



**Minutes of the Campus Curricula Committee Meeting**

**April 5, 2022**

**8:15am, Bertelsmeyer 110H**

**(For Faculty Senate Meeting of April 28, 2022)**

**Attendees:** Steve Raper, Petra Dewitt, Katie Shannon, Michael Davis, Kyle Perry, Cecil Eng Huang Chua, Evie Sherlock, Dennis Roberts, Marita Raper

The following curriculum forms were discussed and approved:

**Course Change Forms:**

File: 776.7 AERO ENG 3131 : Aerodynamics I  
File: 4642.5 BIO SCI 4316: Introduction to Geomicrobiology  
File: 4848 CHEM ENG 5325 : Carbon Capture Process Engineering  
File: 2418.5 COMP SCI 3610 : Introduction to Computer Networks  
File: 4619.7 COMP SCI 4090 : Software Engineering Capstone I  
File: 4620.4 COMP SCI 4091 : Software Engineering Capstone II  
File: 637.9 COMP SCI 4610 : Computer Security  
File: 2476.1 COMP SCI 5600 : Advanced Computer Networks  
File: 2263.1 EXP ENG 6212 : Theory Of High Explosives  
File: 4862 FRENCH 2330 : Introduction to Professional French  
File: 4855 FRENCH 3010 : The Francophone World  
File: 4856 FRENCH 3020 : Contemporary French and Francophone Literature  
File: 1505.1 FRENCH 3370 : Survey Of French Literature I (Early Period)  
File: 742.1 FRENCH 3375 : Survey Of French Literature II (Modern Period)  
File: 4864 FRENCH 4340 : French for Engineering  
File: 4866 MATH 5680 : Mathematics of Machine Learning  
File: 4853 MECH ENG 5535 : Carbon Conversion and Energy Utilization  
File: 4849 PET ENG 1120 : Introduction to Subsurface Energy and Carbon Storage  
File: 1045.4 PET ENG 3330 : Formation Evaluation  
File: 1241.1 PET ENG 4531 : Natural Gas Engineering  
File: 1983.4 PET ENG 4631 : Applied Reservoir Simulation  
File: 919.8 PET ENG 4720 : Reservoir Geomechanics  
File: 4847 PET ENG 5050 : Carbon Storage  
File: 4845 PET ENG 5801 : Petroleum Data Analytics  
File: 4859 SPANISH 2161 : Contemporary Latin America  
File: 4863 SPANISH 2330 : Introduction to Professional Spanish



File: 4857 SPANISH 3100 : Spanish Translation for Technical Applications  
File: 4858 SPANISH 4330 : Professional Spanish  
File: 4860 SPANISH 4350 : Spanish Literature, Science, and Technology

**Program Change Forms:**

File: 141.39 AE ENG-BS : Aerospace Engineering BS  
File: 153.71 CP ENG-BS : Computer Engineering BS  
File: 152.20 CV ENG-BS : Civil Engineering BS  
File: 155.57 EL ENG-BS : Electrical Engineering BS  
File: 382.13 ENV SCI-BS : Environmental Sciences BS  
File: 51.23 EV ENG-BS : Environmental Engineering BS  
File: 86.55 MC ENG-BS : Mechanical Engineering BS  
File: 103.7 MULTI-BA : Multidisciplinary Studies BA  
File: 104.29 NU ENG-BS : Nuclear Engineering BS  
File: 108.52 PE ENG-BS : Petroleum Engineering BS  
File: 386 PROPOSED : Carbon Management Engineering CT  
File: 388 PROPOSED : Intercultural Studies CT

**Experimental Course forms:**

File: 4865 PHYSICS 6001.002 : Advanced Problem Solving

**New Business:**

Reminder to put a call out for DSCC members for the 22-23 year.

The meeting adjourned at 8:46 am.

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Stephen A. Raper, Chair  
Missouri S&T Campus Curricula Committee

# Course Change Request

Date Submitted: 03/02/22 3:42 pm

Viewing: **AERO ENG 3131 : Aerodynamics I**

File: 776.7

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

Last edit: 03/03/22 11:22 am

Changes proposed by: nisbett

## In Workflow

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

## Approval Path

1. 03/02/22 5:08 pm  
David Bayless (djbkqf):  
Approved for RMECHENG Chair
2. 03/03/22 11:22 am  
Marita Raper (tibbettsmg):

### Programs

referencing this course

[AE ENG-MI: Aerospace Engineering Minor](#)

[AE ENG-BS: Aerospace Engineering BS](#)

### Other Courses

referencing this course

In The Prerequisites:

[AERO ENG 3171 : Aerodynamics II](#)

[AERO ENG 3361 : Flight Dynamics and Control](#)

[AERO ENG 4133 : Introduction to Aerothermochemistry](#)

[AERO ENG 4882 : Experimental Methods in Aerospace Engineering I](#)

[AERO ENG 5131 : Intermediate Thermofluid Mechanics](#)

[AERO ENG 5570 : Plasma Physics I](#)

[AERO ENG 5715 : Concurrent Engineering](#)

[MECH ENG 5131 : Intermediate Thermofluid Mechanics](#)

[MECH ENG 5570 : Plasma Physics I](#)

[MECH ENG 5715 : Concurrent Engineering](#)

[NUC ENG 4370 : Plasma Physics I](#)

[NUC ENG 5370 : Plasma Physics I](#)

PHYSICS 4543 : Plasma Physics I

Requested Fall 2022 ~~01/08/2018~~  
 Effective Change  
 Date  
 Department Mechanical & Aerospace Engineering  
 Discipline Aerospace Engineering (AERO ENG)  
 Course Number 3131  
 Title

Approved for CCC  
 Secretary  
 3. 03/18/22 8:35 am  
 Stephen Raper  
 (sraper):  
 Approved for  
 Engineering DSCC  
 Chair  
 4. 03/22/22 2:24 pm  
 Marita Raper  
 (tibbettsmg):  
 Approved for  
 Pending CCC  
 Agenda post  
 5. 04/05/22 9:23 am  
 Marita Raper  
 (tibbettsmg):  
 Approved for CCC  
 Meeting Agenda  
 6. 04/05/22 12:26  
 pm  
 Stephen Raper  
 (sraper):  
 Approved for  
 Campus Curricula  
 Committee Chair

**History**

1. Oct 19, 2015 by isaac (776.1)
2. Oct 7, 2017 by nisbett (776.5)

Aerodynamics I



Abbreviated Aerodynamics I

Course Title

## Catalog

## Description

A study of the fundamental concepts of fluid mechanics as applied to aerodynamic applications with both differential and control volume analysis. Theory and application of viscous and inviscid incompressible flow including boundary layer theory and two dimensional airfoil theory.

## Prerequisites

A grade of "C" or better in each of the following: Aero Eng 2861; Math 1214 or Math 1211; ~~1208~~; Math 1215; ~~1215 or~~ Math ~~1221~~; ~~Math~~ 2222; Physics 1135 or Physics 1111.

## Field Trip

## Statement

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

Required for Majors	Yes
---------------------	-----

Elective for Majors	No
---------------------	----

Justification for  
change:

Adding the additional option of Math 1211 as a prerequisite. Deleting the old math courses that are no longer offered from prerequisites.

Semesters

previously

offered as an

experimental

course

Co-Listed

Courses:

Course Reviewer

Comments

**tibbettsmg (03/03/22 11:22 am):** the prereq changes are considered non-affecting changes and can be submitted for Fall 22. MR

Key: 776

[Preview Bridge](#)

# Course Change Request

Date Submitted: 02/14/22 12:05 pm

Viewing: **BIO SCI 4316 ~~4343~~ : Introduction to Geomicrobiology**

File: 4642.5

Last approved: 10/07/19 6:01 am

Last edit: 02/16/22 12:42 pm

Changes proposed by: shannonk

## In Workflow

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

## Approval Path

1. 02/14/22 12:42 pm  
David Duvernell (duvernell):  
Approved for  
RBIOLSCI Chair
2. 02/16/22 12:42 pm  
Marita Raper

Programs referencing this course

[ENV SCI-BS: Environmental Sciences BS](#)

[EV ENG-BS: Environmental Engineering BS](#)

Requested	<u>Fall 2022</u> <del>Spring 2020</del>
Effective Change	
Date	
Department	Biological Sciences
Discipline	Biological Sciences (BIO SCI)
Course Number	<u>4316</u> <del>4343</del>
Title	

(tibbettsmg):  
Approved for CCC  
Secretary

3. 03/14/22 9:05 am

Katie Shannon  
(shannonk):  
Approved for  
Sciences DSCC  
Chair

4. 03/22/22 2:25 pm

Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:23 am

Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda

6. 04/05/22 12:25  
pm

Stephen Raper  
(sraper):  
Approved for  
Campus Curricula  
Committee Chair

## History

1. Oct 7, 2019 by  
Katie Shannon  
(shannonk)

Abbreviated Intro Geomicro  
Course Title

### Catalog

#### Description

Microorganisms have profound effects on the environment around them and have influenced biochemical and mineralogical processes throughout time. This course will explore the impact microorganisms have on geological processes.

#### Prerequisites

Bio Sci 3313.

#### Field Trip

#### Statement

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

Total: 3

Required for	No
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Majors

Elective for	Yes
--------------	-----

Majors

#### Justification for

change:

BIO SCI 4343 is an old course number for comparative chordate anatomy and should not have been used for a different course

#### Semesters

previously

offered as an

experimental

course

Spring 2014 - nine undergraduate students

Spring 2016 - ten undergraduate students

Spring 2018 - six undergraduate students (Spring 2018 Bio Sci 4001 -6 undergraduate students)

Co-Listed

Courses:

Course Reviewer

Comments

**tibbettsmg (02/16/22 12:42 pm):** renumbering required due to technical error of duplicate course number. MR

Key: 4642

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 12/16/21 5:17 pm

Viewing: **CHEM ENG 5325 : Carbon Capture**

## Process Engineering

File: 4848

Last edit: 12/17/21 8:51 am

Changes proposed by: jcwang

Programs  
referencing this  
course

[PROPOSED: Carbon Management Engineering](#)

Requested                      Fall 2022

Effective Change

Date

Department                    Chemical and Biochemical Engineering

Discipline                      Chemical Engineering (CHEM ENG)

Course Number                5325

Title

### 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. 12/16/21 6:43 pm  
Hu Yang (huyang):  
Approved for  
RCHEMENG Chair
2. 03/03/22 11:01  
am  
Marita Raper  
(tibbettsmg):  
Approved for CCC

Secretary

3. 03/18/22 8:35 am

Stephen Raper

(sraper):

Approved for

Engineering DSCC

Chair

4. 03/22/22 2:26 pm

Marita Raper

(tibbettsmg):

Approved for

Pending CCC

Agenda post

5. 04/05/22 9:23 am

Marita Raper

(tibbettsmg):

Approved for CCC

Meeting Agenda

6. 04/05/22 12:25

pm

Stephen Raper

(sraper):

Approved for

Campus Curricula

Committee Chair

## Carbon Capture Process Engineering

Abbreviated Course Title      Carbon Capture

## Catalog

## Description

An introduction to the process technologies and material design associated with capturing carbon in industrial operations to reduce carbon emission, reutilizing captured carbon in oil and chemical process industries, and extracting carbon from



the atmosphere to mitigate green-house effect and climate change.

#### Prerequisites

Chem Eng 3150 or graduate standing.

#### Field Trip

#### Statement

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

Total: 3

Required for	No
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#### Majors

Elective for	Yes
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#### Majors

#### Justification for

new course:

Carbon management has become the central theme for combating climate change. It channels a spectrum of methodologies and strategies where carbon capture plays critical roles on many levels. This course introduces the students to the capabilities of process engineering in achieving carbon capture on multiple fronts. It is intended to be a required course for the new Graduate Certificate in Carbon Management Engineering as well as a new technical elective course to interested students across several disciplines.

#### Semesters

previously

offered as an

experimental

course

#### Co-Listed

Courses:

#### Course Reviewer

Comments

**tibbettsmg (12/17/21 8:51 am):** course required for new CT. mt

Key: 4848

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/14/22 12:43 pm

Viewing: **COMP SCI 3610** : [Introduction to](#)

## Computer Networks

File: 2418.5

Last approved: 06/17/19 3:37 am

Last edit: 03/16/22 11:54 am

Changes proposed by: zhupe

Programs  
referencing this  
course

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

[CMP SC-BS: Computer Science BS](#)

Other Courses  
referencing this  
course

In The Prerequisites:

[COMP SCI 4090 : Software Engineering Capstone I](#)

Requested	<u><a href="#">Spring 2023</a></u> <del>Fall 2019</del>
Effective Change Date	
Department	Computer Science
Discipline	Computer Science (COMP SCI)
Course Number	3610
Title	

### In Workflow

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

### Approval Path

1. 03/14/22 1:05 pm  
Samuel Frimpong  
(frimpong):  
Approved for  
RCOMPSCI Chair
2. 03/16/22 11:54  
am  
Marita Raper  
(tibbettsmg):

Approved for CCC  
Secretary

3. 03/22/22 3:21 pm

Stephen Raper

(sraper):

Approved for  
Engineering DSCC  
Chair

4. 03/23/22 11:32

am

Marita Raper

(tibbettsmg):

Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:23 am

Marita Raper

(tibbettsmg):

Approved for CCC  
Meeting Agenda

6. 04/05/22 12:24

pm

Stephen Raper

(sraper):

Approved for  
Campus Curricula  
Committee Chair

## History

1. Jun 17, 2019 by  
tauritzd (2418.1)

[Introduction to](#) Computer Networks

Abbreviated [Intro.](#) Computer Networks

## Course Title

## Catalog

## Description

This course covers general principles of computer networking, focusing primarily on internet protocols. It covers the TCP/IP stack, with the application layer first, moving down through link and physical layers. Topics include network virtualization, security, wireless, and mobile networks, with extensive live protocol analysis. Coursework is project based.

## Prerequisites

A grade of "C" or better in Comp Sci 3800.

## Field Trip

## Statement

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

Total: 3

Required for	Yes
--------------	-----

Majors

Elective for	No
--------------	----

Majors

Justification for  
change:

The title "Introduction to Computer Networks" is more appropriate for this course.

Semesters

previously

offered as an

experimental

course

Co-Listed

Courses:

## Course Reviewer

## Comments

**tibbettsmg (03/16/22 11:54 am):** cannot be considered for Fall 22; updated effective term to Sp23. MR

Key: 2418

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/14/22 1:01 pm

Viewing: **COMP SCI 4090 : Software Engineering  
Capstone I**

File: 4619.7

Last approved: 10/14/19 6:01 am

Last edit: 03/16/22 12:00 pm

Changes proposed by: zhupe

Programs  
referencing this  
course

[CMP SC-BS: Computer Science BS](#)

Other Courses  
referencing this  
course

In The Prerequisites:

[COMP SCI 4091 : Software Engineering Capstone II](#)

Requested	Fall <del>2019</del> <u>2022</u>
Effective Change Date	
Department	Computer Science
Discipline	Computer Science (COMP SCI)
Course Number	4090
Title	

In Workflow

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

Approval Path

1. 03/14/22 1:05 pm  
Samuel Frimpong  
(frimpong):  
Approved for  
RCOMPSCI Chair
2. 03/16/22 12:00  
pm  
Marita Raper  
(tibbetmsg):

Approved for CCC  
Secretary

3. 03/22/22 3:21 pm

Stephen Raper

(sraper):

Approved for  
Engineering DSCC  
Chair

4. 03/23/22 11:33

am

Marita Raper

(tibbettsmg):

Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:24 am

Marita Raper

(tibbettsmg):

Approved for CCC  
Meeting Agenda

6. 04/05/22 12:24

pm

Stephen Raper

(sraper):

Approved for  
Campus Curricula  
Committee Chair

## History

1. Oct 14, 2019 by

Daniel Tauritz

(tauritzd)



Abbreviated SE Capstone I

Course Title

## Catalog

## Description

This is the first course in the Software Engineering Capstone sequence covering the Software Life Cycle. Students will learn about software engineering, and work in teams to spec, design, prototype, implement, test, document, deploy, and maintain a software system. This course is programming intensive, writing emphasized and addresses ethical considerations.

## Prerequisites

A grade of "C" or better in all of Comp Sci 2300, Comp Sci 2500, and Comp Sci 3610.  
~~3610, and in one of Philos 3225, Philos 3235, Philos 4340, or Philos 4368.~~

## Field Trip

## Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

Yes

Majors

Elective for

No

Majors

## Justification for

change:

Philos 3225, Philos 3235, Philos 4340, or Philos 4368 are not directly needed for CS4090. The prerequisites have been updated to better reflect content application within the Capstone courses.

## Semesters

previously

offered as an

experimental

course

Co-Listed

Courses:

Course Reviewer

Comments

**tibbettsmg (03/16/22 12:00 pm):** this can be considered for Fall 22 as it is reducing the prereq and will not negatively impact students. MR

Key: 4619

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/14/22 1:01 pm

Viewing: **COMP SCI 4091 : Software Engineering  
Capstone II**

File: 4620.4

Last approved: 10/14/19 6:01 am

Last edit: 03/16/22 12:02 pm

Changes proposed by: zhupe

Programs  
referencing this  
course

[CMP SC-BS: Computer Science BS](#)

Requested	<u>Spring 2023</u> <del>Fall 2019</del>
Effective Change Date	
Department	Computer Science
Discipline	Computer Science (COMP SCI)
Course Number	4091
Title	

In Workflow

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

Approval Path

1. 03/14/22 1:05 pm  
Samuel Frimpong  
(frimpong):  
Approved for  
RCOMPSCI Chair
2. 03/16/22 12:04  
pm  
Marita Raper  
(tibbettsmg):

Approved for CCC  
Secretary

3. 03/22/22 3:21 pm

Stephen Raper

(sraper):

Approved for  
Engineering DSCC  
Chair

4. 03/23/22 11:34  
am

Marita Raper

(tibbettsmg):

Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:24 am

Marita Raper

(tibbettsmg):

Approved for CCC  
Meeting Agenda

6. 04/05/22 12:25  
pm

Stephen Raper

(sraper):

Approved for  
Campus Curricula  
Committee Chair

## History

1. Oct 14, 2019 by  
Daniel Tauritz  
(tauritzd)

Abbreviated SE Capstone II

Course Title

## Catalog

## Description

This is the second course in the Software Engineering Capstone sequence covering the Software Life Cycle. Students will learn about software engineering, and work in teams to spec, design, prototype, implement, test, document, deploy and maintain a software system. This course is programming intensive, writing emphasized and addresses ethical considerations.

## Prerequisites

A grade of "C" or better in both Comp Sci 4090 and Comp Sci [4610, and proceeded or accompanied by one of Philos 3225, Philos 3235, Philos 4340 or Philos 4368.](#)

~~4610.~~

## Field Trip

## Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

Yes

Majors

Elective for

No

Majors

## Justification for

change:

Adjusting prerequisites to better reflect content application within the Capstone courses.

## Semesters

previously

offered as an

experimental

course

Co-Listed

Courses:

Course Reviewer

Comments

**tibbettsmg (03/16/22 12:02 pm):** this will negatively impact students and cannot be considered for Fall 22. Updated effective term to Sp23. MR

Key: 4620

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/14/22 12:44 pm

Viewing: **COMP SCI 4610 : Computer Security**

File: 637.9

Last approved: 10/28/19 6:01 am

Last edit: 03/16/22 12:05 pm

Changes proposed by: zhupe

## In Workflow

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

### Programs

referencing this course

[CMP SC-BS: Computer Science BS](#)

### Other Courses

referencing this course

In The Prerequisites:

[COMP SCI 4091 : Software Engineering Capstone II](#)

[COMP SCI 6600 : Formal Methods in Computer Security](#)

Requested	Spring <del>2020</del> <u>2023</u>
Effective Change Date	
Department	Computer Science
Discipline	Computer Science (COMP SCI)
Course Number	4610
Title	

## Approval Path

1. 03/14/22 1:04 pm  
Samuel Frimpong (frimpong):  
Approved for RCOMPSCI Chair
2. 03/16/22 12:05 pm  
Marita Raper (tibbetmsg):

Approved for CCC  
Secretary

3. 03/22/22 3:21 pm

Stephen Raper

(sraper):

Approved for  
Engineering DSCC  
Chair

4. 03/23/22 11:34

am

Marita Raper

(tibbettsmg):

Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:24 am

Marita Raper

(tibbettsmg):

Approved for CCC  
Meeting Agenda

6. 04/05/22 12:25

pm

Stephen Raper

(sraper):

Approved for  
Campus Curricula  
Committee Chair

## History

1. Aug 5, 2019 by tauritzd (637.1)
2. Oct 28, 2019 by zhupe (637.5)



Abbreviated            Computer Security  
Course Title

## Catalog

## Description

This course covers principles of threat-modeling, trust, and security policies. Topics include cryptography, reverse engineering, software security, malware analysis, authentication, access controls, operating systems hardening, virtualization, database security, and network security. This class is programming intensive and project based, with case-analyses.

## Prerequisites

A grade of "C" or better in Comp Sci 3610. ~~3800~~.

## Field Trip

## Statement

## Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

## Required for

Yes

## Majors

## Elective for

No

## Majors

## Justification for

## change:

We are starting to offer CS3610 (Computer Networks) in this spring semester and are ready to restore the original prerequisite CS3610 proposed two years ago.

