

This course has not been offered for more than 10 years and will not be offered in the foreseeable future.

Semesters

previously
offered as an
experimental
course

Co-Listed

Courses:

Course Reviewer
Comments

Key: 98

[Preview Bridge](#)

Course Change Request

Date Submitted: 10/01/18 3:32 pm

Viewing: **COMP ENG 5151 : Digital Systems
Design Laboratory**

File: 71.7

Last approved: 02/09/15 3:19 am

Last edit: 10/01/18 3:56 pm

Changes proposed by: youngerr

Programs
referencing this
course

[CP ENG-BS: Computer Engineering BS](#)

Requested	Fall 2019 2015
Effective Change Date	
Department	Electrical and Computer Engineering
Discipline	Computer Engineering (COMP ENG)
Course Number	5151
Title	Digital Systems Design Laboratory
Abbreviated Course Title	Digital Sys Design Lab

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. FS Meeting
Agenda
8. Faculty Senate
Chair
9. Registrar
10. CAT entry
11. Peoplesoft

Approval Path

1. 10/01/18 3:51 pm
Daryl Beetner
(daryl): Approved
for RELECENG
Chair
2. 10/01/18 3:56 pm
Brittany Parnell
(ershenb):
Approved for CCC
Secretary

3. 10/29/18 10:32 am
Stephen Raper (sraper):
Approved for Engineering DSCC Chair
4. 11/08/18 2:21 pm
Brittany Parnell (ershenb):
Approved for Pending CCC Agenda post

History

1. Jun 30, 2014 by stanleyj (71.1)
2. Feb 9, 2015 by stanleyj (71.3)

Design of 32-bit microcontroller based systems. Topics include the instruction set architecture of a 32-bit microcontroller, assembly language and C programming, using microcontroller peripherals for communication, measurement and control.

~~Experimental studies of problems with high speed digital signals in circuits.~~ Student designs, **programs** ~~wires, tests,~~ and **tests microcontroller programs a microprocessor based projects.** ~~single board computer project. A FPGA design is programmed and tested.~~

Prerequisites

Comp Eng ~~COMP-ENG~~ 3150 or **Comp Eng** 5110.

Field Trip

Statement

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

Required for Majors	No
Elective for Majors	Yes

Justification for
change:

The description needs to be updated to reflect changes to the course content that have occurred over the last few years.

Semesters
previously
offered as an
experimental
course

Co-Listed
Courses:

Course Reviewer
Comments

Key: 71

[Preview Bridge](#)

Course Change Request

Date Submitted: 10/16/18 1:17 pm

Viewing: **PSYCH 4720 : Psychology of Social Technology** ~~Human-Computer Interaction~~

File: 569.1

Last edit: 10/16/18 1:17 pm

Changes proposed by: murray

Other Courses referencing this course

In The Prerequisites:

[PSYCH 5720 : Advanced Human-Computer Interaction](#)

Requested **Fall 2019** ~~08/14/2018~~

Effective Change

Date

Department Psychological Science

Discipline Psychology (PSYCH)

Course Number 4720

Title

Psychology of Social Technology ~~Human-Computer Interaction~~

Abbreviated **Psych of Social Tech** ~~Human-~~

Course Title ~~Computer Interact~~

Catalog Description

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. CAT entry
11. Peoplesoft

Approval Path

1. 10/23/18 9:46 am murray: Approved for RPSYCHOL Chair
2. 10/23/18 3:06 pm Brittany Parnell (ershenb): Approved for CCC Secretary

3. 10/23/18 5:37 pm

Barry Flachsbart

(barryf):

Approved for
Social Sciences
DSCC Chair

4. 11/08/18 2:21 pm

Brittany Parnell

(ershenb):

Approved for
Pending CCC
Agenda post

This course covers research, ~~Research,~~ theory, and practice from psychology and other social science disciplines ~~have implications~~ for **understanding the ~~effective design and~~ use of, **interactions with, and interactions through** ~~of~~ computers **and other technology.** ~~in organizations.~~ This course introduces students to the psychological **and social** issues **involving personal, work, and societal use of technology.** ~~in software engineering, technology in the workplace, and organizational design.~~**

Prerequisites

Psych 1101.