## Semesters

## previously

## offered as an

## experimental

## course

## Co-Listed

## Courses:

Course Reviewer

Comments

**tibbettsmg (03/16/22 12:05 pm):** This change cannot be considered for Fall 22.

Updated term to Sp23. MR

Key: 637

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/14/22 12:57 pm

Viewing: **COMP SCI 5600 : Advanced Computer Networks**

File: 2476.1

Last edit: 03/16/22 12:09 pm

Changes proposed by: zhupe

Programs  
referencing this  
course

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

[CP ENG-MI: Computer Engineering Minor](#)

Other Courses  
referencing this  
course

In The Prerequisites:

[COMP ENG 5420 : Introduction to Network Security.](#)

[COMP SCI 6303 : Pervasive Computing](#)

Requested	<a href="#">Spring 2023</a> <del>08/14/2018</del>
Effective Change Date	
Department	Computer Science
Discipline	Computer Science (COMP SCI)
Course Number	5600
Title	

In Workflow

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

Approval Path

1. 03/14/22 1:04 pm  
Samuel Frimpong (frimpong):  
Approved for RCOMPSCI Chair
2. 03/16/22 12:10 pm  
Marita Raper (tibbettsmg):

Approved for CCC  
Secretary

3. 03/22/22 3:21 pm

Stephen Raper

(sraper):

Approved for  
Engineering DSCC  
Chair

4. 03/23/22 11:35

am

Marita Raper

(tibbettsmg):

Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:24 am

Marita Raper

(tibbettsmg):

Approved for CCC  
Meeting Agenda

6. 04/05/22 12:25

pm

Stephen Raper

(sraper):

Approved for  
Campus Curricula  
Committee Chair

## Advanced Computer Networks

Abbreviated            Computer Networks  
Course Title

### Catalog

### Description

This course focuses on the ~~Internet and the general~~ principles of computer

networking. It covers the TCP/IP model from the application layer to the physical layer. ~~link layer in a top-down approach. It also exposes students to multimedia networking, network security, wireless and mobile networks.~~ It is a ~~networking class~~ targeted toward ~~for~~ entry-level graduate students. It also exposes students to multimedia networking, network security, wireless and mobile networks. It involves ~~This course has additional requirements beyond CS4600 on~~ network performance modeling and analysis, ~~development~~ and implementing ~~implementation of complex~~ communication protocols. ~~Credit will not be given if previously have taken CS4600 or CpE 4410/5410.~~

#### Prerequisites

A grade of "C" or better ~~grade~~ in Comp Sci 3610. ~~3800.~~

#### Field Trip

#### Statement

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

Total: 3

Required for	No
--------------	----

Majors

Elective for	<u>Yes</u> <del>No</del>
--------------	--------------------------

Majors

#### Justification for

change:

CS4600 was never really taught, and thus it should be removed. CpE4410 does not exist anymore, and thus it should be removed. CS5600 used to be our only core networking course. Now, we have an introduction to networking, CS3610, which itself requires 3800. So we update the prerequisite and the course description.

#### Semesters

previously

offered as an

experimental

course

Co-Listed

Courses:

Course Reviewer

Comments

**tibbettsmg (03/16/22 12:09 pm):** this change cannot be considered for Fall 22; updated term to Spring 23. While the description seems to be significantly changed, it does not appear that the content of the course is dramatically altered. MR

Key: 2476

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/09/22 12:43 pm

Viewing: **EXP ENG 6212 : Theory Of High**

## Explosives

File: 2263.1

Last edit: 03/09/22 1:52 pm

Changes proposed by: caseysc

Other Courses  
referencing this  
course

In The Catalog Description:

[MIN ENG 6632 : Theory Of High Explosives](#)

Requested	<u>Spring 2023</u> <del>08/01/2014</del>
Effective Change Date	
Department	Mining & Nuclear Engineering
Discipline	Explosives Engineering (EXP ENG)
Course Number	6212
Title	

### In Workflow

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

### Approval Path

1. 03/09/22 1:38 pm  
Kwame Awuah-  
Offei (kwamea):  
Approved for  
MINEXP ENG  
Chair
2. 03/09/22 1:52 pm  
Marita Raper

(tibbettsmg):  
Approved for CCC  
Secretary

3. 03/22/22 3:21 pm

Stephen Raper  
(sraper):  
Approved for  
Engineering DSCC  
Chair

4. 03/23/22 11:36  
am

Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:24 am

Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda

6. 04/05/22 12:25  
pm

Stephen Raper  
(sraper):  
Approved for  
Campus Curricula  
Committee Chair

## Theory Of High Explosives

Abbreviated Course Title      Theory Of High Explosives

Catalog  
Description



Study of the application of chemical thermodynamics and the hydrodynamic theory to determine the properties of high explosives; application of detonation theory to steady-state detonations in real explosives; application of the above to the blasting action of explosives.

#### Prerequisites

[Graduate Standing; Math 1215, Chemistry 1310, Physics 1135, and either Exp Eng 5112 or Exp Eng 5612.](#) ~~Graduate Standing.~~

#### Field Trip

#### Statement

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

Total: 3

Required for	No
--------------	----

Majors

Elective for	No
--------------	----

Majors

#### Justification for

change:

Explosives Engineering Technology Masters allows for non engineering students to enroll in this course. This course requires a basic engineering foundation.

#### Semesters

previously

offered as an

experimental

course

#### Co-Listed

Courses:

MIN ENG 6632 - Theory Of High Explosives

#### Course Reviewer

Comments

**tibbettsmg (03/09/22 1:52 pm):** updated effective term to Spring 23 and notified dept that prereqs are not checked for 6xxx level courses. MR

Key: 2263

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 03/02/22 3:17 pm

Viewing: **FRENCH 2330 : Introduction to**

## Professional French

File: 4862

Last edit: 04/05/22 9:24 am

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	Fall 2022
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	French (FRENCH)
Course Number	2330
Title	

### 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. CAT entry
11. Peoplesoft

### Approval Path

1. 03/03/22 12:59 pm  
Audra Merfeld-Langston  
(audram):  
Approved for  
RPHILOS Chair
2. 03/09/22 12:28

- pm
- Marita Raper  
(tibbettsmg):  
Approved for CCC  
Secretary
- 3. 03/09/22 2:39 pm  
Petra Dewitt  
(dewittp):  
Approved for Arts  
& Humanities  
DSCC Chair
- 4. 03/22/22 2:27 pm  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
- 5. 04/05/22 9:24 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
- 6. 04/05/22 12:26  
pm  
Stephen Raper  
(sraper):  
Approved for  
Campus Curricula  
Committee Chair

Introduction to Professional French

Abbreviated            Intro Professional Fren.  
Course Title

Catalog

## Description

This course introduces students to the linguistic and intercultural skills necessary to succeed in professional settings in which the principal language of communication is French. Course materials and discussions are in French.

## Prerequisites

French 1180.

## Field Trip

## Statement

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

Total: 3

Required for	No
--------------	----

Majors

Elective for	Yes
--------------	-----

Majors

## Justification for

new course:

This course is part of the new emphasis area "French Language and French-Speaking Cultures" (Multidisciplinary Studies B.A. degree).

## Semesters

previously

offered as an

experimental

course

N/A

## Co-Listed

Courses:

## Course Reviewer

## Comments

**tibbettsmg (03/09/22 12:28 pm):** recommend removing "consent of instructor" from prereq as it is unnecessary. MR

Key: 4862

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 01/24/22 11:11 am

Viewing: **FRENCH 3010 : The Francophone World**

File: 4855

Last edit: 03/09/22 2:40 pm

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	Fall 2022
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	French (FRENCH)
Course Number	3010
Title	

### In Workflow

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

### Approval Path

1. 03/01/22 11:25 am  
Audra Merfeld-Langston  
(audram):  
Approved for RPHILOSOSO Chair
2. 03/09/22 12:30

- pm
- Marita Raper  
(tibbettsmg):  
Approved for CCC  
Secretary
- 3. 03/09/22 2:40 pm  
Petra Dewitt  
(dewittp):  
Approved for Arts  
& Humanities  
DSCC Chair
- 4. 03/22/22 2:27 pm  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
- 5. 04/05/22 9:25 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
- 6. 04/05/22 12:25  
pm  
Stephen Raper  
(sraper):  
Approved for  
Campus Curricula  
Committee Chair

The Francophone World

Abbreviated            The Francophone World  
Course Title

Catalog



## Description

This course explores history and culture of the French-speaking world. Students will broaden and deepen their understanding of its richness and diversity. Specific topics and regions covered may vary. The course is taught in French.

## Prerequisites

Any 2000-level French course.

## Field Trip

## Statement

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

Total: 3

Required for	No
--------------	----

Majors

Elective for	Yes
--------------	-----

Majors

## Justification for

new course:

French curriculum for French Language and French-Speaking Cultures emphasis area with the Multidisciplinary Studies degree.

## Semesters

previously

offered as an

experimental

course

## Co-Listed

Courses:

## Course Reviewer

## Comments

**tibbettsmg (03/09/22 12:29 pm):** recommend removing "consent of instructor" from prereq as it is unnecessary. MR

Key: 4855

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 01/24/22 11:15 am

Viewing: **FRENCH 3020 : Contemporary French and Francophone Literature**

File: 4856

Last edit: 03/09/22 4:12 pm

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	Fall 2022
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	French (FRENCH)
Course Number	3020
Title	

### In Workflow

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

### Approval Path

1. 03/01/22 11:29 am  
Audra Merfeld-Langston  
(audram):  
Approved for RPHILOSOSO Chair
2. 03/09/22 12:30

pm

Marita Raper

(tibbettsmg):

Approved for CCC

Secretary

3. 03/09/22 4:13 pm

Petra Dewitt

(dewittp):

Approved for Arts

&amp; Humanities

DSCC Chair

4. 03/22/22 2:33 pm

Marita Raper

(tibbettsmg):

Approved for

Pending CCC

Agenda post

5. 04/05/22 9:25 am

Marita Raper

(tibbettsmg):

Approved for CCC

Meeting Agenda

6. 04/05/22 12:25

pm

Stephen Raper

(sraper):

Approved for

Campus Curricula

Committee Chair

## Contemporary French and Francophone Literature

Abbreviated

Contemp Francophone Lit

Course Title

Catalog

**Description**

Studies in contemporary Francophone literature (fiction and non-fiction). Course materials, assignments, and discussions are in French.

**Prerequisites**

Any 2000- level French course.

**Field Trip****Statement**

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

No

Majors

Elective for

Yes

Majors

**Justification for**

new course:

French curriculum for French Language and French-Speaking Cultures emphasis area with the Multidisciplinary Studies degree.

**Semesters**

previously

offered as an

experimental

course

**Co-Listed**

Courses:

Course Reviewer

Comments

Key: 4856

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/10/22 10:34 am

Viewing: **FRENCH 3370 ~~4370~~ : Survey Of French Literature I (Early Period)**

File: 1505.1

Last edit: 03/10/22 11:22 am

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	<u>Fall 2022</u> <del>08/14/2018</del>
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	French (FRENCH)
Course Number	<u>3370</u> <del>4370</del>
Title	

## In Workflow

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

## Approval Path

1. 03/01/22 11:29 am  
Audra Merfeld-Langston  
(audram):  
Approved for RPHILOSO Chair
2. 03/09/22 12:33

pm

Marita Raper

(tibbettsmg):

Rollback to

Initiator

3. 03/10/22 10:52

am

Audra Merfeld-

Langston

(audram):

Approved for

RPHILOS0 Chair

4. 03/10/22 11:03

am

Marita Raper

(tibbettsmg):

Approved for CCC

Secretary

5. 03/10/22 11:22

am

Petra Dewitt

(dewittp):

Approved for Arts

& Humanities

DSCC Chair

6. 03/22/22 2:34 pm

Marita Raper

(tibbettsmg):

Approved for

Pending CCC

Agenda post

7. 04/05/22 9:25 am

Marita Raper

(tibbettsmg):

Approved for CCC

Meeting Agenda  
 8. 04/05/22 12:25  
 pm  
 Stephen Raper  
 (sraper):  
 Approved for  
 Campus Curricula  
 Committee Chair

## Survey Of French Literature I (Early Period)

Abbreviated                  Survey Of French Lit I  
 Course Title

### Catalog

#### Description

The history and development of French literature from Les Chansons De Geste through the important philosophers of the 18th century to Beaumarchais. Assigned readings are in French, and lectures are largely in French.

#### Prerequisites

French 2170.

#### 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:

French curriculum for French Language and French-Speaking Cultures emphasis area



with the Multidisciplinary Studies degree. Language literature survey courses are being renumbered to the 3000 level. 4000 level courses will be reserved for more intensives study of a particular topic.

#### Semesters

previously  
offered as an  
experimental  
course

#### Co-Listed

Courses:

#### Course Reviewer

#### Comments

**tibbettsmg (03/09/22 12:33 pm):** Rollback: please provide justification for renumbering request and resubmit. MR

**tibbettsmg (03/10/22 11:02 am):** this renumbering request can be considered for Fall 22 as long as the course is not added to the schedule until approvals are complete. MR

Key: 1505

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/10/22 10:34 am

Viewing: **FRENCH 3375 ~~4375~~ : Survey Of French Literature II (Modern Period)**

File: 742.1

Last edit: 03/10/22 11:04 am

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	<u>Fall 2022</u> <del>08/14/2018</del>
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	French (FRENCH)
Course Number	<u>3375</u> <del>4375</del>
Title	

## In Workflow

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

## Approval Path

1. 03/01/22 11:31 am  
Audra Merfeld-Langston  
(audram):  
Approved for RPHILOSΟ Chair
2. 03/09/22 12:34

pm

Marita Raper

(tibbettsmg):

Rollback to

Initiator

3. 03/10/22 10:53

am

Audra Merfeld-

Langston

(audram):

Approved for

RPHILOS0 Chair

4. 03/10/22 11:05

am

Marita Raper

(tibbettsmg):

Approved for CCC

Secretary

5. 03/10/22 11:23

am

Petra Dewitt

(dewittp):

Approved for Arts

& Humanities

DSCC Chair

6. 03/22/22 2:35 pm

Marita Raper

(tibbettsmg):

Approved for

Pending CCC

Agenda post

7. 04/05/22 9:25 am

Marita Raper

(tibbettsmg):

Approved for CCC

Meeting Agenda  
 8. 04/05/22 12:25  
 pm  
 Stephen Raper  
 (sraper):  
 Approved for  
 Campus Curricula  
 Committee Chair

## Survey Of French Literature II (Modern Period)

Abbreviated [Survey French Lit II](#) ~~Surv-Fr-Lit~~  
 Course Title ~~HMdrn-Prd~~

### Catalog

#### Description

Survey of 19th and 20th century French-language ~~French~~ literature. Course materials, assignments, and discussions are in French.

#### Prerequisites

French 2170.

#### Field Trip

#### Statement

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

Total: 3

Required for	No
--------------	----

Majors

Elective for	<u>Yes</u> <del>No</del>
--------------	--------------------------

Majors

Justification for  
 change:

French curriculum for French Language and French-Speaking Cultures emphasis area within the Multidisciplinary Studies degree. Language literature survey courses are

being renumbered to the 3000 level. 4000 level courses will be reserved for more intensives study of a particular topic.

Semesters

previously

offered as an

experimental

course

Co-Listed

Courses:

Course Reviewer

Comments

**tibbettsmg (03/09/22 12:34 pm):** Rollback: please provide justification for renumbering request and then resubmit.MR

**tibbettsmg (03/10/22 11:04 am):** this renumbering request can be considered for Fall 22 as long as the course is not added to the schedule until all approvals are complete. MR

Key: 742

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 03/10/22 10:29 am

Viewing: **FRENCH 4340 : French for Engineering**

File: 4864

Last edit: 03/11/22 11:36 am

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	Fall 2022
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	French (FRENCH)
Course Number	4340
Title	

### In Workflow

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

### Approval Path

1. 03/03/22 12:59  
pm  
Audra Merfeld-  
Langston  
(audram):  
Approved for  
RPHILOSΟ Chair
2. 03/09/22 12:38

pm

Marita Raper

(tibbettsmg):

Rollback to

Initiator

3. 03/10/22 12:59

pm

Audra Merfeld-

Langston

(audram):

Approved for

RPHILOSOPHY Chair

4. 03/11/22 11:37

am

Marita Raper

(tibbettsmg):

Approved for CCC

Secretary

5. 03/11/22 1:15 pm

Petra Dewitt

(dewittp):

Approved for Arts

& Humanities

DSCC Chair

6. 03/22/22 2:36 pm

Marita Raper

(tibbettsmg):

Approved for

Pending CCC

Agenda post

7. 04/05/22 9:25 am

Marita Raper

(tibbettsmg):

Approved for CCC

Meeting Agenda

8. 04/05/22 12:26  
pm  
Stephen Raper  
(sraper):  
Approved for  
Campus Curricula  
Committee Chair

## French for Engineering

Abbreviated            French for Engineering  
Course Title

### Catalog

#### Description

This course focuses on developing the linguistic and intercultural skills students need to effectively communicate about engineering-related topics in French. May also cover other STEM topics. Taught in French.

#### Prerequisites

Any 3000-level French course.

#### Field Trip

#### Statement

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

Total: 3

Required for	No
--------------	----

Majors

Elective for	Yes
--------------	-----

Majors

Justification for  
new course:

This course is part of the new emphasis area "French Language and French-Speaking Cultures" (Multidisciplinary Studies B.A. degree). Students studying abroad as part of



the Global Engineering Program will be expected to take this course.

### Semesters

previously  
offered as an  
experimental  
course

### Co-Listed

### Courses:

#### Course Reviewer

#### Comments

**tibbettsmg (03/09/22 12:38 pm):** Rollback: Emphasis area proposal title has "French for Engineering". Please provide justification for title change to "French for STEM" and resubmit. Also recommend removing "instructor permission" from prereq as it is unnecessary. MR

Key: 4864

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 03/03/22 9:29 am

Viewing: **MATH 5680 : Mathematics of Machine Learning**

File: 4866

Last edit: 03/07/22 11:49 am

Changes proposed by: prunnon

Requested	Fall 2022
Effective Change Date	
Department	Mathematics & Statistics
Discipline	Mathematics (MATH)
Course Number	5680
Title	

### 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. CAT entry
11. Peoplesoft

### Approval Path

1. 03/03/22 9:42 am  
John Singler  
(singlerj):  
Approved for  
RMATHEMA Chair
2. 03/07/22 11:49 am  
Marita Raper

- (tibbettsmg):  
Approved for CCC  
Secretary
3. 03/21/22 9:55 am  
Katie Shannon  
(shannonk):  
Approved for  
Sciences DSCC  
Chair
4. 03/22/22 2:36 pm  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
5. 04/05/22 9:25 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
6. 04/05/22 12:25  
pm  
Stephen Raper  
(sraper):  
Approved for  
Campus Curricula  
Committee Chair

## Mathematics of Machine Learning

Abbreviated Course Title      Math of Machine Learning

### Catalog

### Description

Mathematics, programming, data analysis, and graphics associated with machine

learning. Probability, Naïve Bayes classifier, stochastic gradient descent, self-organizing maps, decision trees and other tree-based methods, perception, reinforcement learning, keras, and neural networks. These topics will be treated from a mathematical viewpoint.

#### Prerequisites

A grade of "C" or better in Math 2222; programming competency.

#### Field Trip

#### Statement

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

Total: 3

Required for	No
--------------	----

Majors

Elective for	Yes
--------------	-----

Majors

#### Justification for

new course:

This course leverages the expertise of our faculty and attracted a decent number of students both times it has been offered (20 students in FS20, 26 students in FS21), so we look forward to continuing to offer it as a permanent course.

#### Semesters

previously

offered as an

experimental

course

FS20, FS21

#### Co-Listed

Courses:

#### Course Reviewer

#### Comments

**tibbettsmg (03/07/22 11:49 am):** enrollment confirmed (20 in FS20, 26 in FS21).

Updated prereq formatting. MR

Key: 4866

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 01/18/22 10:32 am

Viewing: **MECH ENG 5535 : Carbon Conversion  
and Energy Utilization**

File: 4853

Last edit: 03/03/22 10:58 am

Changes proposed by: djbkqf

Programs  
referencing this  
course

[PROPOSED: Carbon Management Engineering](#)

Requested	Fall 2022
Effective Change Date	
Department	Mechanical & Aerospace Engineering
Discipline	Mechanical Engineering (MECH ENG)
Course Number	5535
Title	

### In Workflow

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

### Approval Path

1. 03/02/22 5:08 pm  
David Bayless  
(djbkqf):  
Approved for  
RMECHENG Chair
2. 03/03/22 10:59  
am  
Marita Raper  
(tibbettsmg):

Approved for CCC  
Secretary

3. 03/18/22 8:38 am

Stephen Raper  
(sraper):

Approved for  
Engineering DSCC  
Chair

4. 03/22/22 2:37 pm

Marita Raper  
(tibbettsmg):

Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:25 am

Marita Raper  
(tibbettsmg):

Approved for CCC  
Meeting Agenda

6. 04/05/22 12:25  
pm

Stephen Raper  
(sraper):

Approved for  
Campus Curricula  
Committee Chair

## Carbon Conversion and Energy Utilization

Abbreviated Course Title      Carbon&Energy Conversion

### Catalog

#### Description

An introduction to energy conversion processes involving carbon, non-carbon replacements, fuel chemistry, carbon utilization and conversions, carbon reuse and

recycling; including topics such as decarbonization, combustion, other energy conversion processes involving carbon, non-energy carbon use, and life cycle and techno-economic analyses of energy systems

#### 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 new course:

Carbon management has become the central theme for combating climate change. It channels a spectrum of methodologies and strategies where carbon capture plays critical roles on many levels. This course introduces the students to carbon conversion processes and the roles these processes play in creating a more sustainable energy future. It is intended to be a required course for a future Graduate Certificate in Carbon management as well as a new technical elective course that can benefit interested students across several disciplines.

#### Semesters

previously  
offered as an  
experimental  
course

#### Co-Listed

Courses:



Course Reviewer

Comments

**tibbettsmg (03/03/22 10:58 am):** Required course for new carbon management CT  
submitted by Chem Eng. MR

Key: 4853

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 12/17/21 10:36 am

Viewing: **PET ENG 1120 : Introduction to Subsurface Energy and Carbon Storage**

File: 4849

Last edit: 12/21/21 1:16 pm

Changes proposed by: weim

### In Workflow

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

### Approval Path

1. 12/17/21 12:19 pm  
Jeff Cawlfeld (jdc): Approved for RGEOENG Chair
2. 12/21/21 1:16 pm  
Marita Raper (tibbetmsg):

Programs referencing this course  
[PE ENG-BS: Petroleum Engineering BS](#)

Requested	Fall 2022
Effective Change Date	
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	1120
Title	

- Approved for CCC  
Secretary
3. 02/11/22 1:23 pm  
Stephen Raper  
(sraper):  
Approved for  
Engineering DSCC  
Chair
4. 02/11/22 2:34 pm  
Marita Raper  
(tibbettsmg):  
Rollback to  
Engineering DSCC  
Chair for Pending  
CCC Agenda post
5. 03/18/22 8:39 am  
Stephen Raper  
(sraper):  
Approved for  
Engineering DSCC  
Chair
6. 03/22/22 2:38 pm  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
7. 04/05/22 9:25 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
8. 04/05/22 12:25  
pm  
Stephen Raper

(sraper):  
 Approved for  
 Campus Curricula  
 Committee Chair

## Introduction to Subsurface Energy and Carbon Storage

Abbreviated Intro Energy & Carbon  
 Course Title

### Catalog

### Description

This course provides an overview of oil and gas upstream activities, a brief introduction to geothermal energy and carbon storage in geological reservoirs.

### Prerequisites

### Field Trip Statement

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

Total: 1

Required for	Yes
--------------	-----

Majors

Elective for	No
--------------	----

Majors

### Justification for

new course:

This course will give a brief discussion of varied disciplines of the PE program

### Semesters

previously  
 offered as an  
 experimental  
 course

Co-Listed

Courses:

Course Reviewer

Comments

**tibbettsmg (12/21/21 1:16 pm):** This course will be required for Pet Eng BS per updated DC form submission. Must be approved simultaneously with the DC.

**tibbettsmg (02/11/22 2:34 pm):** Rollback: needs to be reviewed and added to the same agenda as the Pet Eng BS. MR

Key: 4849

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/08/22 1:52 pm

Viewing: **PET ENG 3330 : Formation Evaluation**

## **Well-Logging**

File: 1045.4

Last approved: 06/20/19 3:38 am

Last edit: 03/09/22 12:56 pm

Changes proposed by: weim

Programs  
referencing this  
course

[PE ENG-BS: Petroleum Engineering BS](#)

[GE ENG-BS: Geological Engineering BS](#)

[GL&GPH-BS: Geology and Geophysics BS](#)

[GEOL-MI: Geology Minor](#)

Other Courses  
referencing this  
course

In The Prerequisites:

[PET ENG 4311 : Reservoir Characterization](#)

[PET ENG 4441 : Well Stimulation](#)

[PET ENG 4720 : Reservoir Geomechanics](#)

Requested                      Spring ~~2020~~ 2023  
Effective Change  
Date  
Department                      Geosciences and Geological and Petroleum

### In Workflow

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

### Approval Path

1. 03/08/22 3:04 pm  
Jeff Cawfield  
(jdc): Approved for RGEOENG Chair
2. 03/09/22 12:56 pm  
Marita Raper  
(tibbettsmg):

Engineering  
Discipline            Petroleum Engineering (PET ENG)  
Course Number       3330  
Title

Approved for CCC  
Secretary  
3. 03/22/22 3:21 pm  
Stephen Raper  
(sraper):  
Approved for  
Engineering DSCC  
Chair  
4. 03/23/22 11:37  
am  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post  
5. 04/05/22 9:25 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda  
6. 04/05/22 12:25  
pm  
Stephen Raper  
(sraper):  
Approved for  
Campus Curricula  
Committee Chair

### History

1. Jun 22, 2015 by  
reflori (1045.1)
2. Jun 20, 2019 by  
reflori (1045.2)

Abbreviated Formation Evaluation ~~Well~~  
 Course Title ~~Logging~~

### Catalog

#### Description

An introduction to the electrical, nuclear, and acoustic properties of rocks: theory and interpretation of ~~conventional~~ well logs.

#### Prerequisites

Physics 2135 or 2111; Pet Eng 3320.

#### Field Trip

#### Statement

Credit Hours	LEC: 2	LAB: 1	IND: 0	RSD: 0
--------------	--------	--------	--------	--------

Total: 3

Required for	Yes
--------------	-----

Majors

Elective for	No
--------------	----

Majors

#### Justification for

change:

The logging interpretation is a process of formation evaluation. In addition, change the name of the course to "Formation Evaluation" will make it more flexible to add formation evaluation skills in the teaching with time.

#### Semesters

previously

offered as an

experimental

course

#### Co-Listed

Courses:



## Course Reviewer

### Comments

**tibbettsmg (03/09/22 12:56 pm):** this is an affecting change and cannot be considered for Fall 22. updated effective term to Spring 23. MR

Key: 1045

[Preview Bridge](#)

# Course Change Request

Date Submitted: 12/14/21 1:13 pm

Viewing: **PET ENG 4531 : Natural Gas Engineering**

File: 1241.1

Last edit: 04/05/22 9:27 am

Changes proposed by: weim

Programs referencing this course  
[PE ENG-BS: Petroleum Engineering BS](#)

Requested Effective Change Date	<u>Fall 2022</u> <del>08/14/2018</del>
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	4531
Title	

## In Workflow

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

## Approval Path

1. 12/13/21 12:19 pm  
 Jeff Cawlfeld (jdc): Approved for RGEOENG Chair
2. 12/13/21 2:49 pm  
 Marita Raper (tibbettsmg):

Rollback to

Initiator

3. 12/17/21 12:19  
pm

Jeff Cawfield

(jdc): Approved  
for RGEOSENG  
Chair

4. 12/21/21 1:20 pm

Marita Raper

(tibbettsmg):  
Approved for CCC  
Secretary

5. 02/11/22 1:23 pm

Stephen Raper

(sraper):  
Approved for  
Engineering DSCC  
Chair

6. 02/11/22 2:35 pm

Marita Raper

(tibbettsmg):  
Rollback to  
Engineering DSCC  
Chair for Pending  
CCC Agenda post

7. 03/18/22 8:39 am

Stephen Raper

(sraper):  
Approved for  
Engineering DSCC  
Chair

8. 03/22/22 2:39 pm

Marita Raper

(tibbettsmg):

Approved for  
 Pending CCC  
 Agenda post  
 9. 04/05/22 9:27 am  
 Marita Raper  
 (tibbettsmg):  
 Approved for CCC  
 Meeting Agenda  
 10. 04/05/22 12:25  
 pm  
 Stephen Raper  
 (sraper):  
 Approved for  
 Campus Curricula  
 Committee Chair

## Natural Gas Engineering

Abbreviated            Natural Gas Engineering  
 Course Title

### Catalog

#### Description

This course will cover basic and fundamental knowledge for a future natural gas engineer, including natural gas properties, natural gas underground storage estimates, natural gas exploration/drilling/and completion, natural gas productivity and deliverability estimates, natural gas related processing after it reaches the surface. ~~Gas reserves estimation, deliverability, and future production performance prediction. Deliverability testing of gas wells including isochronal, flow after flow, drawdown and buildup. Gasfield development and underground storage. Gas production metering gauging and transmission.~~

#### Prerequisites

~~Preceded or accompanied by~~ Pet Eng 2510, 3520.

#### Field Trip

#### Statement

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

Justification for change:

The course is increasingly important as Natural Gas is an important energy resource. It becomes a "required" class.

The pre-requisite is relatively loosened to include students from more background and make the class extendable.

Teaching content is slightly adjusted.

Semesters previously offered as an experimental course

Co-Listed Courses:

Course Reviewer

Comments

**tibbettsmg (12/13/21 2:49 pm):** Rollback: Rollback to update prereq per email. mt

**tibbettsmg (12/21/21 1:18 pm):** updated prereq formatting. This will be required for majors with proposed Pet Eng BS changes.

**tibbettsmg (02/11/22 2:35 pm):** Rollback: this needs to be reviewed and on the same agenda as the Pet Eng BS

**tibbettsmg (04/05/22 9:27 am):** removed consent of instructor fro prereq as it is not

needed. change approved at CCC meeting. MR

Key: 1241

[Preview Bridge](#)

# Course Change Request

Date Submitted: 12/13/21 11:18 am

Viewing: **PET ENG 4631 : Applied Reservoir Simulation**

File: 1983.4

Last approved: 10/12/20 6:01 am

Last edit: 12/21/21 1:21 pm

Changes proposed by: weim

Programs referencing this course

[PE ENG-BS: Petroleum Engineering BS](#)

Requested	<u>Fall 2022</u> <del>Spring 2021</del>
Effective Change Date	
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	4631
Title	

## In Workflow

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

## Approval Path

1. 12/13/21 12:16 pm  
Jeff Cawlfild (jdc): Approved for RGEOENG Chair
2. 12/21/21 1:21 pm  
Marita Raper (tibbetmsg):

- Approved for CCC  
Secretary
3. 02/11/22 1:24 pm  
Stephen Raper  
(sraper):  
Approved for  
Engineering DSCC  
Chair
4. 02/11/22 2:36 pm  
Marita Raper  
(tibbettsmg):  
Rollback to  
Engineering DSCC  
Chair for Pending  
CCC Agenda post
5. 03/18/22 8:39 am  
Stephen Raper  
(sraper):  
Approved for  
Engineering DSCC  
Chair
6. 03/22/22 2:40 pm  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
7. 04/05/22 9:27 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
8. 04/05/22 12:26  
pm  
Stephen Raper



(sraper):  
 Approved for  
 Campus Curricula  
 Committee Chair

History  
 1. Oct 12, 2020 by  
 weim (1983.1)

### Applied Reservoir Simulation

Abbreviated Applied Reservoir Simul  
 Course Title

#### Catalog

#### Description

Simulation of reservoir problems using field and individual well models to determine well spacing, production effects of secondary and enhanced recovery processes, future rate predictions and recovery, coning effects, and more. The lab focuses on learning computer simulation models, including practice using the software and data analyses techniques.

#### Prerequisites

Pet Eng 3520.

#### Field Trip

#### Statement

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

Required for Yes ~~No~~  
 Majors

Elective for No ~~Yes~~  
 Majors

#### Justification for

change:

The course is increasingly important for a Petroleum Engineering curriculum.

Semesters

previously

offered as an

experimental

course

Co-Listed

Courses:

Course Reviewer

Comments

**tibbettsmg (12/21/21 1:21 pm):** This becomes a required course with the proposed Pet Eng BS changes.

**tibbettsmg (02/11/22 2:36 pm):** Rollback: proposed change must be reviewed at the same time as Pet Eng BS.

Key: 1983

[Preview Bridge](#)

# Course Change Request

Date Submitted: 03/08/22 1:54 pm

Viewing: **PET ENG 4720 : Reservoir**

## Geomechanics

File: 919.8

Last approved: 02/21/22 6:01 am

Last edit: 03/09/22 12:59 pm

Changes proposed by: weim

### In Workflow

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

### Approval Path

1. 03/08/22 3:12 pm  
Jeff Cawlfeld (jdc): Approved for RGEOENG Chair
2. 03/09/22 12:59 pm  
Marita Raper (tibbetmsg):

Programs referencing this course

[PE ENG-BS: Petroleum Engineering BS](#)

[PET SYS-CT: Petroleum Systems CT](#)

[PROPOSED: Carbon Management Engineering](#)

[GEOL-MI: Geology Minor](#)

Requested Effective Change Date	<u>Spring 2023</u> <del>Fall 2022</del>
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	4720
Title	

Approved for CCC  
Secretary

3. 03/22/22 3:21 pm

Stephen Raper

(sraper):

Approved for  
Engineering DSCC  
Chair

4. 03/23/22 11:38

am

Marita Raper

(tibbettsmg):

Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:27 am

Marita Raper

(tibbettsmg):

Approved for CCC  
Meeting Agenda

6. 04/05/22 12:26

pm

Stephen Raper

(sraper):

Approved for  
Campus Curricula  
Committee Chair

## History

1. Jun 20, 2019 by  
reflori (919.1)

2. Feb 21, 2022 by  
eckertan (919.4)

Abbreviated Res Geom

Course Title

## Catalog

## Description

This course introduces the work process necessary to create the Mechanical Earth Model's principal components, formation in situ stress and strength. 1-D modeling methods are reviewed and extended to 3-D, and the integration of MEM with well design is shown. An MEM model will be created and compared to actual field results.

## Prerequisites

Pet Eng [3330](#), ~~3330~~ and Geology [3310](#), and Geology [3319](#). ~~3310~~.

## Field Trip

## Statement

Credit Hours	LEC: 2	LAB: 1	IND: 0	RSD: 0
--------------	--------	--------	--------	--------

Total: 3				
----------	--	--	--	--

Required for	Yes			
--------------	-----	--	--	--

Majors				
--------	--	--	--	--

Elective for	No			
--------------	----	--	--	--

Majors				
--------	--	--	--	--

## Justification for

change:

The lab session is very important for students understanding geomechanical properties.

## Semesters

previously  
offered as an  
experimental  
course

## Co-Listed

Courses:

## Course Reviewer

## Comments

**tibbettsmg (03/09/22 12:59 pm):** updated prereq formatting. cannot be considered for Fall 22; updated effective term to Spring 23. MR

Key: 919

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 12/17/21 4:55 pm

Viewing: **PET ENG 5050 : Carbon Storage**

File: 4847

Last edit: 03/03/22 11:01 am

Changes proposed by: weim

Programs  
referencing this  
course

[PE ENG-BS: Petroleum Engineering BS](#)

[PROPOSED: Carbon Management Engineering](#)

Requested	Fall 2022
Effective Change Date	
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	5050
Title	

### In Workflow

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

### Approval Path

1. 12/17/21 1:34 pm  
Marita Raper  
(tibbettsmg):  
Rollback to  
Initiator
2. 12/20/21 8:21 am  
Jeff Cawfield  
(jdc): Approved  
for RGEOENG

- Chair
- 3. 03/03/22 11:01 am  
Marita Raper (tibbettsmg):  
Approved for CCC Secretary
- 4. 03/18/22 8:40 am  
Stephen Raper (sraper):  
Approved for Engineering DSCC Chair
- 5. 03/22/22 2:40 pm  
Marita Raper (tibbettsmg):  
Approved for Pending CCC Agenda post
- 6. 04/05/22 9:27 am  
Marita Raper (tibbettsmg):  
Approved for CCC Meeting Agenda
- 7. 04/05/22 12:26 pm  
Stephen Raper (sraper):  
Approved for Campus Curricula Committee Chair

Carbon Storage

Abbreviated Course Title      Carbon Storage



## Catalog

### Description

This course provides an overview of CO<sub>2</sub> storage in subsurface from fundamental to applications. The topics include importance of store CO<sub>2</sub> in subsurface, CO<sub>2</sub> phase behavior, geologic reservoir storage, CO<sub>2</sub> enhanced oil recovery, CO<sub>2</sub> leakage monitoring and control, and field case studies.

### Prerequisites

### Field Trip

### Statement

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

Total: 3

Required for	Yes
--------------	-----

Majors

Elective for	No
--------------	----

Majors

### Justification for

new course:

This is required for educating students with emerging energy challenges and opportunities.

### Semesters

previously

offered as an

experimental

course

### Co-Listed

Courses:

### Course Reviewer

Comments

**tibbettsmg (12/17/21 1:34 pm):** Rollback: rollback per request. mt

**tibbettsmg (03/03/22 11:01 am):** required course for new carbon management CT  
proposed by Chem Eng. MR

Key: 4847

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 02/11/22 2:02 pm

Viewing: **PET ENG 5801 : Petroleum Data**

## **Analytics**

File: 4845

Last edit: 02/16/22 12:54 pm

Changes proposed by: weim

Programs  
referencing this  
course

[PE ENG-BS: Petroleum Engineering BS](#)

Requested	Fall 2022
Effective Change	
Date	
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Petroleum Engineering (PET ENG)
Course Number	5801
Title	

### In Workflow

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

### Approval Path

1. 12/17/21 12:15 pm  
Jeff Cawfield  
(jdc): Approved for RGEOENG Chair
2. 12/21/21 1:45 pm  
Marita Raper  
(tibbetmsg):

- Rollback to  
Initiator
3. 02/11/22 2:06 pm  
Jeff Cawlfeld  
(jdc): Approved  
for RGEOENG  
Chair
4. 02/16/22 12:55  
pm  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Secretary
5. 03/22/22 3:21 pm  
Stephen Raper  
(sraper):  
Approved for  
Engineering DSCC  
Chair
6. 03/23/22 11:39  
am  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
7. 04/05/22 9:27 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
8. 04/05/22 12:26  
pm  
Stephen Raper  
(sraper):

Approved for  
Campus Curricula  
Committee Chair

## Petroleum Data Analytics

Abbreviated Course Title      Petroleum Data Analytics

### Catalog

#### Description

This course provides a general introduction to fundamental data analytics methods including basic statistical analysis, regression analyses and their applications in petroleum engineering, and their implementation using python, the most popular interpreted computer language.

#### Prerequisites

Comp Sci 1500 and at least Junior standing.

#### Field Trip

#### Statement

Credit Hours	LEC: 2	LAB: 1	IND: 0	RSD: 0
--------------	--------	--------	--------	--------

Total: 3

Required for	Yes
--------------	-----

Majors

Elective for	No
--------------	----

Majors

Justification for  
new course:

Data analytics is an increasingly important perspective for young engineers in their job pursuits.

Semesters  
previously  
offered as an

experimental

course

Fall 2019

Fall 2021

Co-Listed

Courses:

Course Reviewer

Comments

**tibbettsmg (12/21/21 1:45 pm):** Rollback: rollback per email.

**tibbettsmg (02/16/22 12:54 pm):** updated prerequisite formatting. MR

Key: 4845

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 01/24/22 11:35 am

Viewing: **SPANISH 2161 : Contemporary Latin America**

File: 4859

Last edit: 03/09/22 4:13 pm

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	Fall 2022
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	Spanish (SPANISH)
Course Number	2161
Title	

### In Workflow

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

### Approval Path

1. 03/01/22 11:31 am  
Audra Merfeld-Langston  
(audram):  
Approved for  
RPHILOSO Chair
2. 03/09/22 12:42

pm

Marita Raper

(tibbettsmg):

Approved for CCC

Secretary

3. 03/09/22 4:13 pm

Petra Dewitt

(dewittp):

Approved for Arts

&amp; Humanities

DSCC Chair

4. 03/22/22 2:41 pm

Marita Raper

(tibbettsmg):

Approved for

Pending CCC

Agenda post

5. 04/05/22 9:27 am

Marita Raper

(tibbettsmg):

Approved for CCC

Meeting Agenda

6. 04/05/22 12:26

pm

Stephen Raper

(sraper):

Approved for

Campus Curricula

Committee Chair

## Contemporary Latin America

Abbreviated

Contemp Latin America

Course Title

Catalog



**Description**

This course aims to engage students in the understanding of the diverse cultures of contemporary Latin America while reflecting upon key socioeconomic, political, and intellectual trends that characterized Modern and Postmodern Latin America from the beginning of the 20th century to the present.

**Prerequisites**

Spanish 1180.

**Field Trip****Statement****Credit Hours**

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

**Required for**

No

**Majors****Elective for**

Yes

**Majors****Justification for****new course:**

Spanish curriculum for Spanish Language and Spanish-Speaking Cultures emphasis area within the Multidisciplinary Studies degree.

**Semesters****previously****offered as an****experimental****course****Co-Listed****Courses:****Course Reviewer****Comments**

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 03/02/22 3:20 pm

Viewing: **SPANISH 2330 : Introduction to Professional Spanish**

File: 4863

Last edit: 03/09/22 2:47 pm

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	Fall 2022
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	Spanish (SPANISH)
Course Number	2330
Title	

### In Workflow

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

### Approval Path

1. 03/03/22 12:59 pm  
Audra Merfeld-Langston  
(audram):  
Approved for  
RPHILOSOSO Chair
2. 03/09/22 12:44

pm

Marita Raper

(tibbettsmg):

Approved for CCC

Secretary

3. 03/09/22 2:47 pm

Petra Dewitt

(dewittp):

Approved for Arts

&amp; Humanities

DSCC Chair

4. 03/22/22 2:42 pm

Marita Raper

(tibbettsmg):

Approved for

Pending CCC

Agenda post

5. 04/05/22 9:27 am

Marita Raper

(tibbettsmg):

Approved for CCC

Meeting Agenda

6. 04/05/22 12:26

pm

Stephen Raper

(sraper):

Approved for

Campus Curricula

Committee Chair

## Introduction to Professional Spanish

Abbreviated

Intro Professional Span.

Course Title

Catalog

## Description

This course introduces students to the linguistic and intercultural skills necessary to succeed in professional settings in which the principal language of communication is Spanish. Course materials and discussion are in Spanish.

## Prerequisites

Spanish 1180.

## Field Trip

## Statement

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

Total: 3

Required for	No
--------------	----

## Majors

Elective for	Yes
--------------	-----

## Majors

## Justification for

## new course:

This course is part of the new emphasis area "Spanish Language and Spanish-Speaking Cultures" (Multidisciplinary Studies B.A. degree).