Field Trip

Statement

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

Required for Majors	No
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Elective for Majors	Yes No
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Justification for
change:

We are changing the name and description to reflect advances in technology. Humans are using devices beyond the traditional computer and change expands the class to address those and future changes.

Semesters

previously

offered as an

experimental

course

This is an existing class. We want to change the name and description.

Co-Listed

Courses:

Course Reviewer

Comments

Key: 569

[Preview Bridge](#)

Course Change Request

Date Submitted: 09/28/18 9:18 am

Viewing: **SYS ENG 6110 : ~~Risk Modeling and~~
Optimization under Uncertainty**

File: 719.9

Last approved: 02/05/18 3:29 am

Last edit: 10/15/18 9:14 am

Changes proposed by: qinr

Catalog Pages
referencing this
course

[Engineering Management](#)

Other Courses
referencing this
course

In The Catalog Description:

[ENG MGT 6415 : Risk Modeling and Optimization under
Uncertainty.](#)

Requested	Fall 2019 08/14/2018
Effective Change Date	
Department	Engineering Management and Systems Engineering
Discipline	Systems Engineering (SYS ENG)
Course Number	6110
Title	Risk Modeling and Optimization under Uncertainty

In Workflow

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

Approval Path

1. 09/27/18 3:24 pm
Suzanna Long
(longsuz):
Rollback to
Initiator
2. 09/28/18 9:22 am
Suzanna Long
(longsuz):

Abbreviated ~~Risk Mod and~~ Opt Uncert
Course Title

Catalog
Description

Approved for
RENGMNGT Chair
3. 09/28/18 10:56
am
Brittany Parnell
(ershenb):
Approved for CCC
Secretary
4. 10/29/18 10:35
am
Stephen Raper
(sraper):
Approved for
Engineering DSCC
Chair
5. 11/08/18 2:22 pm
Brittany Parnell
(ershenb):
Approved for
Pending CCC
Agenda post

History

1. Feb 5, 2018 by
qinr (719.1)

Optimization in the presence of model uncertainty or system stochasticity is discussed. The course covers fundamentals of stochastic programming, robust optimization, and dynamic programming. ~~Risk analysis of products and systems will be explored. Traditional probabilistic risk assessment techniques will be covered along with recent approaches (i.e., stochastic programming, robust optimization, and dynamic programming) that use historical data-based risk models to realize optimal risk management.~~

Prerequisites

Graduate standing.

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
change:

The course title and catalog description are revised to be consistent with the current focuses of optimization under uncertainty.

Semesters
previously
offered as an
experimental
course

Co-Listed
Courses:

ENG MGT 6415 - Risk Modeling and Optimization under Uncertainty

Course Reviewer
Comments

longsuz (09/27/18 3:24 pm): Rollback: Course title needs updated

sraper (10/10/18 3:26 pm): changed effective date per email request.

Key: 719

[Preview Bridge](#)

Program Change Request

Date Submitted: 11/07/18 1:45 pm

Viewing: **ARC ENG-BS : Architectural Engineering BS**

File: 143.28

Last approved: 02/27/18 10:02 am

Last edit: 11/16/18 10:16 am

Changes proposed by: baur

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

Start Term

Fall **2019** ~~2018~~

Program Code

ARC ENG-BS

Department

Civil, Architectural, and Environmental Engineering

Title

Architectural Engineering BS

Program Requirements and 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. **FS Meeting Agenda**
8. **Faculty Senate Chair**
9. **Registrar**
10. **Kristy Giacomelli**

Approval Path

1. 11/12/18 4:59 am
Joel Burken
(burken): Approved for RCIVILEN Chair
2. 11/12/18 3:14 pm
Brittany Parnell
(ershenb):
Approved for CCC Secretary
3. 11/16/18 10:16 am
Stephen Raper
(srafer): Approved for Engineering DSCC Chair
4. 11/20/18 12:08 pm
Brittany Parnell
(ershenb):
Approved for Pending CCC Agenda post

History

1. Sep 27, 2013 by
Lahne Black (lahne)
2. Sep 27, 2013 by
Lahne Black (lahne)

- 3. Apr 28, 2014 by Lahne Black (lahne)
- 4. Aug 4, 2014 by pantaleoa
- 5. Jan 30, 2015 by Stuart Baur (baur)
- 6. Sep 21, 2015 by Stuart Baur (baur)
- 7. Sep 15, 2016 by Crystal Wilson (wilsoncry)
- 8. Feb 27, 2018 by Stuart Baur (baur)