## Semesters

## previously

## offered as an

## experimental

## course

## Co-Listed

## Courses:

## Course Reviewer

## Comments

**tibbettsmg (03/09/22 12:44 pm):** recommend to remove "consent of instructor" from prereq as it is unnecessary. MR

Key: 4863

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 01/24/22 11:28 am

Viewing: **SPANISH 3100 : Spanish Translation  
for Technical Applications**

File: 4857

Last edit: 03/09/22 4:13 pm

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	Fall 2022
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	Spanish (SPANISH)
Course Number	3100
Title	

### In Workflow

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

### Approval Path

1. 03/01/22 11:32  
am  
Audra Merfeld-  
Langston  
(audram):  
Approved for  
RPHILOSO Chair
2. 03/09/22 12:48

pm

Marita Raper

(tibbettsmg):

Approved for CCC

Secretary

3. 03/09/22 4:13 pm

Petra Dewitt

(dewittp):

Approved for Arts

&amp; Humanities

DSCC Chair

4. 03/22/22 2:43 pm

Marita Raper

(tibbettsmg):

Approved for

Pending CCC

Agenda post

5. 04/05/22 9:28 am

Marita Raper

(tibbettsmg):

Approved for CCC

Meeting Agenda

6. 04/05/22 12:26

pm

Stephen Raper

(sraper):

Approved for

Campus Curricula

Committee Chair

## Spanish Translation for Technical Applications

Abbreviated

Spanish Translation

Course Title

Catalog



**Description**

This course will introduce students to the art and skills of translation. It will provide students practical experience translating technical and scientific documents from Spanish to English and from English to Spanish.

**Prerequisites**

Spanish 1180.

**Field Trip****Statement****Credit Hours**

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

**Required for**

No

**Majors****Elective for**

Yes

**Majors****Justification for****new course:**

Spanish curriculum for Spanish Language and Spanish-Speaking Cultures emphasis area with the Multidisciplinary Studies degree.

**Semesters**

previously

offered as an

experimental

course

**Co-Listed****Courses:****Course Reviewer****Comments**

Key: 4857

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 01/24/22 11:31 am

Viewing: **SPANISH 4330 : Professional Spanish**

File: 4858

Last edit: 03/01/22 11:32 am

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	Fall 2022
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	Spanish (SPANISH)
Course Number	4330
Title	

### In Workflow

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

### Approval Path

1. 03/01/22 11:33  
am  
Audra Merfeld-  
Langston  
(audram):  
Approved for  
RPHILOSΟ Chair
2. 03/09/22 12:49

pm

Marita Raper

(tibbettsmg):

Approved for CCC

Secretary

3. 03/09/22 2:48 pm

Petra Dewitt

(dewittp):

Approved for Arts

&amp; Humanities

DSCC Chair

4. 03/22/22 2:43 pm

Marita Raper

(tibbettsmg):

Approved for

Pending CCC

Agenda post

5. 04/05/22 9:28 am

Marita Raper

(tibbettsmg):

Approved for CCC

Meeting Agenda

6. 04/05/22 12:26

pm

Stephen Raper

(sraper):

Approved for

Campus Curricula

Committee Chair

Professional Spanish

Abbreviated Professional Spanish

Course Title

Catalog

**Description**

Through practical examples and exercises, this course helps you develop linguistic proficiency, intercultural competence, and knowledge of the Spanish-language professional world. Focus on applications in a variety of professional milieu, depending on students' specializations and areas of interest. Readings, lectures, and discussions in Spanish.

**Prerequisites**

Any Spanish course at the 2000 level or above.

**Field Trip****Statement**

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

No

Majors

Elective for

Yes

Majors

**Justification for**

new course:

Spanish curriculum for Spanish Language and Spanish-Speaking Cultures emphasis area within the Multidisciplinary Studies degree.

**Semesters**

previously

offered as an

experimental

course

**Co-Listed**

Courses:

Course Reviewer

Comments

Key: 4858

[Preview Bridge](#)

# Course Change Request

## New Course Proposal

Date Submitted: 01/24/22 11:38 am

Viewing: **SPANISH 4350 : Spanish Literature, Science, and Technology**

File: 4860

Last edit: 03/01/22 11:33 am

Changes proposed by: msp7h

Programs  
referencing this  
course

[MULTI-BA: Multidisciplinary Studies BA](#)

Requested	Fall 2022
Effective Change Date	
Department	Arts, Languages, & Philosophy
Discipline	Spanish (SPANISH)
Course Number	4350
Title	

### In Workflow

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

### Approval Path

1. 03/01/22 11:33 am  
Audra Merfeld-Langston  
(audram):  
Approved for  
RPHILOSO Chair
2. 03/09/22 12:50

- pm
- Marita Raper  
(tibbettsmg):  
Approved for CCC  
Secretary
- 3. 03/09/22 2:48 pm  
Petra Dewitt  
(dewittp):  
Approved for Arts  
& Humanities  
DSCC Chair
- 4. 03/22/22 2:44 pm  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
- 5. 04/05/22 9:28 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
- 6. 04/05/22 12:26  
pm  
Stephen Raper  
(sraper):  
Approved for  
Campus Curricula  
Committee Chair

Spanish Literature, Science, and Technology

Abbreviated Course Title      Spanish Lit, Sci, & Tech

Catalog

**Description**

Discussion of unique texts, representations, and collections from distinct Spanish-speaking societies. Consideration of the social and cultural functions of science and technology through the lens of literature. Inquiry about how different societies have equated advancement and progress with challenges, solutions, and controversy.

**Prerequisites**

Any Spanish 2000 or 3000-level course or equivalent.

**Field Trip****Statement**

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

No

Majors

Elective for

Yes

Majors

**Justification for**

new course:

Spanish curriculum for Spanish Language and Spanish-Speaking Cultures emphasis area within the Multidisciplinary Studies degree.

**Semesters**

previously

offered as an

experimental

course

**Co-Listed**

Courses:

Course Reviewer

Comments



[Preview Bridge](#)

## Program Change Request

Date Submitted: 03/02/22 3:50 pm

Viewing: **AE ENG-BS : Aerospace Engineering  
BS**

File: 141.39

Last approved: 10/28/21 10:36 am

Last edit: 03/02/22 3:50 pm

Changes proposed by: nisbett

Catalog Pages Using this Program

[Aerospace Engineering](#)

Start Term

Fall 2022

Program Code

AE ENG-BS

Department

Mechanical & Aerospace Engineering

Title

Aerospace Engineering BS

### Program Requirements and Description

### In Workflow

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

### Approval Path

1. 03/02/22 5:08 pm  
David Bayless (djbkqf): Approved for RMECHENG Chair
2. 03/03/22 11:20 am  
Marita Raper (tibbettsmg): Approved for CCC Secretary
3. 03/18/22 8:35 am  
Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/22/22 2:13 pm  
Marita Raper (tibbettsmg): Approved for Pending CCC Agenda post
5. 04/05/22 9:37 am  
Marita Raper (tibbettsmg): Approved for CCC Meeting Agenda

6. 04/05/22 12:26 pm  
Stephen Raper  
(srafer): Approved  
for Campus  
Curricula  
Committee Chair

## History

1. Apr 28, 2014 by J. Keith Nisbett (nisbett)
2. Aug 1, 2014 by pantaleoa
3. Jul 14, 2015 by pantaleoa
4. Mar 27, 2017 by Shauntae Ellis (smetg6)
5. Nov 2, 2018 by Kakkattukuzhy Isaac (isaac)
6. Jun 14, 2019 by ershenb
7. Mar 3, 2020 by ershenb
8. Oct 28, 2021 by J. Keith Nisbett (nisbett)

## Bachelor of Science Aerospace Engineering

The aerospace 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.

~~Bachelor of Science Aerospace Engineering Entering freshmen desiring to study aerospace engineering will be admitted to the Foundational Engineering and Computing Program. They will, however, be permitted, if they wish, to state an aerospace engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Foundational Engineering and Computing 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. A cumulative GPA of 2.5, and math/science GPA of 2.25 are the minimum requirements for admission to the aerospace engineering program. Students must comply with the requirements specified in the current online catalog published by the registrar. For the bachelor of science degree in aerospace 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 aerospace engineering. Each student's program of study must contain a minimum of 24 credit hours of course work in general education and must be chosen to satisfy the following requirements:

1. [ENGLISH 1120](#).
2. [HISTORY 1200](#), [HISTORY 1300](#), [HISTORY 1310](#), or [POL SCI 1200](#)
3. [ECON 1100](#) or [ECON 1200](#)
4. [ENGLISH 1160](#) or [ENGLISH 3560](#) or [SP&M S 1185](#)
5. A literature elective\*
6. An ethics elective\*
7. Depth elective. A humanities or social science elective that has a humanities or social science course already taken as a prerequisite\*
8. A humanities or social science elective\*

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

<b>Freshman Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">FR ENG 1100</a>	1	<a href="#">MECH ENG 1720</a>	3
<a href="#">CHEM 1310</a> & <a href="#">CHEM 1319</a> & <a href="#">CHEM 1100</a> <sup>1</sup>	6	<a href="#">MATH 1215</a> <sup>4</sup>	4
<a href="#">ENGLISH 1120</a>	3	<a href="#">PHYSICS 1135</a> <sup>4</sup>	4
<a href="#">MATH 1214</a> or <a href="#">1211</a> <sup>4</sup>	4	H/SS Economics elective <sup>3</sup>	3
H/SS History Elective <sup>2</sup>	3		
	17		14
<b>Sophomore Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">COMP SCI 1570</a> or <a href="#">1972</a>	2-3	<a href="#">AERO ENG 2780</a>	2
<a href="#">COMP SCI 1580</a> or <a href="#">1982</a>	1	<a href="#">AERO ENG 2360</a> <sup>4</sup>	3
<a href="#">CIV ENG 2200</a> <sup>4</sup>	3	<a href="#">MECH ENG 2519</a> <sup>4</sup>	3
<a href="#">MATH 2222</a> <sup>4</sup>	4	<a href="#">MATH 3304</a> <sup>4</sup>	3
<a href="#">PHYSICS 2135</a> <sup>4</sup>	4	<a href="#">CIV ENG 2210</a> <sup>4</sup>	3
<a href="#">AERO ENG 2861</a> <sup>4</sup>	3	<a href="#">AERO ENG 2790</a>	2
	17-18		16
<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">AERO ENG 3613</a> <sup>4</sup>	3	<a href="#">AERO ENG 3251</a> <sup>4</sup>	3
<a href="#">AERO ENG 3131</a> <sup>4</sup>	3	<a href="#">AERO ENG 3361</a>	3
<a href="#">AERO ENG 3877</a>	3	<a href="#">AERO ENG 3171</a>	3
<a href="#">ELEC ENG 2800</a>	3	<a href="#">AERO ENG 4882</a>	2
Electives-Advanced Math/Cmp Sci <sup>5</sup>	3	Elective/Ethics <sup>9</sup>	3
		Elective/Communications <sup>7</sup>	3

	15		17
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">AERO ENG 4535</a>	3	<a href="#">AERO ENG 4781</a> or <a href="#">4791</a>	3
<a href="#">AERO ENG 4253</a>	3	Electives-Technical <sup>6</sup>	3
<a href="#">AERO ENG 4780</a> or <a href="#">4790</a>	2	Electives-Technical <sup>6</sup>	3
<a href="#">AERO ENG 4883</a>	2	<a href="#">AERO ENG 4885</a>	1
Electives-Technical <sup>6</sup>	3	Electives-Hum/Soc Sci	3
Depth Elective/Hum/Soc Sci <sup>8</sup>	3	Elective/Literature	3
	16		16
Total Credits: 128-129			

1

[CHEM 1310](#), [CHEM 1319](#) and [CHEM 1100](#) or an equivalent training program approved by Missouri S&T.

2

Must be one of the following: [POL SCI 1200](#), [HISTORY 1200](#), [HISTORY 1300](#), or [HISTORY 1310](#).

3

Must be one of the following: [ECON 1100](#) or [ECON 1200](#).

4

A grade of "C" or better in [CHEM 1310](#), [MATH 1214](#) or [MATH 1211](#), [MATH 1215](#), [MATH 2222](#), [MATH 3304](#), [PHYSICS 1135](#), [PHYSICS 2135](#), [CIV ENG 2200](#), [CIV ENG 2210](#), and computer programming elective, [AERO ENG 2360](#), [AERO ENG 2861](#), and [MECH ENG 2519](#), as prerequisite for follow-up courses in the curriculum and for graduation.

5

Must be one of the following: [AERO ENG 5830](#), [COMP SCI 3200](#), [MATH 3108](#), [STAT 3113](#), [STAT 3115](#), or any 5000-level math or computer science course approved by the student's advisor.

6

Electives must be approved by the student's advisor. Nine hours of technical electives must be in mechanical and aerospace engineering. Three hours of departmental technical electives must be at the 5000-level. [AERO ENG 3877](#) and the 5000-level Asteroid Mining course co-listed with geological engineering are not to be used for 5000-level technical elective.

7

This course can be selected from [ENGLISH 1160](#), [ENGLISH 3560](#), [SP&M S 1185](#), or the complete four-course sequence in advanced ROTC ([MIL ARMY 3250](#), [MIL ARMY 3500](#), [MIL ARMY 4250](#), and [MIL ARMY 4500](#); or [MIL AIR 3110](#), [MIL AIR 3120](#), [MIL AIR 4110](#) and [MIL AIR 4120](#)).

8

To satisfy the depth requirement, this course should have a humanities and social science course already taken as a prerequisite.

9

Must be a course on engineering ethics, business ethics, bio ethics, social ethics, or any ethics course approved by the student's advisor.

~~The aerospace 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.~~

Justification for request

Removing reference to Freshmen Engineering.

Supporting Documents

Course Reviewer Comments

Key: 141

## Program Change Request

Date Submitted: 03/03/22 11:26 am

Viewing: **CP ENG-BS : Computer Engineering  
BS**

File: 153.71

Last approved: 03/03/20 1:41 pm

Last edit: 03/18/22 8:36 am

Changes proposed by: stanleyj

Catalog Pages Using this Program

[Computer Engineering](#)

Start Term

Fall 2022 ~~2020~~

Program Code

CP ENG-BS

Department

Electrical and Computer Engineering

Title

Computer Engineering BS

### Program Requirements and Description

### In Workflow

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

### Approval Path

1. 11/22/21 1:28 pm  
Watkins (watkins):  
Rollback to Initiator
2. 12/14/21 8:57 pm  
Watkins (watkins):  
Approved for  
RELECENG Chair
3. 12/17/21 9:10 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Secretary
4. 12/20/21 1:27 pm  
Stephen Raper  
(sraper): Rollback to  
Initiator
5. 03/02/22 12:36 pm  
Marita Raper  
(tibbettsmg):  
Rollback to Initiator
6. 03/03/22 7:58 pm  
Watkins (watkins):  
Approved for  
RELECENG Chair
7. 03/07/22 11:41 am  
Marita Raper

- (tibbettsmg):  
Approved for CCC  
Secretary
8. 03/18/22 8:36 am  
Stephen Raper  
(sraper): Approved  
for Engineering  
DSCC Chair
9. 03/22/22 2:15 pm  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
10. 04/05/22 9:37 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
11. 04/05/22 12:24 pm  
Stephen Raper  
(sraper): Approved  
for Campus  
Curricula  
Committee Chair

## History

1. Aug 6, 2014 by Stanley (stanleyj)
2. Aug 13, 2014 by pantaleoa
3. Sep 21, 2015 by kleb6b
4. Apr 25, 2016 by Stanley (stanleyj)
5. Dec 1, 2016 by Stanley (stanleyj)
6. Sep 19, 2017 by Stanley (stanleyj)
7. Jun 18, 2018 by Stanley (stanleyj)
8. Nov 2, 2018 by Stanley (stanleyj)
9. May 2, 2019 by Stanley (stanleyj)
10. May 14, 2019 by ershenb
11. Mar 3, 2020 by Stanley (stanleyj)



For the

~~**Bachelor of Science Computer Engineering 1**~~ Entering freshmen desiring to study ~~**Computer Engineering**~~ will be admitted to the ~~**Foundational Engineering and Computing Program**~~. They will be permitted to state a ~~**Computer Engineering preference, which will be used as a consideration for available freshman departmental scholarships**~~. The focus of the ~~**Foundational Engineering and Computing 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**~~. **Bachelor of Science degree in Computer Engineering<sup>1</sup>**

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

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

- [ENGLISH 1120](#)
- [HISTORY 1200](#) or [HISTORY 1300](#) or [HISTORY 1310](#) or [POL SCI 1200](#)
- [ECON 1100](#) or [ECON 1200](#)
- Technical Communication Elective: [ENGLISH 1160](#) or [ENGLISH 3560](#)
- [SP&M S 1185](#)
- The remaining minimum of 6 additional credit hours must be three-credit hour lecture courses offered in disciplines in the humanities and social sciences. Humanities courses are defined as those in: Art, English and Technical Communication, Etymology, Foreign Languages, Music, Philosophy, Speech and Media Studies, and Theatre. Social Sciences courses are defined as those in: Economics, History, Political Science, and Psychology. Study abroad courses may count as H/SS courses. H/SS courses numbered 2001, 3001, and 4001 (experimental courses) may also be used to complete these elective requirements.

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

Transfer credits from other universities in sociology and general humanities may count as humanities or social science electives.

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

### Free Electives Footnote:

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

<b>Freshman Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">FR ENG 1100</a> <sup>2</sup>	1	<a href="#">COMP SCI 1500</a>	3
<a href="#">MATH 1214</a> or <a href="#">1211</a> <sup>3,21</sup>	4	<a href="#">MATH 1215</a> <sup>3</sup>	4
<a href="#">CHEM 1310</a>	4	<a href="#">PHYSICS 1135</a> <sup>3,4</sup>	4
<a href="#">CHEM 1319</a>	1	<a href="#">ECON 1100</a> or <a href="#">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 (any level) <sup>5</sup>	3
<a href="#">ENGLISH 1120</a>	3		
	16		17
<b>Sophomore Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">ELEC ENG 2100</a> <sup>3,6,7</sup>	3	<a href="#">COMP ENG 2210</a> <sup>3,6,8</sup>	3
<a href="#">ELEC ENG 2101</a> <sup>3,6</sup>	1	<a href="#">COMP ENG 2211</a> <sup>3,6</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 SCI 1570</a> <sup>3</sup>	3	<a href="#">MATH 3304</a> <sup>3</sup>	3
<a href="#">COMP SCI 1580</a> <sup>3</sup>	1	<a href="#">COMP SCI 1200</a> <sup>3</sup>	3
<a href="#">PHYSICS 2135</a> <sup>3,4</sup>	4	<a href="#">COMP SCI 1575</a>	3
	16		16
<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">COMP ENG 3110</a>	3	COMP ENG Elective A <sup>3,14</sup>	3
<a href="#">COMP ENG 3150</a>	3	<a href="#">ELEC ENG 3410</a> <sup>3,6,9</sup>	3
<a href="#">COMP ENG 3151</a> <sup>3,6,8</sup>	1	<a href="#">COMP SCI 3800</a> or <a href="#">2500</a> <sup>3</sup>	3
<a href="#">ELEC ENG 2200</a> <sup>3,6,7</sup>	3	<a href="#">STAT 3117</a> <sup>12</sup>	3
<a href="#">ELEC ENG 2201</a> <sup>3,6,7</sup>	1	Communication Elective <sup>13</sup>	3
Mathematics Elective <sup>10</sup>	3		
<a href="#">SP&amp;M S 1185</a> <sup>13</sup>	3		
	17		15
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">COMP ENG 5410</a> <sup>3</sup>	3	COMP ENG Elective D <sup>3,15,16</sup>	3
COMP ENG Elective C <sup>3,15,16</sup>	3	COMP ENG Elective E <sup>3,15,16</sup>	3
<a href="#">COMP ENG 4096</a> <sup>3,17</sup>	1	<a href="#">COMP ENG 4097</a> <sup>3,17</sup>	3
Elective-Hum or Soc (any level) <sup>5</sup>	3	Professional Development Elective <sup>20</sup>	3
Engineering Science Elective <sup>11</sup>	3	Free Elective <sup>18</sup>	3
COMP ENG Elective B <sup>3,19</sup>	3		

Total Credits: 128

1

The minimum number of hours required for a degree in Computer Engineering is 128.

2

Students that transfer to Missouri S&T after their freshman year are not required to enroll in Foundational Engineering and Computing Seminars.

3

A minimum grade of "C" must be attained in [MATH 1214](#) or [MATH 1211](#), [MATH 1215](#), [MATH 2222](#), and [MATH 3304](#), [PHYSICS 1135](#) and [PHYSICS 2135](#) (or their equivalents), [COMP SCI 1570](#), [COMP SCI 1580](#), [COMP SCI 1575](#), [COMP SCI 1200](#), [COMP SCI 2500](#) or [COMP SCI 3800](#), [COMP ENG 2210](#), [COMP ENG 2211](#), [COMP ENG 3150](#), [COMP ENG 3151](#), [COMP ENG 3110](#), [COMP ENG 5410](#), [COMP ENG 4096](#), and [ELEC ENG 2100](#), [ELEC ENG 2101](#), [ELEC ENG 2120](#), [ELEC ENG 2200](#), [ELEC ENG 2201](#), and [ELEC ENG 3410](#) and the COMP ENG electives A, B, C, D and E. Also, students may not enroll in other courses that use these courses as prerequisites until the minimum grade of "C" is attained.

4

Students may take [PHYSICS 1111](#) and [PHYSICS 1119](#) in place of [PHYSICS 1135](#). Students may take [PHYSICS 2111](#) and [PHYSICS 2119](#) in place of [PHYSICS 2135](#).

5

All electives must be approved by the student's advisor. Students must comply with the general education requirements with respect to selection and depth of study. These requirements are specified in the current catalog.

6

Students who drop a lecture course prior to the deadline to drop a class must also drop the corequisite lab course.

7

Students must earn a passing grade on the ELEC ENG Advancement Exam I (associated with [ELEC ENG 2100](#)) before they enroll in [ELEC ENG 2120](#) or [ELEC ENG 2200](#) and [ELEC ENG 2201](#).

8

Students must earn a passing grade on the COMP ENG Advancement Exam (associated with [COMP ENG 2210](#)) before they enroll in any course with [COMP ENG 2210](#) and [COMP ENG 2211](#) as prerequisites.

9

Students must earn a passing grade on the ELEC ENG Advancement Exam II (associated with [ELEC ENG 2120](#)) before they enroll in [ELEC ENG 3410](#).

10

Students must take one of the following courses:

[MATH 3108](#), [MATH 3109](#), [MATH 5302](#), [MATH 5603](#), [MATH 5105](#), [MATH 5106](#), [MATH 5107](#), [MATH 5108](#), [MATH 4209](#), [MATH 4211](#), [MATH 5215](#), [MATH 5222](#), [MATH 5325](#), [MATH 4530](#), [MATH 5737](#), [MATH 5351](#), [MATH 5154](#), [MATH 4096](#), [MATH 5483](#), [MATH 5585](#), [STAT 5644](#), [STAT 5346](#), [STAT 5353](#).

11

Students must take one of [MECH ENG 2340](#), [MECH ENG 2519](#), [MECH ENG 2527](#), [PHYSICS 2311](#), [PHYSICS 2401](#), [CHEM 2210](#), [BIO SCI 2213](#), [BIO SCI 2223](#), [CIV ENG 2200](#), [MECH ENG 2350](#), [PHYSICS 2305](#), [PHYSICS 4311](#), [CER ENG 4240](#), or [NUC ENG 3205](#).

12

Students may replace [STAT 3117](#) with [STAT 3115](#) or [STAT 5643](#).

13

Student must take [ENGLISH 3560](#) or [ENGLISH 1160](#). Students may replace [SP&M.S 1185](#) with the ROTC sequence of [MIL ARMY 4250](#) and [MIL ARMY 4500](#) or [MIL AIR 4110](#) and [MIL AIR 4120](#).

14

Comp Eng Elective A must be a 4000 or 5000-level Comp Eng, Elec Eng, or Comp Sci course with at least a 3-hour lecture component. This normally includes all Comp Eng and Elec Eng 4000 or 5000-level courses except Comp Eng or Elec Eng 4000, 4099, 4096, and 4097 or Comp Sci 5000, [COMP SCI 4010](#), [COMP SCI 5600](#), and Comp Sci 4099.

15

Comp Eng Electives C, D, and E must be 3000, 4000 or 5000-level courses from an approved list of science, mathematics, and engineering courses. In particular, this list includes all 3000, 4000 or 5000-level Comp Eng, Elec Eng and Comp Sci courses except required courses in Comp Eng, Elec Eng, and Comp Sci and except Comp Eng 4096 and 4097, [ELEC ENG 2800](#), 4096, and 4097, and [COMP SCI 2002](#) and [COMP SCI 3610](#) and [COMP SCI 5600](#)). Comp Eng Electives C, D,

and E must include at least six hours of engineering or computer science courses.

16

COMP ENG Electives C, D, and E cannot include more than three hours of [COMP ENG 4000](#), [COMP ENG 4099](#), [ELEC ENG 4000](#), or [ELEC ENG 4099](#).

17

Students pursuing dual degrees in COMP ENG and ELEC ENG may take either [COMP ENG 4096](#) or [ELEC ENG 4096](#) and [COMP ENG 4097](#) or [ELEC ENG 4097](#). Students may not receive credit for both [COMP ENG 4096](#) and [ELEC ENG 4096](#) or [COMP ENG 4097](#) and [ELEC ENG 4097](#) in the same degree program.

18

Students are required to take at least three credit hours. [ELEC ENG 2800](#) level, [ELEC ENG 4096](#), [ELEC ENG 4097](#), [COMP ENG 4096](#) and [COMP ENG 4097](#) may not be used for free electives. No more than one credit hour of [COMP ENG 3002](#) or [ELEC ENG 3002](#) may be applied to the BS degree for free electives.

19

Comp Eng Elective B must be a 4000 or 5000 level COMP ENG course with at least a 3-hour lecture component, excluding [COMP ENG 4096](#) and [COMP ENG 4097](#). Students admitted to the accelerated BS/MS program must satisfy Cp Eng Electives B and C with 5xx or 6xx-level courses and a minimum grade of B.

20

Students must take one of the following courses: [BUS 5980](#), [ECON 4430](#), [ECON 5337](#), [ENG MGT 2310](#), [ENG MGT 3320](#), [ENG MGT 4110](#), [ENG MGT 5514](#), [PHILOS 3225](#).

21

The course combination [MATH 1210](#) and [MATH 1211](#) may be taken in place of [MATH 1214](#).

~~Notes: Student must satisfy the common freshman year academic requirements and be admitted into the department.~~ An accelerated BS/MS program is optional.

## Emphasis Areas for Computer Engineering

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

### Computational Intelligence

Highly Recommended		
<a href="#">COMP ENG 5310</a>	Computational Intelligence	3
<del><a href="#">ELEC ENG 5370</a></del>	<del>Course ELEC ENG 5370 Not Found</del>	<del>3</del>
<a href="#">COMP ENG 6310</a>	Markov Decision Processes	3
Suggested		
<a href="#">ELEC ENG 5330</a>	Fuzzy Logic Control	3
<a href="#">COMP ENG 5450</a>	Digital Image Processing	3
<a href="#">COMP ENG 5460</a>	Machine Vision	3

### Computer Architecture and Embedded Systems

Highly Recommended		
<a href="#">COMP ENG 5110</a>	Principles of Computer Architecture	3
<a href="#">COMP ENG 5120</a>	Digital Computer Design	3
<a href="#">COMP ENG 5151</a>	Digital Systems Design Laboratory	3
<a href="#">COMP ENG 5160</a>	Embedded Processor System Design	3
<a href="#">COMP ENG 5170</a>	Real-Time Systems	3

Suggested		
<a href="#">COMP ENG 5610</a>	Real-Time Digital Signal Processing	3
<a href="#">COMP ENG 5130</a>	Advanced Microcomputer System Design	3
<a href="#">ELEC ENG 3100</a>	Electronics I	3
<a href="#">COMP SCI 3100</a>	Software Engineering I	3

## Integrated Circuits and Logic Design

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

## Networking, Security, and Dependability

Highly Recommended		
<a href="#">COMP ENG 5420</a>	Introduction to Network Security	3
<a href="#">COMP ENG 5430</a>	Wireless Networks	3
<a href="#">COMP ENG 6440</a>	Network Performance Analysis	3
<a href="#">COMP ENG 6510</a>	Resilient Networks	3
Suggested		
<a href="#">COMP ENG 5510</a>	Fault-Tolerant Digital Systems	3

## Accelerated BS/MS Program Option for EE and CpE Majors

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

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

~~The BS degree requirements are modified for admitted students such that EE Electives D and E or CpE Electives B and C will be satisfied by six credit hours of 5000-level or above ECE coursework.~~ To be eligible for the accelerated BS/MS ECE program, an EE or CpE undergraduate must be at or beyond the junior level with a minimum of 60 credit hours and must have completed 18 credit hours of EE and/or CpE courses at Missouri S&T with at least a 3.50 GPA in the ECE courses. To be admitted, the student must complete the program application and must have the recommendation of an ECE faculty member who agrees to serve as the graduate thesis advisor. No other MS degree requirements are changed. The MS degree must be for the thesis option. The program may be combined with existing honors research and emphasis area options. Admitted students will have both undergraduate and graduate records in the Registrar's Office.

The Accelerated program application must be completed within one semester after the shared-credit courses are completed. Courses taken for shared credit will be identified on this application form and on Graduate Form 1, which is submitted after the student enters the graduate program. The ~~nine~~ six hours of shared-credit coursework will be taken as undergraduate credit, ~~must be approved by the academic advisor,~~ and may not be undergraduate research, special problems, or transfer courses (a co-listed course can only apply for these undergraduate requirements if it is under an EE or CpE registration. Note that the choice of EE or CpE registration may affect how a course can apply within an MS program.) An additional ~~nine~~ six credit hours of coursework for graduate credit (beyond the shared BS/MS credits) can be taken while in the undergraduate program by applying for dual undergraduate/graduate enrollment. Taking additional courses for graduate credit will require formal application to the graduate program. Acceptance to the MS degree from the Accelerated Program is automatic so long as the student meets ECE graduate student academic performance requirements. To remain in the program, the student must maintain good standing within the undergraduate EE or CpE program and must maintain continuous enrollment at Missouri S&T. If the student exits the program before completion of the MS degree requirements or fails to maintain continuous enrollment at Missouri S&T, the shared-credit courses may not apply toward graduate requirements in the event of future readmission.

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

#### Justification for request

The course combination, Math 1210/1211, provide a new option for students to satisfy the Math 1214 requirement.

ECE Faculty approved proposal to increase transfer of credit hours from six to nine for students enrolling in the Accelerated BS/MS Program.

The freshman engineering program references in the CpE BS degree program description have been removed, as the freshman engineering program has been discontinued.

EE 5370 has been removed as a highly recommended course for the emphasis area Computational Intelligence because EE 5370 is no longer offered.

#### Supporting Documents

~~[Substituting CS 1500 for ME 1720 - Justification - 072219.docx](#)~~

[RE Accelerated BS MS Program.pdf](#)

[Accelerated BS MS program website.docx](#)

#### Course Reviewer Comments

**watkins (11/22/21 1:28 pm):** Rollback: Correct Date

**tibbettsmg (12/17/21 9:10 am):** updated formatting. mt

**sraper (12/20/21 1:27 pm):** Rollback: hold until Direct Admissions language removal.

**tibbettsmg (03/02/22 12:36 pm):** Rollback: rollback for additional changes per Dr. Stanley request. Please also remove the FEP language.

**tibbettsmg (03/04/22 3:04 pm):** updated footnote formatting. MR

**tibbettsmg (03/07/22 11:40 am):** updated CS 4600 to CS 3610 and removed EE 1002 and EE 1003 per Chair approval email on 3/4/22.

**sraper (03/18/22 8:36 am):** see this note: discuss during CCC meeting. 1) CP-ENG-BS seems to show in the four-year schedule Math 1214 or Math 1211, with footnote 3 and 21. Footnote 21 states Math 1210 and Math 1211 may be taken in place of Math 1214. These don't quite match? I'm not sure that footnote 21 is needed, as the prereq for Math 1211 is Math 1210 or by placement exam. Why reject the placement exam?

Key: 153

## Program Change Request

Date Submitted: 03/02/22 1:28 pm

Viewing: **CV ENG-BS : Civil Engineering BS**

File: 152.20

Last approved: 03/03/20 1:41 pm

Last edit: 03/02/22 1:28 pm

Changes proposed by: seelyj

Catalog Pages Using this Program

[Civil Engineering](#)

Start Term

Fall ~~2020~~ 2022

Program Code

CV ENG-BS

Department

Civil, Architectural, and Environmental Engineering

Title

Civil 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. Evie Sherlock

### Approval Path

1. 03/02/22 12:41 pm  
Marita Raper  
(tibbettsmg):  
Rollback to Initiator
2. 03/14/22 5:07 am  
Joel Burken  
(burken): Approved  
for RCIVILEN Chair
3. 03/16/22 11:51 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Secretary
4. 03/22/22 3:21 pm  
Stephen Raper  
(sraper): Approved  
for Engineering  
DSCC Chair
5. 03/23/22 11:29 am  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
6. 04/05/22 9:37 am  
Marita Raper



(tibbettsmg):  
 Approved for CCC  
 Meeting Agenda  
 7. 04/05/22 12:25 pm  
 Stephen Raper  
 (sraper): Approved  
 for Campus  
 Curricula  
 Committee Chair

## History

1. Sep 27, 2013 by  
Lahne Black (lahne)
2. Aug 6, 2014 by  
Lahne Black (lahne)
3. Sep 21, 2015 by  
Genda Chen  
(gchen)
4. Mar 3, 2020 by  
ershenb

## Civil Engineering Bachelor of Science

The Civil Engineering ~~Civil Engineering~~ program at Missouri S&T is characterized by its focus on the scientific basics of ~~of~~ engineering and its innovative application; indeed, the underlying theme of ~~of~~ this educational program is the application of the ~~of the~~ scientific basics to engineering practice through attention to problems and needs of the ~~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.

~~Civil Engineering Bachelor of Science Entering freshmen desiring to study Civil Engineering will be admitted to the Foundational Engineering and Computing Program. They will, however, be permitted, if they wish, to state a Civil Engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Foundational Engineering and Computing 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 Civil 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 attained in all courses taken in Civil 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](#) , [HISTORY 1300](#) , [HISTORY 1310](#) , or [POL SCI 1200](#) . The economics course may be either [ECON 1100](#) or [ECON 1200](#) . The humanities course must be selected from the approved lists for art, English, foreign languages, music, philosophy, speech and media studies, or theater.
2. 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 chair.

<b>Freshman Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">FR ENG 1100</a> <sup>2</sup>	1	<a href="#">MECH ENG 1720</a>	3
<a href="#">CHEM 1310</a> & <a href="#">CHEM 1319</a>	5	<a href="#">MATH 1215</a>	4
<a href="#">MATH 1214</a> or <a href="#">1211</a>	4	<a href="#">PHYSICS 1135</a>	4
<a href="#">ENGLISH 1120</a>	3	Economics Elective <sup>1</sup>	3
History Elective <sup>1</sup>	3	Humanities or Social Science <sup>1</sup>	3
	16		17
<b>Sophomore Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">CIV ENG 2401</a> <sup>2</sup>	3	<a href="#">MECH ENG 2350</a>	2
<a href="#">CIV ENG 2003</a> <sup>2</sup>	3	<a href="#">STAT 3113</a>	3
<a href="#">CIV ENG 2200</a> <sup>2</sup>	3	<a href="#">GEO ENG 1150</a>	3
<a href="#">MATH 2222</a>	4	<a href="#">CIV ENG 2210</a> <sup>2</sup>	3
<a href="#">PHYSICS 2135</a>	4	<a href="#">CIV ENG 2211</a> <sup>2</sup>	1
		<a href="#">MATH 3304</a>	3
	17		15
<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">ENG MGT 1210</a> <sup>2</sup>	2	<a href="#">CIV ENG 3116</a> <sup>2</sup>	3
<a href="#">CIV ENG 3201</a> <sup>2</sup>	3	<a href="#">CIV ENG 3842</a> <sup>2</sup>	3
<a href="#">CIV ENG 3715</a> <sup>2</sup>	3	<a href="#">CIV ENG 3500</a> <sup>2</sup>	3
<a href="#">CIV ENG 3330</a> <sup>2</sup>	3	<a href="#">CIV ENG 3334</a> <sup>2</sup>	4
<a href="#">CIV ENG 2601</a> <sup>2</sup>	3	<a href="#">CIV ENG 4448</a> <sup>2</sup>	3
Communications Elective <sup>1</sup>	3		
	17		16
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">CIV ENG 4010</a> <sup>2</sup>	1	<a href="#">CIV ENG 4097</a> <sup>2</sup>	3
(2) CIV ENG Depth Electives <sup>3,4</sup>	6	CIV ENG Tech Elective <sup>3,5</sup>	3

<a href="#">CIV ENG 3210</a> <sup>2</sup>	3	CIV ENG Depth Elective <sup>3,4</sup>	3
Humanities Elective <sup>1</sup>	3	Upper Level Humanities or Social Sciences Elective <sup>1</sup>	3
<a href="#">CIV ENG 3220</a> <sup>2</sup>	3	CIV ENG Tech Elective <sup>3,5</sup>	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. One general education elective must be from [ENGLISH 1160](#), [ENGLISH 3560](#), or [SP&M S 1185](#).

2

A grade of 'C' or better required to satisfy graduation requirements.

3

A grade of 'C' or better may be required in CE technical and depth elective prerequisite courses. Refer to the Missouri S&T undergraduate catalog for this prerequisite information.

4

Choose depth electives using Guidelines for Depth and Technical Electives.

5

Choose technical electives using Guidelines for Depth and Technical Electives.

~~The Civil 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.~~ **Note:** All Civil 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. Students must sign a release form giving the University access to their Fundamentals of Engineering Examination score.

## Guidelines for Depth and Technical Electives

Please consult the Department's Advising Center or your academic advisor for guidelines regarding the selection of depth and technical electives. A maximum total of 6 credit hours of independent study ([CIV ENG 5000](#) or [CIV ENG 4099](#)) can be used as depth or technical electives in the B.S. Civil Engineering curriculum.

## Course Listings by Area

### Construction Engineering

<a href="#">CIV ENG 5441</a>	Professional Aspects Of Engineering Practice	3
<a href="#">CIV ENG 5442</a>	Construction Planning and Scheduling Strategies	3
<a href="#">CIV ENG 5445</a>	Construction Methods	3
<a href="#">CIV ENG 5446</a>	Management Of Construction Costs	3
<a href="#">CIV ENG 5448</a>	Green Engineering: Analysis of Constructed Facilities	3

<a href="#">CIV ENG 5449</a>	Engineering and Construction Contract Specifications	3
<a href="#">CIV ENG 5451</a>	<a href="#">Information Technology Applications in the Construction Industry</a>	<a href="#">3</a>
<a href="#">CIV ENG 5452</a>	<a href="#">Pre-Project Planning and Feasibility Studies</a>	<a href="#">3</a>
<a href="#">CIV ENG 5453</a>	<a href="#">Logistics for Construction Industry</a>	<a href="#">3</a>
<a href="#">CIV ENG 5454</a>	<a href="#">Construction Technology for High-Rise Buildings</a>	<a href="#">3</a>
<a href="#">CIV ENG 5455</a>	<a href="#">Construction Industry Best Practices</a>	<a href="#">3</a>

## Materials Engineering

<a href="#">CIV ENG 5112</a>	Bituminous Materials	3
<a href="#">CIV ENG 5113</a>	Composition And Properties Of Concrete	3
<a href="#">CIV ENG 5117</a>	Asphalt Pavement Design	3
<a href="#">CIV ENG 5118</a>	Smart Materials And Sensors	3
<a href="#">CIV ENG 5156</a>	Pavement Design	3

## Environmental Engineering

<a href="#">CIV ENG 3615</a>	Water And Wastewater Engineering	3
<a href="#">CIV ENG 5605</a>	Environmental Systems Modeling	3
<a href="#">CIV ENG 5619</a>	Environmental Engineering Design	3
<a href="#">CIV ENG 5630</a>	Remediation of Contaminated Groundwater and Soil	3
<a href="#">CIV ENG 5635</a>	Phytoremediation and Natural Treatment Systems: Science and Design	3
<a href="#">CIV ENG 5640</a>	Environmental Law And Regulations	3
<a href="#">CIV ENG 5642</a>	Sustainability, Population, Energy, Water, and Materials	3
<a href="#">CIV ENG 5650</a>	Public Health Engineering	3
<a href="#">CIV ENG 5660</a>	Introduction To Air Pollution	3
<a href="#">CIV ENG 5662</a>	Air Pollution Control Methods	3
<a href="#">CIV ENG 5665</a>	Indoor Air Pollution	3
<a href="#">CIV ENG 5670</a>	Solid Waste Management	3

## Geotechnical Engineering

<a href="#">CIV ENG 4729</a>	Foundation Engineering	3
<a href="#">CIV ENG 5715</a>	Intermediate Soil Mechanics	3
<a href="#">CIV ENG 5716</a>	Geotechnical Earthquake Engineering	3
<a href="#">CIV ENG 5729</a>	Foundation Engineering II	3
<a href="#">CIV ENG 5744</a>	Geosynthetics in Engineering	3
<a href="#">CIV ENG 5750</a>	Transportation Applications of Geophysics	3

## Water Resources Engineering

<a href="#">CIV ENG 5330</a>	Unsteady Flow Hydraulics	3
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<a href="#">CIV ENG 5331</a>	Hydraulics Of Open Channels	3
<a href="#">CIV ENG 5332</a>	Transport Processes in Environmental Flows	3
<a href="#">CIV ENG 5333</a>	Intermediate Hydraulic Engineering	3
<a href="#">CIV ENG 5335</a>	Water Infrastructure Engineering	3
<a href="#">CIV ENG 5337</a>	River Mechanics And Sediment Transport	3
<a href="#">CIV ENG 5338</a>	Hydrologic Engineering	3
<a href="#">CIV ENG 5360</a>	Water Resources And Wastewater Engineering	3

## Structural Engineering

<a href="#">CIV ENG 5118</a>	Smart Materials And Sensors	3
<a href="#">CIV ENG 5203</a>	Applied Mechanics In Structural Engineering	3
<a href="#">CIV ENG 5205</a>	Structural Analysis II	3
<a href="#">CIV ENG 5206</a>	Low-Rise Building Analysis and Design	3
<a href="#">CIV ENG 5207</a>	Computer Methods of Structural Analysis	3
<a href="#">CIV ENG 5208</a>	Structural Dynamics	3
<a href="#">CIV ENG 5209</a>	<a href="#">Wind Engineering</a>	<a href="#">3</a>
<a href="#">CIV ENG 5210</a>	Advanced Steel Structures Design	3
<a href="#">CIV ENG 5220</a>	Advanced Concrete Structures Design	3
<a href="#">CIV ENG 5222</a>	Prestressed Concrete Design	3
<a href="#">CIV ENG 5231</a>	Infrastructure Strengthening with Composites	3
<a href="#">CIV ENG 5260</a>	Analysis And Design Of Wood Structures	3
<a href="#">CIV ENG 5270</a>	Structural Masonry Design	3

## Transportation Engineering

<a href="#">CIV ENG 5250</a>	Air Transportation	3
<a href="#">CIV ENG 5510</a>	Geometric Design Of Highways	3
<a href="#">CIV ENG 5513</a>	Traffic Engineering	3
<a href="#">CIV ENG 5515</a>	Advanced Traffic Operations and Capacity Analysis	3

Justification for request

Removing FEP paragraph and changing wording for General ED electives.