Architectural Engineering Bachelor of Science

Entering freshmen desiring to study Architectural Engineering will be admitted to the Freshman Engineering Program. They ~~will will,~~ however, be permitted, if they wish, to state ~~an a-~~Architectural Engineering preference, which ~~will 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 Architectural ~~Engineering, Engineering-~~ a minimum of 129 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. An average of at least two grade points per credit hour must also be maintained in all courses taken in Architectural 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 course, one economics course, one humanities course, and [ENGLISH 1120](#). The history course is to be selected from [HISTORY 1200](#) (preferred), [HISTORY 1300](#), or [HISTORY 1310](#). The economics course may be either [ECON 1100](#) or [ECON 1200](#). ~~ART 3203~~ ~~Art 3203~~ is required.
2. Depth requirement. Three credit hours must be taken in humanities or social sciences at the 2000-level or above. This will be satisfied by taking the required ~~HISTORY 2510 and HISTORY 4550.~~ ~~History 2510 and 4550.~~ All courses taken to satisfy the depth requirement must be taken after graduating from high school.
3. The Gen Ed course chosen must meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog and may include one communications course in addition to [ENGLISH 1120](#).
4. Special topics and special problems and honors seminars are allowed only by petition to and approval by the student's department chair.

The Architectural 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, and are design are-~~ presented and discussed through classroom and laboratory instruction.

Freshman Year			
First Semester	Credits	Second Semester	Credits

CHEM 1100	1	MATH 1215	4
FR ENG 1100 ²	1	General Ed Elective ¹	3
MATH 1214	4	MECH ENG 1720	3
ENGLISH 1120	3	PHYSICS 1135	4
General Ed Elective ¹	3		
CHEM 1310 & CHEM 1319	5		
	17		14
Sophomore Year			
First Semester	Credits	Second Semester	Credits
CIV ENG 2200 ²	3	STAT 3113	3
MATH 2222	4	GEOLOGY 1110	3
PHYSICS 2135	4	CIV ENG 2210	3
CIV ENG 2401 ²	3	CIV ENG 2211	1
ARCH ENG 2003	3	ARCH ENG 2103	3
		ART 3203	3
		MATH 3304	3
		MECH ENG 2350	2
	17		18
Junior Year			
First Semester	Credits	Second Semester	Credits
ARCH ENG 3201 ²	3	ARCH ENG 4820 ²	3
CIV ENG 3330 ²	3	STAT 3113	3
MECH ENG 2527	3	ARCH ENG 4800	3
ARCH ENG 3804	3	CIV ENG 3116	3
ENG MGT 1210	2	HISTORY 2510	3
CIV ENG 3715	3	ARCH ENG 3220	3
	17		15
Senior Year			
First Semester	Credits	Second Semester	Credits
ARCH ENG 4010	1	ARCH ENG 4097	3
ARCH ENG 3210	3	ARCH ENG Technical Elective ^{3,4}	3
ARCH ENG 4448	3	CIV ENG 4729	3
ARCH ENG Technical Elective ^{3,4}	3	General Education Elective ¹	3
HISTORY 4550	3	Basic Science Elective ⁵	3
ARCH ENG 4850	3	ARCH ENG Technical Elective ^{3,4}	3
	16		15
Total Credits: 129			

¹ All general education 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.

- 2 A grade of 'C' or better required to satisfy graduation requirements.
- 3 A grade of 'C' or better may be required in ARCH ENG technical elective prerequisite courses. Refer to the Missouri S&T undergraduate catalog for this prerequisite information.
- 4 Choose technical electives from approved lists under Emphasis Areas for Architectural Engineering Students. A maximum of 3 credits of independent study ([ARCH ENG 5000](#) or [ARCH ENG 4099](#)) may be used as a technical elective. Additional independent study course may be taken but will not count towards the B.S. Architectural Engineering degree.
- 5 ~~Each student is required to take three hours of basic science electives in consultation with his/her academic advisor. This course must be selected from the following: Chem 1301, Geo 1111, Geo 2610, Bio Sci 1213, Bio Sci 1943, Phys 1505, or Phys 2305-~~

Note: All Architectural Engineering students must take the Fundamentals of Engineering examination prior to graduation. A passing grade on this examination is not required to earn a B.S. degree, however, it is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process as described in Assessment Requirements found elsewhere in this catalog.