Supporting Documents

[Civil course offerings.xlsx](#)

Course Reviewer Comments

**tibbetmsg (03/02/22 12:41 pm):** Rollback: rollback for additional changes per request.

Key: 152

## Program Change Request

Date Submitted: 03/03/22 7:56 pm

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

File: 155.57

Last approved: 10/01/21 2:41 pm

Last edit: 03/18/22 8:38 am

Changes proposed by: stanleyj

Catalog Pages Using this Program

[Electrical Engineering](#)

Start Term

Fall 2022 Spring 2024

Program Code

EL ENG-BS

Department

Electrical and Computer Engineering

Title

Electrical Engineering BS

### Program Requirements and Description

### In Workflow

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

### Approval Path

1. 11/22/21 1:30 pm  
Watkins (watkins):  
Approved for  
RELECENG Chair
2. 11/22/21 3:42 pm  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Secretary
3. 12/20/21 1:28 pm  
Stephen Raper  
(sraper): Rollback to  
CCC Secretary for  
Engineering DSCC  
Chair
4. 12/21/21 8:05 am  
Marita Raper  
(tibbettsmg):  
Rollback to Initiator
5. 03/03/22 7:45 pm  
Watkins (watkins):  
Rollback to Initiator
6. 03/03/22 7:58 pm  
Watkins (watkins):  
Approved for  
RELECENG Chair

7. 03/07/22 11:56 am  
Marita Raper  
(tibbetmsg):  
Approved for CCC  
Secretary
8. 03/18/22 8:38 am  
Stephen Raper  
(sraper): Approved  
for Engineering  
DSCC Chair
9. 03/22/22 2:16 pm  
Marita Raper  
(tibbetmsg):  
Approved for  
Pending CCC  
Agenda post
10. 04/05/22 9:37 am  
Marita Raper  
(tibbetmsg):  
Approved for CCC  
Meeting Agenda
11. 04/05/22 12:25 pm  
Stephen Raper  
(sraper): Approved  
for Campus  
Curricula  
Committee Chair

## History

1. Aug 6, 2014 by  
Watkins (watkins)
2. Aug 13, 2014 by  
pantaleoa
3. Apr 25, 2016 by  
Watkins (watkins)
4. Jun 18, 2018 by  
Watkins (watkins)
5. May 15, 2019 by  
Mehdi Ferdowsi  
(ferdowsi)
6. Mar 3, 2020 by  
ershenb
7. Oct 28, 2020 by  
Marita Raper  
(tibbetmsg)
8. Oct 1, 2021 by  
Crystal Wilson  
(wilsoncry)

For the

~~**Bachelor of Science Electrical Engineering 1** Entering freshmen desiring to study Electrical Engineering will be admitted to the Foundational Engineering and Computing 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 Foundational Engineering and Computing 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.~~ **Bachelor of Science degree in Electrical Engineering<sup>1</sup>**

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

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

- [ENGLISH 1120](#)
- [HISTORY 1200](#) or [HISTORY 1300](#) or [HISTORY 1310](#) or [POL SCI 1200](#)
- [ECON 1100](#) or [ECON 1200](#)
- Technical Communication Elective: [ENGLISH 1160](#) or [ENGLISH 3560](#)
- [SP&M S 1185](#)
- The remaining minimum of 6 additional credit hours must be three-credit hour lecture courses offered in disciplines in the humanities and social sciences. Humanities courses are defined as those in: Art, English and Technical Communication, Etymology, Foreign Languages, Music, Philosophy, Speech and Media Studies, and Theatre. Social Sciences courses are defined as those in: Economics, History, Political Science, and Psychology. Study abroad courses may count as H/SS courses. H/SS courses numbered 2001, 3001, and 4001 (experimental courses) may also be used to complete these elective requirements.

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

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

### Free Electives Footnote:

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

Freshman Year



First Semester	Credits	Second Semester	Credits
<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> or <a href="#">1211</a> <sup>3, 21</sup>	4	<a href="#">ECON 1100</a> or <a href="#">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
<b>Sophomore Year</b>			
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 1500</a>	3
	16		16
<b>Junior Year</b>			
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	Communication Elective <sup>13</sup>	3
	14		17
<b>Senior Year</b>			
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	Professional Development Elective <sup>20</sup>	3
<a href="#">ELEC ENG 4096</a> <sup>3</sup>	1	Free Elective <sup>18</sup>	3
Free Elective <sup>18</sup>	3		
Elective-Hum or Soc Sci (any level) <sup>5</sup>	3		
	17		15

## Total Credits: 128

1

The minimum number of hours required for a degree in Electrical Engineering is 128.

2

Students that transfer after their freshman year are not required to enroll in [FR ENG 1100](#).

3

A minimum grade of "C" must be attained in [MATH 1214](#), [MATH 1215](#), [MATH 2222](#), and [MATH 3304](#), [PHYSICS 1135](#) and [PHYSICS 2135](#) (or their equivalents), [ELEC ENG 2100](#), [ELEC ENG 2101](#), [ELEC ENG 2120](#), [ELEC ENG 2200](#), [ELEC ENG 2201](#), [ELEC ENG 3320](#), [ELEC ENG 3321](#), [ELEC ENG 3430](#), [ELEC ENG 3431](#), [ELEC ENG 3100](#), [ELEC ENG 3101](#), and [ELEC ENG 3600](#), the ELEC ENG power elective ([ELEC ENG 3500](#) and [ELEC ENG 3501](#) or [ELEC ENG 3540](#) and [ELEC ENG 3541](#)), [ELEC ENG 4096](#) and [COMP ENG 2210](#) and [COMP ENG 2211](#). Also, students may not enroll in other courses that use these courses as prerequisites until the minimum grade of "C" is attained.

4

Students may take [PHYSICS 1111](#) and [PHYSICS 1119](#) in place of [PHYSICS 1135](#). Students may take [PHYSICS 2111](#) and [PHYSICS 2119](#) in place of [PHYSICS 2135](#).

5

All electives must be approved by the student's advisor. Students must comply with the general education requirements with respect to selection and depth of study. These requirements are specified in the current catalog.

6

Students who drop a lecture course prior to the last week to drop a class must also drop the corequisite lab.

7

Students must earn a passing grade on the ELEC ENG Advancement Exam I (associated with [ELEC ENG 2100](#)) before they enroll in [ELEC ENG 2120](#) or [ELEC ENG 2200](#) and [ELEC ENG 2201](#).

8

Students must earn a passing grade on the COMP ENG Advancement Exam (associated with [COMP ENG 2210](#)) before they enroll in any course with [COMP ENG 2210](#) and/or [COMP ENG 2211](#) as prerequisites.

9

Students must earn a passing grade on the ELEC ENG Advancement Exam II (associated with [ELEC ENG 2120](#)) before they enroll in [ELEC ENG 3500](#), [ELEC ENG 3540](#), [ELEC ENG 3501](#), [ELEC ENG 3541](#), [ELEC ENG 3320](#), [ELEC ENG 3321](#), [ELEC ENG 3430](#), [ELEC ENG 3431](#), [ELEC ENG 3100](#), [ELEC ENG 3101](#), or [ELEC ENG 3600](#), or other courses with [ELEC ENG 2120](#) as a prerequisite.

10

Students must earn a passing grade on the ELEC ENG Advancement Exam III (associated with [ELEC ENG 2200](#)) before they enroll in [ELEC ENG 3100](#) and [ELEC ENG 3101](#) or other courses with [ELEC ENG 2200](#) as a prerequisite.

11

Students must take [MECH ENG 2340](#), [MECH ENG 2519](#), [MECH ENG 2527](#), [PHYSICS 2305](#), [PHYSICS 2311](#), [PHYSICS 2401](#), [NUC ENG 3103](#), [CHEM 2210](#), [BIO SCI 2213](#), or [BIO SCI 2223](#). The following pairs of course are substitutions: [CIV ENG 2200](#) and [MECH ENG 2350](#) or [ENG MGT 2110](#) and [ENG MGT 3310](#).

12

Students may replace [STAT 3117](#) with [STAT 3115](#) or [STAT 5643](#).

13

Students must take [ENGLISH 3560](#) or [ENGLISH 1160](#). Students may replace [SP&M S 1185](#) with the ROTC sequence of [MIL ARMY 4250](#) and [MIL ARMY 4500](#) or [MIL AIR 4110](#) and [MIL AIR 4120](#).

14

ELEC ENG Electives A, B, and C must be chosen from ELEC ENG 56XX, [ELEC ENG 3500](#), [ELEC ENG 3540](#), [ELEC ENG 3410](#), [ELEC ENG 3250](#), [ELEC ENG 3340](#), [ELEC ENG 3440](#), [ELEC ENG 3120](#), and [COMP ENG 3150](#). Only one ELEC ENG 56XX course may be used.

15

The ELEC ENG Power Elective may be satisfied with [ELEC ENG 3500](#) and [ELEC ENG 3501](#) or [ELEC ENG 3540](#) and [ELEC ENG 3541](#).

16

ELEC ENG Elective D must be a 4XXX-level or above ELEC ENG or COMP ENG course with at least a 3-hour lecture component. [ELEC ENG 4000](#), [ELEC ENG 5000](#), [COMP ENG 4000](#), [COMP ENG 5000](#), [ELEC ENG 4099](#), [COMP ENG 4099](#), [ELEC ENG 4096](#), [COMP ENG 4096](#),

[ELEC ENG 4097](#), [COMP ENG 4097](#), [ELEC ENG 5070](#), [COMP ENG 5070](#), ELEC ENG 58XX, and COMP ENG 58XX may not be used for Elective D.

17

ELEC ENG Elective E may be any 3XXX-level or above ELEC ENG or COMP ENG course except [ELEC ENG 3002](#), ELEC ENG 38XX, [ELEC ENG 4096](#), [ELEC ENG 4097](#), and [ELEC ENG 5070](#) and [COMP ENG 3002](#), COMP ENG 38XX, [COMP ENG 4000](#), [COMP ENG 4096](#), [COMP ENG 4097](#), and [COMP ENG 5070](#).

18

Students are required to take six hours of free elective in consultation with their academic advisors. Credits that do not count toward this requirement are deficiency courses (such as algebra and trigonometry) and extra credits from courses meeting other requirements. Any courses outside of engineering and science must be at least three credit hours. ELEC ENG 28XX, ELEC ENG 38XX, [ELEC ENG 4096](#), [ELEC ENG 4097](#), COMP ENG 28XX, COMP ENG 38XX, [COMP ENG 4096](#) and [COMP ENG 4097](#) may not be used for free electives. No more than one credit hour of [ELEC ENG 3002](#) or [COMP ENG 3002](#) may be applied to the BS degree for free electives.

19

Students that pursue an optional degree emphasis area have restricted options for EI Eng Electives A, D, and E. Students admitted to the accelerated BS/MS program must satisfy EI Eng Electives D and E with 5xx or 6xx-level courses and a minimum grade of B.

20

Students must take one of the following courses: [BUS 5980](#), [ECON 4430](#), [ECON 5337](#), [ENG MGT 2310](#), [ENG MGT 3320](#), [ENG MGT 4110](#), [ENG MGT 5514](#), or [PHILOS 3225](#).

21

Both [MATH 1210](#) and [MATH 1211](#) may be taken in place of [MATH 1214](#). A C or better grade is required in both courses.

~~Note: Student must satisfy the common freshman year academic requirements and be admitted into the department. See Foundational Engineering and Computing Program.~~ All Electrical Engineering students are encouraged to take the fundamentals of Engineering Examination prior to graduation. It is the first step toward becoming a registered professional engineer.

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

## Emphasis Areas for Electrical Engineering

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

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

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

For students who seek an Electrical Engineering degree with a declared emphasis, courses in the declared emphasis area will be applied to ELEC ENG Electives A, D, and E in the degree requirements. For students who choose to have multiple emphasis areas, the additional courses will apply to ELEC ENG Elective B or C and free elective requirements. Students should seek guidance from their advisors on emphasis areas and on courses that are relevant to more than one emphasis area. Students may have an emphasis area or emphasis areas listed on their transcript by completing three three-credit-hour courses in electrical and computer engineering from the designated lists with at least one of the courses being at the 4XXX-level or above. This requirement will be satisfied by completing the relevant ABC Elective course, a 4XXX-level or above course for Elective D, and another 3XXX-level or above course for Elective E from the designated listing. The required ELEC ENG courses [ELEC ENG 3320](#), [ELEC ENG 3430](#), [ELEC ENG 3100](#), and [ELEC ENG 3600](#) and the course used to satisfy the power requirement ([ELEC ENG 3500](#) or [ELEC ENG 3540](#)) may not be used to meet the three course requirement. Transfer courses do not apply to emphasis areas. A co-listed course may count toward both areas. Experimental courses [ELEC ENG 3001](#), [ELEC ENG 4001](#), [ELEC ENG 5001](#), [COMP ENG 3001](#), [COMP ENG 4001](#), 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>	Basic Programmable Logic Controllers	3
ELEC ENG 43XX and ELEC ENG 53XX Courses		
Electromagnetics		
ELEC ENG 46XX and ELEC ENG 56XX Courses		
Optics and Devices		
<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		

## Accelerated BS/MS Program Option for EE and CpE Majors

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

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

~~The BS degree requirements are modified for admitted students such that EE Electives D and E or CpE Electives B and C will be satisfied by six credit hours of 5000-level or above ECE coursework.~~ To be eligible for the accelerated BS/MS ECE program, an EE or CpE undergraduate must be at or beyond the junior level with a minimum of 60 credit hours and must have completed 18 credit hours of EE and/or CpE courses at Missouri S&T with at least a 3.50 GPA in the ECE courses. To be admitted, the student must complete the program application and must have the recommendation of an ECE faculty member who agrees to serve as the graduate thesis advisor. No other MS degree requirements are changed. The MS degree must be for the thesis option. The program may be combined with existing honors research and emphasis area options. Admitted students will have both undergraduate and graduate records in the Registrar's Office.

The Accelerated program application must be completed within one semester after the shared-credit courses are completed. Courses taken for shared credit will be identified on the application form and on Graduate Form 1, which is submitted after the student enters the graduate program. The ~~nine~~ six hours of shared-credit coursework will be taken as undergraduate credit, ~~must be approved by the academic advisor,~~ and may not be undergraduate research, special problems, or transfer courses (a co-listed course can only apply for these undergraduate requirements if it is under an EE or CpE registration. Note that the choice of EE or CpE registration may affect how a course can apply within an MS program.) An additional ~~nine~~ six credit hours of coursework for graduate credit (beyond the shared BS/MS credits) can be taken while in the undergraduate program by applying for dual undergraduate/graduate enrollment. Taking additional courses for graduate credit will require formal application to the graduate program. Acceptance to the MS degree program from the Accelerated program is automatic so long as the student meets ECE graduate student academic performance requirements. To remain in the Accelerated program, the student must maintain good standing within the undergraduate EE or CpE program and must maintain continuous enrollment at Missouri S&T. If the student exits the program before completion of the MS degree requirements or fails to maintain continuous enrollment at Missouri S&T, the shared-credit courses may not apply toward graduate requirements in the event of future readmission.

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

### Justification for request

The combination of Math 1210 and Math 1211 is now an option for students to take in place of Math 1214.

ECE Faculty approved proposal to increase transfer of credit hours from six to nine for students enrolling in the Accelerated BS/MS Program.

Freshman Engineering Program details have been removed from the EE BS Program description due to the elimination of the Freshman Engineering Program.

### Supporting Documents

[Accelerated BS MS program website.docx](#)

[RE Accelerated BS MS Program.pdf](#)

### Course Reviewer Comments

**tibbettsmg (11/22/21 3:41 pm):** updated plan of study formatting. mt

**tibbettsmg (11/22/21 3:42 pm):** updated term to fs22. mt

**srapr (12/20/21 1:28 pm):** Rollback: Hold until Direct admissions Language removal.

**tibbettsmg (12/21/21 8:05 am):** Rollback: rollback per note and conversation with Steve Raper.

**watkins (03/03/22 7:45 pm):** Rollback: Further change needed

**tibbettsmg (03/07/22 11:55 am):** updated formatting on footnote 17 and 21. MR

**sraper (03/18/22 8:38 am):** See note. discuss during CCC. 1) CP-ENG-BS seems to show in the four-year schedule Math 1214 or Math 1211, with footnote 3 and 21. Footnote 21 states Math 1210 and Math 1211 may be taken in place of Math 1214. These don't quite match? I'm not sure that footnote 21 is needed, as the prereq for Math 1211 is Math 1210 or by placement exam. Why reject the placement exam? 2) EL-ENG-BS has the same issue in footnote 21, and I suspect they should alter footnote 3 to include C required in Math 1210.

Key: 155

## Program Change Request

Date Submitted: 02/14/22 12:08 pm

Viewing: **ENV SCI-BS : Environmental Sciences BS**

File: 382.13

Last approved: 01/24/22 10:03 am

Last edit: 02/16/22 12:39 pm

Changes proposed by: shannonk

Catalog Pages Using this Program

[Environmental Sciences](#)

Start Term

Fall 2022

Program Code

ENV SCI-BS

Department

Biological Sciences

Title

Environmental Sciences BS

### Program Requirements and Description

### In Workflow

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

### Approval Path

1. 02/14/22 12:42 pm  
David Duvernell (duvernell):  
Approved for  
RBIOLSCI Chair
2. 02/16/22 12:39 pm  
Marita Raper (tibbettsmg):  
Approved for CCC  
Secretary
3. 03/14/22 9:05 am  
Katie Shannon (shannonk):  
Approved for  
Sciences DSCC  
Chair
4. 03/22/22 2:16 pm  
Marita Raper (tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
5. 04/05/22 9:37 am  
Marita Raper (tibbettsmg):  
Approved for CCC

Meeting Agenda  
 6. 04/05/22 12:25 pm  
 Stephen Raper  
 (sraper): Approved  
 for Campus  
 Curricula  
 Committee Chair

## History

1. Jan 24, 2022 by  
[Nancy Winterburg](#)  
 (nancym)
2. Jan 24, 2022 by  
[Evie Sherlock](#)  
 (esdk3)
3. Jan 24, 2022 by  
[Evie Sherlock](#)  
 (esdk3)

## Bachelor of Science in Environmental Sciences

An Environmental Science degree at Missouri S&T commences with a first-year seminar course that is taken concurrently with an introductory environmental science course, creating familiar student cohorts that can support and motivate one another through the program. Throughout their four years in the program, students are trained in five core areas: economics, biology, geology, environmental engineering, and humanities. In addition, they build foundational skills in mathematics, physical science, and communications. As they progress through the program, students increasingly connect ideas from among and within core areas to build their understanding of the integrated multidisciplinary concepts in environmental science. During their junior and senior years, students will be able to customize their degrees by selecting from a diverse array of elective courses within core areas. The degree's flexible upper division elective choices also allow students to specialize and earn minors in core areas if they choose to do so.

Students apply the skills they learn in the classroom in hands-on laboratory and field courses. Students will finish their senior year with a capstone course that will be designed to engage them in professional development, connect them to career opportunities, hone their research and presentation skills through hands-on projects, and foster lifelong collegial relationships with their peers and instructors through intensive group work.

This curriculum benefits from a flexible design that allows students who may be transitioning from other programs on campus to complete the program in a timely manner. In addition, the degree creates opportunities for students to complete multiple minors within the degree, adding focus and strength to the interdisciplinary foundation.

Freshman Year			
First Semester	Credits	Second Semester	Credits
<a href="#">BIO SCI 1173</a>	3	<a href="#">ENGLISH 1160</a>	3
<a href="#">ENV SCI 1110</a>	1	<a href="#">CHEM 1320</a>	3
<a href="#">CHEM 1310</a>	4	<a href="#">BIO SCI 1223</a>	3
<a href="#">CHEM 1100</a>	1	<a href="#">BIO SCI 1229</a>	1



<a href="#">CHEM 1319</a>	1	<a href="#">MATH 1212</a> , or <a href="#">1211</a> , or <a href="#">1214</a> , or <a href="#">1221</a>	4
<a href="#">ECON 1100</a>	3		
<a href="#">ENGLISH 1120</a>	3		
	16		14
<b>Sophomore Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">GEOLOGY 1110</a>	3	<a href="#">BIO SCI 2263</a>	3
<a href="#">ECON 4641</a>	3	<a href="#">HISTORY 1200</a> , or <a href="#">1300</a> , or <a href="#">1310</a>	3
<a href="#">ENV ENG 2601</a>	3	<a href="#">ENV ENG 2602</a>	3
<a href="#">PHYSICS 1145</a>	4	<a href="#">GEO ENG 3148</a>	3
<a href="#">POL SCI 1200</a>	3	<a href="#">CIV ENG 5640</a>	3
	16		15
<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">PHILOS 1130</a>	3	<a href="#">HISTORY 4470</a> , or <a href="#">2510</a> , or <a href="#">3530</a> , or <a href="#">3510</a>	3
<a href="#">GEO ENG 5331</a>	3	<a href="#">GEOLOGY 2611</a>	3
<a href="#">ECON 1200</a>	3	<a href="#">PHILOS 4350</a>	3
<a href="#">ENV ENG 5642</a>	3	<a href="#">STAT 3425</a>	4
<a href="#">BIO SCI 4313</a>	3	<a href="#">BIO SCI 2223</a>	3
	15		16
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">GEOLOGY 4310</a>	3	FREE ELECTIVES	3
FREE ELECTIVES	2	<a href="#">ENV SCI 4028</a>	3
UPPER DIVISION ELECTIVES <sup>1</sup>	9	UPPER DIVISION ELECTIVES <sup>1</sup>	9
	14		15
Total Credits: 121			

1

See Upper Division Elective Course List

**Upper Division Elective Course List**

<a href="#">BIO SCI 2242</a>	Cave Biology	2
<a href="#">BIO SCI 2252</a>	Vegetation of the Ozarks	2
<a href="#">BIO SCI 2264</a>	Field Ecology	2
<a href="#">BIO SCI 2353</a>	Zoology	3
<a href="#">BIO SCI 2372</a>	Issues in Public Health	3
<a href="#">BIO SCI 2383</a>	Plant Biology	3

<a href="#">BIO SCI 2389</a>	Plant Biology Laboratory	1
<a href="#">BIO SCI 3353</a>	Comparative Vertebrate Anatomy	4
<del><a href="#">BIO SCI 4343</a></del>	<del>Introduction to Geomicrobiology</del>	<del>3</del>
<b><a href="#">BIO SCI 4316</a></b>	<b>Course BIO SCI 4316 Not Found</b>	
<a href="#">BIO SCI 4363</a>	Freshwater Ecology	3
<a href="#">BIO SCI 4383</a>	Toxicology	3
<a href="#">BIO SCI 4423</a>	Introduction to Astrobiology	3
<a href="#">BIO SCI 4563</a>	Global Ecology	3
<a href="#">ECON 4540</a>	Energy Economics	3
<a href="#">ECON 4440</a>	Environmental And Natural Resource Economics	3
<a href="#">ECON 4643</a>	Ethical Problems in a Global Environment	3
<a href="#">ECON 5644</a>	Creativity, Innovation, and Sustainability	3
<a href="#">CHEM 4710</a>	Principles Of Environmental Monitoring	3
<a href="#">ENV ENG 3615</a>	Water And Wastewater Engineering	3
<a href="#">ENV ENG 5605</a>	Environmental Systems Modeling	3
<a href="#">ENV ENG 5630</a>	Remediation of Contaminated Groundwater And Soil	3
<a href="#">ENV ENG 5635</a>	Phytoremediation and Natural Treatment Systems: Science and Design	3
<a href="#">ENV ENG 5660</a>	Introduction To Air Pollution	3
<a href="#">ENV ENG 5662</a>	Air Pollution Control Methods	3
<a href="#">GEOLOGY 4310</a>	Remote Sensing Technology	3
<a href="#">GEOLOGY 4411</a>	Hydrogeology	3
<a href="#">GEOLOGY 4711</a>	Paleoclimatology and Paleoecology	3
<a href="#">GEOLOGY 4721</a>	Meteorology and Climatology	3
<a href="#">GEOLOGY 5681</a>	Lidar Principles and Application	3
<a href="#">GEOLOGY 5741</a>	Micropaleontology	3
<a href="#">GEO ENG 4115</a>	Statistical Methods in Geology and Engineering	3
<a href="#">GEO ENG 4276</a>	Environmental Aspects Of Mining	3
<a href="#">GEO ENG 5233</a>	Risk Assessment In Environmental Studies	3

#### Justification for request

course number for Intro to Geomicro is changing to 4316

#### Supporting Documents

#### Course Reviewer Comments

**tibbettsmg (02/16/22 12:39 pm):** updated formatting. MR

## Program Change Request

Date Submitted: 03/08/22 3:55 pm

Viewing: **EV ENG-BS : Environmental Engineering BS**

File: 51.23

Last approved: 10/28/21 10:36 am

Last edit: 03/18/22 9:12 am

Changes proposed by: mfitch

Catalog Pages Using this Program

[Environmental Engineering](#)

Start Term

Fall 2022

Program Code

EV ENG-BS

Department

Civil, Architectural, and Environmental Engineering

Title

Environmental 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. Evie Sherlock

### Approval Path

1. 03/14/22 5:07 am  
Joel Burken  
(burken): Approved for RCIVILEN Chair
2. 03/16/22 11:52 am  
Marita Raper  
(tibbettsmg): Approved for CCC Secretary
3. 03/22/22 3:21 pm  
Stephen Raper  
(sraper): Approved for Engineering DSCC Chair
4. 03/23/22 11:31 am  
Marita Raper  
(tibbettsmg): Approved for Pending CCC Agenda post
5. 04/05/22 9:37 am  
Marita Raper  
(tibbettsmg): Approved for CCC Meeting Agenda
6. 04/05/22 12:25 pm

Stephen Raper  
(sraper): Approved  
for Campus  
Curricula  
Committee Chair

## History

1. Aug 30, 2013 by pantaleoa
2. Sep 3, 2013 by pantaleoa
3. Sep 27, 2013 by Lahne Black (lahne)
4. Mar 18, 2014 by Lahne Black (lahne)
5. Jul 20, 2015 by pantaleoa
6. Sep 15, 2016 by Crystal Wilson (wilsoncry)
7. Sep 22, 2017 by Crystal Wilson (wilsoncry)
8. Apr 19, 2019 by ershenb
9. Mar 3, 2020 by mfitc
10. Jul 23, 2020 by kristyg
11. Oct 28, 2021 by mfitc

## Environmental Engineering Bachelor of Science

The environmental 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.

~~Environmental Engineering Bachelor of Science Entering freshmen desiring to study environmental engineering will be admitted to the Foundational Engineering and Computing Program. They will, however, be permitted, if they wish, to state an environmental engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Foundational Engineering and Computing 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 environmental 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. At least two grade points per credit hour must also be attained in all courses taken in environmental engineering.

Each student's program of study must contain a minimum of 21 credit hours of course work in [humanities](#), [general education](#) and [social sciences](#), 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](#), [HISTORY 1300](#), [HISTORY 1310](#), or [POL SCI 1200](#). The economics course may be either [ECON 1100](#) or [ECON 1200](#). The humanities course must be [a class in selected from the approved lists for](#) art, English, foreign languages, music, philosophy, speech and media studies, or theater.
2. [HISTORY 2510](#) or [HISTORY 3530](#) is required.
3. The remaining two courses are to be chosen from [humanities \(art, English, foreign languages, music, philosophy, speech the list of approved humanities/social sciences courses](#) and [media studies, or theater\) or social sciences \(economics, history, political science, psychology, or sociology\) 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.

<b>Freshman Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">FR ENG 1100</a> <sup>2</sup>	1	<a href="#">MECH ENG 1720</a>	3
<a href="#">CHEM 1310</a> & <a href="#">CHEM 1319</a>	5	<a href="#">MATH 1215</a>	4
<a href="#">MATH 1214</a> or <a href="#">1211</a>	4	<a href="#">PHYSICS 1135</a>	4
<a href="#">ENGLISH 1120</a>	3	General Education Elective <sup>1</sup>	6
General Education Elective <sup>1</sup>	3		
	16		17
<b>Sophomore Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">CIV ENG 2200</a>	3	<a href="#">CIV ENG 2210</a>	3
<a href="#">MATH 2222</a>	4	<a href="#">CIV ENG 2211</a>	1
<a href="#">ENV ENG 260</a> <sup>13</sup>	3	<a href="#">MECH ENG 2350</a>	2
<a href="#">CHEM 1320</a> or <a href="#">GEOLOGY 3410</a>	3	<a href="#">CHEM ENG 2100</a>	4
<a href="#">BIO SCI 1113</a>	3	<a href="#">ENV ENG 2602</a>	3
		<a href="#">ENV ENG 3603</a>	3
	16		16
<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">ENV ENG 3615</a> <sup>3</sup>	3	<a href="#">ENV ENG 5619</a>	3
<a href="#">CIV ENG 3330</a> <sup>2</sup>	3	<a href="#">STAT 3113</a>	3
<a href="#">MATH 3304</a>	3	<a href="#">CHEM ENG 2110</a>	3
<a href="#">GEO ENG 1150</a>	3	ENV ENG Technical Elective <sup>5,6</sup>	3
<a href="#">PHYSICS 2135</a>	4	Communications Elective <sup>7</sup>	3
	16		15

Senior Year			
First Semester	Credits	Second Semester	Credits
<a href="#">CIV ENG 4448</a>	3	<a href="#">ENV ENG 4097</a> <sup>3</sup>	3
<a href="#">ENV ENG 4010</a> <sup>3</sup>	1	ENV ENG Depth Elective <sup>5,6</sup>	3
<a href="#">CIV ENG 3334</a>	4	ENV ENG Depth Elective <sup>5,6</sup>	3
ENV ENG Air Pollution Elective <sup>4,5</sup>	3	ENV ENG Technical Elective <sup>5,6</sup>	3
<a href="#">HISTORY 2510</a> or <a href="#">3530</a>	3	<a href="#">ENV ENG 4609</a>	1
ENV ENG Depth Elective <sup>5,6</sup>	3	General Education Elective <sup>1</sup>	3
	17		16
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

Existing CIV ENG course that is cross-listed as ENV ENG course.

4

Air Pollution Elective: Choose [ENV ENG 5660](#), [ENV ENG 5662](#) or [ENV ENG 5665](#). One class may not be used to fulfill both the air pollution requirement and a depth elective.

5

A grade of 'C' or better may be required in ENV ENG technical and depth elective prerequisite courses. Refer to the Missouri S&T undergraduate catalog for this prerequisite information.

6

Select depth and technical electives from approved lists. A maximum total of 6 credit hours of independent study ([ENV ENG 5000](#) or [ENV ENG 4099](#)) can be used as depth or technical electives in the B.S. environmental engineering curriculum.

7

Choose 1 of the following: [CIV ENG 2003](#), [ENGLISH 1160](#), [ENGLISH 3560](#), or [SP&M S 1185](#)

**The environmental 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.** **Note:** All environmental 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. Students must sign a release form giving the university access to their Fundamentals of Engineering Examination score.

## Environmental Engineering Depth Electives

The following classes may be used to fulfill the three depth elective courses required for the B.S. in environmental engineering:

<a href="#">ENV ENG 5640</a>	Environmental Law And Regulations	3
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<a href="#">ENV ENG 5630</a>	Remediation of Contaminated Groundwater And Soil	3
<a href="#">ENV ENG 5650</a>	Public Health Engineering	3
<a href="#">ENV ENG 5670</a>	Solid Waste Management	3
<a href="#">ENV ENG 5605</a>	Environmental Systems Modeling	3
<a href="#">ENV ENG 5642</a>	Sustainability, Population, Energy, Water, and Materials	3
<a href="#">ENV ENG 5665</a>	Indoor Air Pollution	3
<a href="#">ENV ENG 5660</a>	Introduction To Air Pollution	3
<a href="#">ENV ENG 5662</a>	Air Pollution Control Methods	3
<a href="#">GEO ENG 5331</a>	Subsurface Hydrology	3
<a href="#">ENV ENG 5360</a>	Water Resources And Wastewater Engineering	3
<a href="#">ENV ENG 5635</a>	Phytoremediation and Natural Treatment Systems: Science and Design	3

One class may not be used to fulfill both the air pollution requirement and depth elective.

## Environmental Engineering Technical Electives

The following classes may be used to fulfill the two technical elective courses required for the B.S. in environmental engineering:

<a href="#">CIV ENG 5331</a>	Hydraulics Of Open Channels	3
<a href="#">CIV ENG 5335</a>	Water Infrastructure Engineering	3
<a href="#">CIV ENG 5446</a>	Management Of Construction Costs	3
<a href="#">CIV ENG 5360</a>	Water Resources And Wastewater Engineering	3
<a href="#">CIV ENG 5448</a>	Green Engineering: Analysis of Constructed Facilities	3
<a href="#">CHEM ENG 3101</a>	Fundamentals of Transport in Chemical and Biochemical Engineering	4
<a href="#">CIV ENG 5744</a>	Geosynthetics in Engineering	3
<a href="#">CHEM ENG 5340</a>	Principles of Environmental Monitoring	3
<a href="#">GEO ENG 3148</a>	Fundamentals Of Geographic Information Systems	3
<a href="#">GEO ENG 3175</a>	Geomorphology And Terrain Analysis	3
<a href="#">GEO ENG 5233</a>	Risk Assessment In Environmental Studies	3
<a href="#">GEO ENG 5235</a>	Environmental Geological Engineering	3
<a href="#">GEO ENG 5239</a>	Groundwater Remediation	3
<a href="#">GEO ENG 4276</a>	Environmental Aspects Of Mining	3
<a href="#">GEOLOGY 3410</a>	Introduction To Geochemistry	3
<a href="#">PET ENG 4210</a>	Drilling and Well Integrity	3
<a href="#">GEOLOGY 4451</a>	Aqueous Geochemistry	3
<a href="#">CIV ENG 5662/ENV ENG 5662</a>	Air Pollution Control Methods	3
<a href="#">GEOLOGY 3811</a>	Fundamentals Of Geographic Information Systems	3
<a href="#">GEOLOGY 4421</a>	Radioactive Waste Management And Remediation	3
<a href="#">CHEM 3410</a>	Chemical Thermodynamics I	3

<a href="#">CHEM 5510</a>	Introduction to Chemical Analysis	4
<a href="#">CHEM 4510</a>	Instrumental Methods Of Chemical Analysis	4
<a href="#">CHEM ENG 3120</a>	Chemical Engineering Thermodynamics II	3
<a href="#">CHEM ENG 5130</a>	Risk Assessment and Reduction	3
<a href="#">CHEM 2210</a>	Organic Chemistry I	3
<a href="#">BIO SCI 2263</a>	Ecology	3
<a href="#">BIO SCI 5313</a>	Pathogenic Microbiology	3
<a href="#">BIO SCI 4323</a>	Molecular Genetics	3
<a href="#">GEO ENG 5237</a>	Geological Aspects Of Hazardous Waste Management	3
<a href="#">GEO ENG 5276</a>	Advanced Environmental Aspects Of Mining	3
<a href="#">GEO ENG 5320</a>	Groundwater Modeling	3
<a href="#">GEO ENG 5331</a>	Subsurface Hydrology	3
<a href="#">GEO ENG 5332</a>	Fundamentals of Groundwater Hydrology	3
<a href="#">GEO ENG 5381</a>	Intermediate Subsurface Hydrology And Contaminant Transport Mechs	3
<a href="#">MIN ENG 5742</a>	Environmental Aspects of Mining	3
<a href="#">BIO SCI 3313</a>	Microbiology	3
<a href="#">BIO SCI 4313</a>	Introduction to Environmental Microbiology	3
<del>BIO SCI 4343</del>	<del>Introduction to Geomicrobiology</del>	<del>3</del>
<a href="#">BIO SCI 4363</a>	Freshwater Ecology	3
<b>BIO SCI 4316</b>	<b>Course BIO SCI 4316 Not Found</b>	
<a href="#">BIO SCI 4563</a>	Global Ecology	3
<a href="#">BIO SCI 4329</a>	Molecular Genetics Laboratory	2
<a href="#">BIO SCI 4383</a>	Toxicology	3
<a href="#">CIV ENG 5330</a>	Unsteady Flow Hydraulics	3
<a href="#">CIV ENG 5332</a>	Transport Processes in Environmental Flows	3
<a href="#">CIV ENG 5333</a>	Intermediate Hydraulic Engineering	3
<a href="#">CIV ENG 5337</a>	River Mechanics And Sediment Transport	3
<a href="#">CIV ENG 5338</a>	Hydrologic Engineering	3

Justification for request

- 1) Eliminating FEP requirement
- 2) Modifying 'general education' to humanities and social sciences, and providing list of those areas rather than refer to a mythic list.

Supporting Documents

Course Reviewer Comments

**sraper (03/18/22 9:12 am):** changed at direction of Registrar.



## Program Change Request

Date Submitted: 03/02/22 3:53 pm

Viewing: **MC ENG-BS : Mechanical Engineering BS**

File: 86.55

Last approved: 10/28/21 10:37 am

Last edit: 03/02/22 3:53 pm

Changes proposed by: nisbett

Catalog Pages Using this Program

[Mechanical Engineering](#)

Start Term

Fall 2022

Program Code

MC ENG-BS

Department

Mechanical & Aerospace Engineering

Title

Mechanical Engineering BS

### Program Requirements and Description

### In Workflow

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

### Approval Path

1. 03/02/22 5:08 pm  
David Bayless (djbkqf): Approved for RMECHENG Chair
2. 03/03/22 11:24 am  
Marita Raper (tibbettsmg): Approved for CCC Secretary
3. 03/18/22 8:38 am  
Stephen Raper (sraper): Approved for Engineering DSCC Chair
4. 03/22/22 2:17 pm  
Marita Raper (tibbettsmg): Approved for Pending CCC Agenda post
5. 04/05/22 9:37 am  
Marita Raper (tibbettsmg): Approved for CCC Meeting Agenda

6. 04/05/22 12:25 pm  
Stephen Raper  
(srafer): Approved  
for Campus  
Curricula  
Committee Chair

## History

1. Feb 24, 2014 by J. Keith Nisbett (nisbett)
2. Aug 6, 2014 by J. Keith Nisbett (nisbett)
3. Jul 21, 2015 by pantaleoa
4. May 3, 2018 by J. Keith Nisbett (nisbett)
5. Jun 14, 2019 by J. Keith Nisbett (nisbett)
6. Mar 3, 2020 by ershenb
7. Oct 8, 2020 by Crystal Wilson (wilsoncry)
8. May 5, 2021 by J. Keith Nisbett (nisbett)
9. Oct 28, 2021 by J. Keith Nisbett (nisbett)

## Bachelor of Science Mechanical Engineering

The mechanical engineering program at Missouri S&T is characterized by its focus on the scientific basics of ef engineering and its innovative application; indeed, the underlying theme of ef this educational program is the application of the ef-the scientific basics to engineering practice through attention to problems and needs of the ef-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.

~~Bachelor of Science Mechanical Engineering Entering freshmen desiring to study mechanical engineering will be admitted to the Foundational Engineering and Computing Program. They will, however, be permitted, if they wish, to state a mechanical engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Foundational Engineering and Computing Program is on enhanced advising and career counseling, with the goal of providing to the student the~~

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

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

1. [ENGLISH 1120](#)
2. [HISTORY 1200](#) or [HISTORY 1300](#) or [HISTORY 1310](#) or [POL SCI 1200](#)
3. [ECON 1100](#) or [ECON 1200](#)
4. [ENGLISH 1160](#) or [ENGLISH 3560](#) or [SP&M S 1185](#)
5. A literature elective
6. A humanity or social science elective\*
7. A humanity or social science elective\* that has, as a prerequisite, a humanity or social science course already taken.

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

<b>Freshman Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">FR ENG 1100</a>	1	<a href="#">ECON 1100</a> or <a href="#">1200</a>	3
<a href="#">CHEM 1310</a> <sup>a</sup>	4	<a href="#">MECH ENG 1720</a>	3
<a href="#">ENGLISH 1120</a>	3	<a href="#">PHYSICS 1135</a> <sup>a</sup>	4
<a href="#">HISTORY 1200</a> , or <a href="#">1300</a> , or <a href="#">1310</a> , or <a href="#">POL SCI 1200</a>	3	<a href="#">MATH 1215</a> <sup>a</sup>	4
<a href="#">CHEM 1319</a>	1	Elective-Hum or Soc Sci <sup>e</sup>	3
<a href="#">MATH 1214</a> or <a href="#">1211</a> <sup>a</sup>	4		
	16		17
<b>Sophomore Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">MATH 2222</a> <sup>a</sup>	4	<a href="#">MECH ENG 2761</a>	2
<a href="#">CIV ENG 2200</a> <sup>a</sup>	3	<a href="#">MECH ENG 2519</a> <sup>a</sup>	3
<a href="#">PHYSICS 2135</a> <sup>a</sup>	4	<a href="#">MECH ENG 2360</a> <sup>a</sup>	3
<a href="#">MECH ENG 2653</a>	3	<a href="#">MATH 3304</a> <sup>a</sup>	3
<a href="#">MECH ENG 1761</a>	1	<a href="#">MET ENG 2110</a> <sup>a</sup>	3
		Programming Elective <sup>a, b</sup>	3
	15		17
<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>

<a href="#">MECH ENG 3313</a>	3	<a href="#">MECH ENG 3411<sup>a</sup></a>	3
<a href="#">MECH ENG 3521</a>	3	<a href="#">MECH ENG 3131</a>	3
<a href="#">ELEC ENG 2800</a>	3	<a href="#">MECH ENG 4840</a>	2
<a href="#">CIV ENG 2210<sup>a</sup></a>	3	Elective-Communications <sup>c</sup>	3
<a href="#">CIV ENG 2211</a>	1	<a href="#">MECH ENG 3708</a>	3
Elective-Advanced Math/Stat <sup>d</sup>	3	<a href="#">MECH ENG 3525</a>	3
	16		17
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">MECH ENG 4842</a>	2	<a href="#">ENG MGT 1100</a>	1
<a href="#">MECH ENG 4479</a>	3	<a href="#">ENG MGT 1210</a>	2
MECH ENG technical elective <sup>f</sup>	3	<a href="#">MECH ENG 4761</a>	3
Literature elective <sup>e</sup>	3	<a href="#">MECH ENG 4480</a>	1
Technical elective <sup>g</sup>	3	MECH ENG 5000-level technical elective <sup>f</sup>	3
Elective-Advanced Hum or Soc Sci <sup>e</sup>	3	Breadth elective <sup>h</sup>	3
	17		13
<b>Total Credits: 128</b>			

a

A grade of "C" or better is required in [CHEM 1310](#), [MATH 1214](#) (or [MATH 1211](#)), [MATH 1215](#), [MATH 2222](#), [MATH 3304](#), [PHYSICS 1135](#), [PHYSICS 2135](#), programming elective, [MET ENG 2110](#), [CIV ENG 2200](#), [CIV ENG 2210](#), [MECH ENG 2519](#), [MECH ENG 2360](#), and [MECH ENG 3411](#), both as prerequisite for follow-up courses in the curriculum and for graduation.

b

The programming elective consists of a lecture and lab combination, and may be selected from [COMP SCI 1970/COMP SCI 1980](#), [COMP SCI 1971/COMP SCI 1981](#), or [COMP SCI 1972/COMP SCI 1982](#), or [COMP SCI 1570/COMP SCI 1580](#). Note that [COMP SCI 1570/COMP SCI 1580](#) requires one more credit hour than the other options.