Emphasis Areas and Course Listings by Area for Architectural Engineering Students

Area I, Structural Engineering

ARCH ENG 5001	Special Topics	6
ARCH ENG 5203	Applied Mechanics In Structural Engineering	3
ARCH ENG 5205	Structural Analysis II	3
ARCH ENG 5260	Analysis And Design Of Wood Structures	3
ARCH ENG 5207	Computer Methods of Structural Analysis	3
ARCH ENG 5210	Advanced Steel Structures Design	3
ARCH ENG 5220	Advanced Concrete Structures Design	3
ARCH ENG 5222	Prestressed Concrete Design	3
ARCH ENG 5729	Foundation Engineering II	3
ARCH ENG 5231	Infrastructure Strengthening with Composites	3
ARCH ENG 5206	Low-Rise Building Analysis And Design	3
ARCH ENG 5208	Structural Dynamics	3

Area II, Construction Engineering and Project Management

ARCH ENG 5442	Construction Planning and Scheduling Strategies	3
ARCH ENG 5445	Construction Methods	3
ARCH ENG 5446	Management Of Construction Costs	3
ARCH ENG 5448	Green Engineering: Analysis of Constructed Facilities	3
ARCH ENG 5449	Engineering and Construction Contract Specifications	3
ENG MGT 5110	Managerial Decision Making	3
ENG MGT 5613	Value Analysis	3
ENG MGT 5711	Total Quality Management	3

Area III, Environmental Systems for Buildings

ARCH ENG 5001	Special Topics	0-6
ARCH ENG 5642	Sustainability, Population, Energy, Water, and Materials	3
ARCH ENG 5665	Indoor Air Pollution	3
ARCH ENG 5820	Building Lighting Systems	3
ARCH ENG 5850	Residential Renewable Energy Systems	3
ENG MGT 5513	Energy and Sustainability Management Engineering	3
ENG MGT 5330	Advanced Human Factors	3
IS&T 4780	Human and Organizational Factors in Cybersecurity	3
IS&T 5885	Human-Computer Interaction	3

Mechanical Emphasis Courses

MECH ENG 5309	Engineering Acoustics I	3
MECH ENG 5566	Solar Energy Technology	3
MECH ENG 5575	Mechanical Systems For Environmental Control	3

Electrical Emphasis Courses

ELEC ENG 3340	Basic Programmable Logic Controllers	3
ELEC ENG 5150	Photovoltaic Systems Engineering	3
COMP ENG 2210 & COMP ENG 2211	Introduction to Digital Logic and Computer Engineering Laboratory	4

Area IV, Construction Materials

ARCH ENG 5203	Applied Mechanics In Structural Engineering	3
CIV ENG 5113	Composition And Properties Of Concrete	3
CIV ENG 5118	Smart Materials And Sensors	3
CIV ENG 5156	Concrete Pavement Design	3
CER ENG 5810	Principles Of Engineering Materials	3

Architectural Engineering Courses

ARCH ENG 2103	Architectural Materials And Methods Of Construction	3
ARCH ENG 3804	Architectural Design II	3
ART 3203	Architectural Design I	3
ARCH ENG 4820	Course ARCH ENG 4820 Not Found	3
ARCH ENG 5820	Building Lighting Systems	3

Architectural Engineering Courses (cross-list with existing civil engineering courses)

ARCH ENG 2003	Engineering Communications and Computations	3
ARCH ENG 2001	Special Topics	0-6
ARCH ENG 3000	Special Problems	1-6
ARCH ENG 3001	Special Topics	0-6
ARCH ENG 2002	Cooperative Engineering Training	1

ARCH ENG 4010	Senior Seminar: Engineering In A Global Society	1
ARCH ENG 3201	Structural Analysis I	3
ARCH ENG 3210	Structural Design in Metals	3
ARCH ENG 3220	Reinforced Concrete Design	3
ARCH ENG 4447	Ethical, Legal and Professional Engineering Practice	2
ARCH ENG 4448	Fundamentals Of Contracts And Construction Engineering	3
ARCH ENG 4097	Senior Design Project	3
ARCH ENG 5000	Special Problems	6
ARCH ENG 5001	Special Topics	6
ARCH ENG 5205	Structural Analysis II	3
ARCH ENG 5260	Analysis And Design Of Wood Structures	3
ARCH ENG 5207	Computer Methods of Structural Analysis	3
ARCH ENG 5210	Advanced Steel Structures Design	3
ARCH ENG 5220	Advanced Concrete Structures Design	3
ARCH ENG 5222	Prestressed Concrete Design	3
ARCH ENG 5445	Construction Methods	3
ARCH ENG 5446	Management Of Construction Costs	3
ARCH ENG 5449	Engineering and Construction Contract Specifications	3
ARCH ENG 5231	Infrastructure Strengthening with Composites	3
ARCH ENG 4099	Undergraduate Research	6

Civil Engineering Courses (required courses, emphasis area, and/or technical electives)

CIV ENG 3715	Fundamentals of Geotechnical Engineering	3
CIV ENG 3116	Construction Materials, Properties And Testing	3
CIV ENG 4729	Foundation Engineering	3
CIV ENG 3330	Engineering Fluid Mechanics	3
CIV ENG 5113	Composition And Properties Of Concrete	3
CIV ENG 5117	Asphalt Pavement Design	3
CIV ENG 5729	Foundation Engineering II	3
CIV ENG 5441	Professional Aspects Of Engineering Practice	3
CIV ENG 5445	Construction Methods	3
CIV ENG 5446	Management Of Construction Costs	3
CIV ENG 5449	Engineering and Construction Contract Specifications	3

Justification for request

Substituting the basic science elective with Geology 1110 will eliminate any confusion. Additionally the realignment of courses will permit GE 1110 to serve as a prerequisite for CE 3715. Lastly, the realignment also provides students the added benefit of choosing an additional tech elective.

Supporting Documents

Course Reviewer Comments

ershenb (11/12/18 3:00 pm): updated start term to Fall 2019

ershenb (11/12/18 3:05 pm): linked Arch Eng 5820

sraper (11/16/18 10:16 am): Deleted footnote 5 per DSCC input.

Key: 143

Program Change Request

Date Submitted: 10/17/18 8:59 am

Viewing: **PHYSIC-MI : Physics Minor**

File: 116.5

Last approved: 07/21/15 1:43 pm

Last edit: 10/17/18 9:44 am

Changes proposed by: vojtat

Catalog Pages Using this Program

[Physics](#)

Start Term

Fall **2019** ~~2015~~

Program Code

PHYSIC-MI

Department

Physics

Title

Physics Minor

Program Requirements and Description

In Workflow

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

Approval Path

1. 10/17/18 9:01 am
Thomas Vojta (vojtat): Approved for RPHYSICS Chair
2. 10/17/18 9:45 am
Brittany Parnell (ershenb): Approved for CCC Secretary
3. 11/07/18 10:36 am
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 11/08/18 2:21 pm
Brittany Parnell (ershenb): Approved for Pending CCC Agenda post

History

1. **Apr 28, 2014** by waddill

Physics Minor Curriculum

The minor in physics is a flexible program whose goal is to increase the breadth and competency of science and engineering students in modern or classical physics. Science students pursuing the physics minor will be interested in a deeper understanding of fundamental physical processes. Engineering students who intend to work in research or advanced development may use a physics minor to acquire a thorough knowledge of atomic, condensed matter, and environmental physics.

The physics minor consists of **the following courses:** ~~PHYSICS 2305 or PHYSICS 2311 and 12 additional hours of physics courses at the 2000 level or above.~~

The introductory physics sequence:		
<u>PHYSICS 1111</u> & <u>PHYSICS 2111</u>	General Physics I and General Physics II	8
or <u>PHYSICS 1135</u> & <u>PHYSICS 2135</u>	Engineering Physics I and Engineering Physics II	
One course in modern physics:		
<u>PHYSICS 2305</u>	Introduction To Modern Physics	3
or <u>PHYSICS 2311</u>	Modern Physics I	
12 additional credit hours of physics courses at the 2000 level or above.		

The program will be designed to conform to the individual's interests and needs.

Justification for request

The new description of the minor is just a clarification of the requirements; it does not imply any changes to the program itself. Specifically, the new description now states explicitly that an introductory physics sequence is required for the minor *in addition* to modern physics and 12 hours of physics electives. In the old description the intro sequence was just implicitly required because it is a prerequisite for the higher classes.

Based on the old description, students have asked to have the second semester of the intro sequence (Physics 2135) count towards the 12 hours physics electives at the 2000 level or beyond - which is not intended.

The new description clarifies the requirements.

Supporting Documents

Course Reviewer Comments

ershenb (10/17/18 9:35 am): Formatted the requirements into a course table.

ershenb (10/17/18 9:37 am): .

ershenb (10/17/18 9:44 am): .

ershenb (10/17/18 9:44 am): .

Course Change Request

New Experimental Course Proposal

Date Submitted: 10/30/18 12:44 pm

Viewing: **CER ENG 4001.003 : Industrial**

Traditional Ceramics

File: 4579

Last edit: 11/20/18 1:15 pm

Changes proposed by: smiller

Requested	Spring 2019
Effective Change Date	
Department	Materials Science & Engineering
Discipline	Ceramic Engineering (CER ENG)
Course Number	4001
Topic ID	003
Experimental Title	Industrial Traditional Ceramics
Experimental Abbreviated Course Title	Traditional Ceramic
Instructors	Mary Reidmeyer

Experimental Catalog Description

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. CAT entry
8. Registrar

Approval Path

1. 10/30/18 2:19 pm
Greg Hilmas (ghilmas):
Approved for RMATSENG Chair
2. 10/31/18 8:17 am
Brittany Parnell (ershenb):
Approved for CCC Secretary
3. 11/09/18 9:02 am
Stephen Raper (sraper):
Approved for

Engineering DSCC
Chair

4. 11/20/18 1:15 pm

Brittany Parnell

(ershenb):

Approved for

Pending CCC

Agenda post

This course will provide background information useful to a student pursuing work in the traditional ceramic field. Topics covered will include raw materials, body formulations, body preparation including rheology, forming, drying, firing, glazes, quality control testing and final product property measurements.

Prerequisites

Cer Eng 2210 and Cer Eng 2315.

Field Trip

Statement

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

Justification for

new course:

The course will cover and expand on a topic area no longer fully covered in the required undergraduate curriculum. Many of our students have Co-ops and internships at traditional ceramic production facilities and are in need of the background and knowledge of materials, processes and testing of traditional ceramic materials.

Semester(s)

previously taught

Co-Listed

Courses:

Course Reviewer

Comments

sraper (11/09/18 9:02 am): Changed abbreviated course title as suggested by DSCC.

Key: 4579

[Preview Bridge](#)

Course Change Request

New Experimental Course Proposal

Date Submitted: 10/26/18 12:14 pm

Viewing: **MATH 6001.004 : Nonlinear Optimization in Machine Learning**

File: 4554

Last edit: 11/08/18 9:02 am

Changes proposed by: prunnion

Requested	Spring 2019
Effective Change Date	
Department	Mathematics & Statistics
Discipline	Mathematics (MATH)
Course Number	6001
Topic ID	004
Experimental Title	Nonlinear Optimization in Machine Learning
Experimental Abbreviated Course Title	Nonlinear Optimization
Instructors	Wenqing Hu

Experimental Catalog Description

In Workflow

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

Approval Path

1. 10/26/18 12:08 pm
Brittany Parnell (ershenb):
Rollback to Initiator
2. 10/26/18 12:26 pm
sclark: Approved for RMATHEMA Chair
3. 10/26/18 1:34 pm
Brittany Parnell (ershenb):

Approved for CCC
Secretary

4. 11/07/18 10:36
am

Katie Shannon
(shannonk):

Approved for
Sciences DSCC
Chair

5. 11/08/18 2:21 pm

Brittany Parnell
(ershenb):

Approved for
Pending CCC
Agenda post

Nonlinear optimization methods and background information in machine learning, including convex functions, steepest descent, line search method, heavy-ball method, accelerated gradient method, stochastic gradient descent and variance reduced gradient, coordinate descent, alternating directions, and nonconvex optimization.

Prerequisites

Math 2222; Math 3108; one of Stat 3115, Stat 3117, Stat 5643.

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Justification for

new course:

This is a new course being developed to leverage the expertise of new faculty and introduce new material into the curriculum. This course is designed both for mathematics graduate students and out-of-department graduate students in programs such as Computer Engineering.

Semester(s)

previously taught

Not previously taught

Co-Listed

Courses:

Course Reviewer

Comments

ershenb (10/26/18 12:08 pm): Rollback: Rollback per the request of Paul Runnion's email.

Key: 4554

[Preview Bridge](#)

Course Change Request

New Experimental Course Proposal

Date Submitted: 10/26/18 11:54 am

Viewing: **MUSIC 2001.001 : Music Appreciation:
Music of Latin America**

File: 4578

Last edit: 10/31/18 8:42 am

Changes proposed by: heldenbrandt

Requested	Spring 2019
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	Music (MUSIC)
Course Number	2001
Topic ID	001
Experimental Title	Music Appreciation: Music of Latin America
Experimental Abbreviated Course Title	Latin American Music
Instructors	Lorie Francis

Experimental Catalog Description

In Workflow

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

Approval Path

1. 10/26/18 11:50 am
Audra Merfeld-Langston (audram): Rollback to Initiator
2. 10/26/18 11:56 am
Audra Merfeld-Langston (audram): Approved for RPHILOSO Chair

3. 10/26/18 1:28 pm
Brittany Parnell
(ershenb):
Approved for CCC
Secretary
4. 10/26/18 2:01 pm
Petra Dewitt
(dewittp):
Approved for Arts
& Humanities
DSCC Chair
5. 11/08/18 2:21 pm
Brittany Parnell
(ershenb):
Approved for
Pending CCC
Agenda post

Music Appreciation: Music of Latin America emphasizes music as a universal language. Through experiential learning in percussion, students will gain an understanding that all cultures have a musical tradition, and recognizing this tradition contributes to the appreciation of each culture (e.g. Mexico, Central America, Colombia, Venezuela, etc.).

Prerequisites

None

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Justification for

new course:

Fulfills a requirement for the Latin American Studies for Technical Applications minor.

Semester(s)

previously taught

None

Co-Listed

Courses:

Course Reviewer

Comments

audram (10/26/18 11:50 am): Rollback: Please edit as indicated on paper copy.

Thank you.

Key: 4578

[Preview Bridge](#)

Course Change Request

New Experimental Course Proposal

Date Submitted: 09/27/18 2:06 pm

Viewing: **PET ENG 4001.005 : Unconventional Petroleum Resource Development**

File: 4569

Last edit: 10/31/18 8:41 am

Changes proposed by: hendrixrl

Requested	Spring 2019
Effective Change Date	
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	4001
Topic ID	005
Experimental Title	Unconventional Petroleum Resource Development
Experimental Abbreviated Course Title	Unconventionals
Instructors	Borrok and Hendrix

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. CAT entry
8. Registrar

Approval Path

1. 10/01/18 8:06 am
David Borrok (borrokd):
Approved for RGEOSENG Chair
2. 10/01/18 9:31 am
Brittany Parnell (ershenb):
Approved for CCC Secretary
3. 10/29/18 10:34 am
Stephen Raper (sraper):
Approved for

Engineering DSCC
Chair

4. 11/08/18 2:21 pm

Brittany Parnell

(ershenb):

Approved for

Pending CCC

Agenda post

Interdisciplinary course covering the geology and petroleum engineering aspects of unconventional resources designed for geology, geophysics, and engineering students. Topics include geochemistry and reservoir characterization, geology of unconventional plays, data requirements and the workflow process, drilling, completions, and stimulation.

Prerequisites

None

Field Trip

Statement

Not required

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Justification for

new course:

In the last decade and especially since the petroleum crash of 2015, the industry has pivoted away from a focus on conventional resources in sandstone and carbonate reservoirs and pivoted toward unconventional resources such as shale oil, shale gas, and tight sands. The geology and engineering workflow for exploiting these resources is very different from that of conventional projects. Nearly all of the activity in the industry is currently focused on unconventional (as are the jobs). This course is designed to help modernize the curriculum to provide our students an opportunity to learn about this developing trend in the petroleum industry.

Semester(s)

previously taught

New course

Co-Listed

Courses:

Course Reviewer

Comments

Key: 4569

[Preview Bridge](#)