c

This course must be selected from the following: [ENGLISH 1160](#), [ENGLISH 3560](#) or [SP&M S 1185](#), or the complete four course sequence in Advanced ROTC ([MIL ARMY 3250](#), [MIL ARMY 3500](#), [MIL ARMY 4250](#), and [MIL ARMY 4500](#); or [MIL AIR 3110](#), [MIL AIR 3120](#), [MIL AIR 4110](#) and [MIL AIR 4120](#)).

d

This course must be selected from the following: [MATH 3108](#), [STAT 3113](#), [STAT 3115](#) or any 5000-level math or stat course approved by the student's advisor.

e

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

f

Six hours of technical electives, subject to approval by the student's advisor, must be in the department of mechanical and aerospace engineering. At least three of these technical elective hours must be at the 5000 level. This elective may not include co-op, special problems, or research credits, such as 3002, 4000, or 4099. Honors students have special requirements for technical electives.

g

This elective must be a three credit hour course, subject to approval by the student's advisor, from any of the following areas: math, statistics, science, engineering, or computer science. The course must be at the 3000 or higher level, or have a prerequisite that is part of the required mechanical engineering curriculum. Exceptions to the course level may be approved by the student's advisor. The elective may not include co-op, special problems, or research credits, such as 3002, 4000, or 4099.

h

This elective consists of three credit hours, subject to approval by the student's advisor, and may be satisfied by any of the following: (1) A three credit hour course from any of the following areas: math, statistics, science, engineering, computer science, business, or IST. The course must be at the 3000 or higher level, or have a prerequisite that is part of the required mechanical engineering curriculum. Exceptions to the course level may be approved by the student's advisor; (2) Any three credit hour course in the list of approved courses for the global studies minor; or (3) Any combination of three credit hours from co-op (3002), special problems (3000, 4000, or 5000), research (4099), or design team credit ([ENG MGT 2011](#), [ENG MGT 2012](#), or [ENG MGT 2013](#)).

i

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

~~The mechanical engineering program at Missouri S&T is characterized by its focus on the scientific basics of engineering and its innovative application; indeed, the underlying theme of this educational program is the application of the scientific basics to engineering practice through attention to problems and needs of the public. The necessary interrelations among the various topics, the engineering disciplines, and the other professions as they naturally come together in the solution of real world problems are emphasized as research, analysis, synthesis, and design are presented and discussed through classroom and laboratory instruction. Note: Students must satisfy the common freshman year academic requirements, and be admitted into the department, in addition to the sophomore, junior and senior year requirements listed above with a minimum of 128 hours.~~ **Energy Conversion Emphasis Area for Mechanical Engineering**

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

a. Two courses from the following list:		6
<a href="#">MECH ENG 5527</a>	Combustion Processes	3
or <a href="#">AERO ENG 5527</a>	Combustion Processes	
<a href="#">MECH ENG 5533</a>	Internal Combustion Engines	3
<a href="#">MECH ENG 5566</a>	Solar Energy Technology	3
<a href="#">MECH ENG 5567</a>	Heat Pump And Refrigeration Systems	3
<a href="#">MECH ENG 5571</a>	Environmental Controls	3
<a href="#">MECH ENG 5575</a>	Mechanical Systems For Environmental Control	3
<a href="#">AERO ENG 5169</a>	Introduction to Hypersonic Flow	3
<a href="#">AERO ENG 5535</a>	Aerospace Propulsion Systems	3
b. One course from the following list:		3
<a href="#">MECH ENG 5519</a>	Advanced Thermodynamics	3
or <a href="#">AERO ENG 5519</a>	Advanced Thermodynamics	
<a href="#">MECH ENG 5525</a>	Intermediate Heat Transfer	3
or <a href="#">AERO ENG 5525</a>	Intermediate Heat Transfer	
<a href="#">MECH ENG 5131</a>	Intermediate Thermofluid Mechanics	3
or <a href="#">AERO ENG 5131</a>	Intermediate Thermofluid Mechanics	

<a href="#">MECH ENG 5139</a>	Computational Fluid Dynamics	3
or <a href="#">AERO ENG 5139</a>	Computational Fluid Dynamics	
c. One additional course from either list "a" or list "b", or from the following list:		3
<a href="#">ECON 4540</a>	Energy Economics	3
<a href="#">ELEC ENG 5150</a>	Photovoltaic Systems Engineering	3
<a href="#">ENV ENG 5660</a>	Introduction To Air Pollution	3
<a href="#">NUC ENG 4257</a>	Two-phase Flow in Energy Systems - I	3

**Note:** ~~Note:~~ By using the breadth elective and technical electives to satisfy the above requirements, this emphasis area requires the same total number of credit hours as the BSME degree. A change of major form should be submitted to designate the energy conversion emphasis area.

## Manufacturing Processes Emphasis Area for Mechanical Engineering

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

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

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

Junior Year			
First Semester	Credits	Second Semester	Credits

<a href="#">MECH ENG 3313</a>	3	<a href="#">MECH ENG 3411<sup>a</sup></a>	3
<a href="#">ELEC ENG 2800</a>	3	<a href="#">MECH ENG 3131</a>	3
<a href="#">MECH ENG 3521</a>	3	<a href="#">MECH ENG 3525</a>	3
<a href="#">CIV ENG 2210<sup>a</sup></a>	3	<a href="#">MECH ENG 4840</a>	2
<a href="#">CIV ENG 2211</a>	1	<a href="#">MECH ENG 3653</a>	3
<a href="#">STAT 3113</a> or <a href="#">3115</a>	3	Elective-Communications <sup>c</sup>	3
	16		17
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">MECH ENG 4842</a>	2	<a href="#">ENG MGT 1100</a>	1
<a href="#">MECH ENG 4479</a>	3	<a href="#">ENG MGT 1210</a>	2
<a href="#">MECH ENG 3708</a>	3	<a href="#">MECH ENG 4761</a>	3
Manufacturing Technical Elective <sup>e</sup>	3	<a href="#">MECH ENG 4480</a>	1
Manufacturing Technical Elective <sup>e</sup>	3	Manufacturing Technical Elective <sup>e</sup>	3
Elective Literature <sup>d</sup>	3	Electives-Hum or Soc Sci <sup>d</sup>	3
	17		13
<b>Total Credits: 63</b>			

a

A grade of "C" or better is required in [CHEM 1310](#), [MATH 1214](#) (or [MATH 1211](#)), [MATH 1215](#), [MATH 2222](#), [MATH 3304](#), [PHYSICS 1135](#), [PHYSICS 2135](#), programming elective, [MET ENG 2110](#), [CIV ENG 2200](#), [CIV ENG 2210](#), [MECH ENG 2519](#), [MECH ENG 2360](#) and [MECH ENG 3411](#), both as prerequisite for follow-up courses in the curriculum and for graduation.

b

The programming elective consists of a lecture and lab combination, and may be selected from [COMP SCI 1970/COMP SCI 1980](#), [COMP SCI 1971/COMP SCI 1981](#), [COMP SCI 1972/COMP SCI 1982](#), or [COMP SCI 1570/COMP SCI 1580](#). Note that [COMP SCI 1570/COMP SCI 1580](#) requires one more credit hour than the other options.

c

This course must be selected from the following: [ENGLISH 1160](#), [ENGLISH 3560](#) or [SP&M S 1185](#), or the complete four course sequence in Advanced ROTC ([MIL ARMY 3250](#), [MIL ARMY 3500](#), [MIL ARMY 4250](#), and [MIL ARMY 4500](#); or [MIL AIR 3110](#), [MIL AIR 3120](#), [MIL AIR 4110](#) and [MIL AIR 4120](#)).

d

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

e

The nine hours of manufacturing technical elective must be selected as follows:

One course from the following manufacturing/automation courses: [MECH ENG 5653](#), [MECH ENG 5655](#), [MECH ENG 5449](#), [MECH ENG 5606](#).

One of the following design courses: [MECH ENG 5763](#), [MECH ENG 5656](#), [MECH ENG 5702](#).

One course from the following list: [MECH ENG 5708](#), [MECH ENG 5758](#).

f

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

## Mechanical Design and Analysis Emphasis Area

Students desiring to obtain a bachelor of science in mechanical engineering with an emphasis area in mechanical design and analysis

must satisfy all requirements of the bachelor of science in mechanical engineering, with the additional stipulation that four courses must be taken as follows:

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

Note that by using the breadth elective and technical electives to satisfy the above requirements, this emphasis area requires the same total number of credit hours as the BSME degree. A change of major form should be submitted to designate the mechanical design and analysis emphasis area.

## Systems Integration Emphasis Area

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

The following requirements in the mechanical engineering curriculum are removed (16 credit hours):		
<a href="#">ELEC ENG 2800</a>	Electrical Circuits	3
<a href="#">ENG MGT 1100</a>	Practical Concepts for Technical Managers	1
Elective-Advanced Math/Stat		3



MECH ENG 5000-level technical elective		3
Technical elective		3
Breadth elective		3
The following requirements are added (16 credit hours):		
<a href="#">ELEC ENG 2100</a>	Circuits I	3
<a href="#">ELEC ENG 2101</a>	Circuit Analysis Laboratory I	1
<a href="#">ELEC ENG 2120</a>	Circuits II	3
<a href="#">ENG MGT 3320</a>	Introduction to Project Management	3
Systems Integration technical elective. One of the following:		
<a href="#">MECH ENG 5307</a>	Vibrations I	3
<a href="#">MECH ENG 5478</a>	Mechatronics	3
<a href="#">MECH ENG 5481</a>	Mechanical And Aerospace Control Systems	3
<a href="#">MECH ENG 5533</a>	Internal Combustion Engines	3
<a href="#">MECH ENG 5571</a>	Environmental Controls	3
<a href="#">MECH ENG 5575</a>	Mechanical Systems For Environmental Control	3
<a href="#">MECH ENG 5656</a>	Design For Manufacture	3
<a href="#">MECH ENG 5704</a>	Compliant Mechanism Design	3
<a href="#">MECH ENG 5708</a>	Rapid Product Design And Optimization	3
<a href="#">MECH ENG 5709</a>	Machine Design II	3
<a href="#">MECH ENG 5715</a>	Concurrent Engineering	3
<a href="#">MECH ENG 5757</a>	Integrated Product And Process Design	3
<a href="#">MECH ENG 5763</a>	Computer Aided Design: Theory and Practice	3
One of the following:		
<a href="#">STAT 3113</a>	Applied Engineering Statistics	3
<a href="#">STAT 3115</a>	Engineering Statistics	3
<a href="#">STAT 3117</a>	Introduction To Probability And Statistics	3

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

<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">MECH ENG 3313</a>	3	<a href="#">MECH ENG 3411<sup>a</sup></a>	3
<a href="#">MECH ENG 3521</a>	3	<a href="#">MECH ENG 3131</a>	3
<a href="#">ELEC ENG 2100</a>	3	<a href="#">MECH ENG 3525</a>	3
<a href="#">ELEC ENG 2101</a>	1	<a href="#">MECH ENG 3708</a>	3
<a href="#">CIV ENG 2210<sup>a</sup></a>	3	<a href="#">MECH ENG 4840</a>	2
<a href="#">CIV ENG 2211</a>	1	<a href="#">ELEC ENG 2120</a>	3

<a href="#">STAT 3113</a> , or <a href="#">3115</a> , or <a href="#">3117</a>	3		
	17		17
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">MECH ENG 4842</a>	2	<a href="#">MECH ENG 4761</a>	3
<a href="#">MECH ENG 4479</a>	3	Systems Integration technical elective <sup>f</sup>	3
<a href="#">MECH ENG 4480</a>	1	Literature elective <sup>d</sup>	3
MECH ENG technical elective <sup>e</sup>	3	Elective - Advanced Hum or Soc Sci <sup>d</sup>	3
Elective - Communications <sup>c</sup>	3	<a href="#">ENG MGT 3320</a>	3
<a href="#">ENG MGT 1210</a>	2		
	14		15
Total Credits: 63			

- a  
A grade of "C" or better is required in [CHEM 1310](#), [MATH 1214](#) (or [MATH 1211](#)), [MATH 1215](#), [MATH 2222](#), [MATH 3304](#), [PHYSICS 1135](#), [PHYSICS 2135](#), programming elective, [MET ENG 2110](#), [CIV ENG 2200](#), [CIV ENG 2210](#), [MECH ENG 2519](#), [MECH ENG 2360](#) and [MECH ENG 3411](#), both as prerequisite for follow-up courses in the curriculum and for graduation.
- b  
The programming elective consists of a lecture and lab combination, and may be selected from [COMP SCI 1970/COMP SCI 1980](#), [COMP SCI 1971/COMP SCI 1981](#), or [COMP SCI 1972/COMP SCI 1982](#), or [COMP SCI 1570/COMP SCI 1580](#). Note that [COMP SCI 1570/COMP SCI 1580](#) requires one more credit hour than the other options.
- c  
This course must be selected from the following: [ENGLISH 1160](#), [ENGLISH 3560](#) or [SP&M S 1185](#), or the complete four course sequence in Advanced ROTC ([MIL ARMY 3250](#), [MIL ARMY 3500](#), [MIL ARMY 4250](#), and [MIL ARMY 4500](#); or [MIL AIR 3110](#), [MIL AIR 3120](#), [MIL AIR 4110](#) and [MIL AIR 4120](#)).
- d  
All electives must be approved by the student's advisor.  
  
Humanity and Social Science electives must be at least 3 credit hours of lecture designation, and also meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog.
- e  
The mechanical engineering technical elective is subject to approval by the student's advisor, and must be in the department of mechanical and aerospace engineering. This elective may not include co-op, special problems, or research credits, such as 3002, 4000, or 4099. Honors students have special requirements for technical electives.
- f  
The systems integration technical elective must be selected from the following list: [MECH ENG 5307](#), [MECH ENG 5478](#), [MECH ENG 5481](#), [MECH ENG 5533](#), [MECH ENG 5571](#), [MECH ENG 5575](#), [MECH ENG 5656](#), [MECH ENG 5704](#), [MECH ENG 5708](#), [MECH ENG 5709](#), [MECH ENG 5715](#), [MECH ENG 5757](#), [MECH ENG 5763](#).
- g  
All mechanical engineering students must take the Fundamentals of Engineering Examination prior to graduation. A passing grade on this examination is not required to earn a B.S. degree. However, it is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process as described in assessment requirements found elsewhere in this catalog.

**Justification for request**  
**Removing reference to Freshmen Engineering.**  
**Supporting Documents**  
**Course Reviewer Comments**

## Program Change Request

Date Submitted: 03/01/22 11:38 am

Viewing: **MULTI-BA : Multidisciplinary Studies  
BA**

File: 103.7

Last approved: 07/21/15 12:06 pm

Last edit: 03/01/22 11:38 am

Changes proposed by: msp7h

Catalog Pages Using this Program

[Multidisciplinary Studies](#)

Start Term

Fall 2022 08/17/2015

Program Code

MULTI-BA

Department

Arts, Languages, & Philosophy

Title

Multidisciplinary Studies BA

### Program Requirements and 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. FS Meeting  
Agenda
8. Faculty Senate  
Chair
9. Registrar
10. Evie Sherlock

### Approval Path

1. 12/06/21 11:24 am  
Audra Merfeld-  
Langston (audram):  
Approved for  
RPHILOSO Chair
2. 12/13/21 2:59 pm  
Marita Raper  
(tibbetmsg):  
Rollback to Initiator
3. 03/01/22 11:40 am  
Audra Merfeld-  
Langston (audram):  
Approved for  
RPHILOSO Chair
4. 03/09/22 12:51 pm  
Marita Raper  
(tibbetmsg):  
Approved for CCC  
Secretary
5. 03/09/22 4:10 pm  
Petra Dewitt  
(dewittp): Approved  
for Arts &  
Humanities DSCC  
Chair
6. 03/22/22 2:18 pm

Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post  
7. 04/05/22 9:37 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda  
8. 04/05/22 12:26 pm  
Stephen Raper  
(srafer): Approved  
for Campus  
Curricula  
Committee Chair

## History

1. May 7, 2014 by  
Lahne Black (lahne)
2. Jun 11, 2014 by  
pantaleoa
3. Jul 21, 2015 by  
pantaleoa

All students in the B.A. multidisciplinary studies program will complete the basics skills and concepts and general education requirements and generally comply with the requirements for the B.A. degree. However, in lieu of the traditional major and minor requirements, student will complete two (24 and 21 hours respectively) or three (15 hours each) focus area chosen from among the various disciplines offered at Missouri S&T. GPA requirements for each area are the same as those for major fields. B.A. multidisciplinary studies students will also complete a 3-hour capstone course ([ALP 4397](#)) that reflects the students' ability to synthesize methods and knowledge from each focus area into an academically coherent product.

Students design their multidisciplinary programs in coordination with a multidisciplinary studies advisor in the department of arts, languages, and philosophy. For each program, the advisor will work with the student to convene and chair a degree committee consisting of one faculty member from each focus area. Student in the program are expected to develop a sensible rationale for their course of study, justifying both the combination of disciplines and each course chosen within that combination in the context of their own needs and interests. Individual programs and capstone course activities are subject to approval of the degree committee.

### French Language and French-Speaking Cultures Emphasis Area

The B.A. in Multidisciplinary Studies with an emphasis on French Language and French-Speaking Cultures consists of 30 language credits plus 15 credits in a third content area. Content Area 1 is French Language, Content Area 2 is French-Speaking Cultures. At least 18 of the 30 credit hours must be at least the 3000 or 4000 level.

Content Area 1: French Language, 15 credits, selecting from the list below. At least 6 of these credits must be at the 3000 or 4000 level.

<a href="#">FRENCH 1180</a>	<a href="#">Intermediate French</a>	<u>4</u>
<a href="#">FRENCH 2110</a>	<a href="#">Basic French Conversation</a>	<u>3</u>

<a href="#">FRENCH 2180</a>	<a href="#">Basic French Composition</a>	<u>3</u>
<a href="#">FRENCH 2330</a>	<a href="#">Course FRENCH 2330 Not Found</a>	
<a href="#">FRENCH 4311</a>	<a href="#">Advanced French Conversation</a>	<u>3</u>
<a href="#">FRENCH 4330</a>	<a href="#">Professional French</a>	<u>3</u>
<a href="#">FRENCH 4340</a>	<a href="#">Course FRENCH 4340 Not Found</a>	

**Content Area 2:** French-Speaking Cultures, 15 credits selecting from the list below. At least 12 of these credits must be at the 3000 or 4000 level.

<a href="#">FRENCH 2330</a>	<a href="#">Course FRENCH 2330 Not Found</a>	
<a href="#">FRENCH 2170</a>	<a href="#">Masterpieces Of French Literature</a>	<u>3</u>
<a href="#">FRENCH 3010</a>	<a href="#">Course FRENCH 3010 Not Found</a>	
<a href="#">FRENCH 3020</a>	<a href="#">Course FRENCH 3020 Not Found</a>	
<a href="#">FRENCH 3370</a>	<a href="#">Course FRENCH 3370 Not Found</a>	
<a href="#">FRENCH 3375</a>	<a href="#">Course FRENCH 3375 Not Found</a>	
<a href="#">FRENCH 4320</a>	<a href="#">French and Francophone Cinema</a>	<u>3</u>
<a href="#">FRENCH 4330</a>	<a href="#">Professional French</a>	<u>3</u>
<a href="#">FRENCH 4360</a>	<a href="#">French Culture And Civilization</a>	<u>3</u>

Additional coursework may count toward language content areas with advisor approval. These include:

<a href="#">FRENCH 3000</a>	<a href="#">Special Problems</a>	<u>0-6</u>
<a href="#">FRENCH 3001</a>	<a href="#">Special Topics</a>	<u>0-6</u>
<a href="#">FRENCH 4000</a>	<a href="#">Special Problems</a>	<u>0-6</u>
<a href="#">FRENCH 4001</a>	<a href="#">Special Topics</a>	<u>0-6</u>
<a href="#">FRENCH 4010</a>	<a href="#">Seminar</a>	<u>0-6</u>
<a href="#">Courses taken in French during study abroad</a>		

### **Spanish Language and Spanish-Speaking Cultures Emphasis Area**

The B.A. in Multidisciplinary Studies with an emphasis on Spanish Language and Spanish-Speaking Cultures consists of 30 language credits plus 15 credits in a third content area. Content Area 1 is Spanish Language. Content Area 2 is Spanish-Speaking Cultures. At least 18 of the 30 credit hours must be at the 3000 or 4000 level.

**Content Area 1:** Spanish Language, 15 credits, selecting from the list below. At least 6 of these credits must be at the 3000 or 4000 level.

<a href="#">SPANISH 1180</a>	<a href="#">Intermediate Spanish</a>	<u>4</u>
<a href="#">SPANISH 2110</a>	<a href="#">Basic Spanish Conversation</a>	<u>3</u>
<a href="#">SPANISH 2180</a>	<a href="#">Intermediate Spanish Composition</a>	<u>3</u>
<a href="#">SPANISH 2330</a>	<a href="#">Course SPANISH 2330 Not Found</a>	
<a href="#">SPANISH 3100</a>	<a href="#">Course SPANISH 3100 Not Found</a>	
<a href="#">SPANISH 4302</a>	<a href="#">Phonetics and Phonology of Spanish</a>	<u>3</u>
<a href="#">SPANISH 4311</a>	<a href="#">Advanced Spanish Conversation</a>	<u>3</u>

SPANISH 4330Course SPANISH 4330 Not Found

Content Area 2: Spanish-Speaking Cultures, 15 credits, selecting from the list below. At least 12 of these credits must be at the 3000 or 4000 level.

<u>SPANISH 2160</u>	<u>Hispanic Culture</u>	<u>3</u>
<u>SPANISH 2161</u>	<u>Course SPANISH 2161 Not Found</u>	
<u>SPANISH 2170</u>	<u>Masterpieces Of Hispanic Literature</u>	<u>3</u>
<u>SPANISH 2330</u>	<u>Course SPANISH 2330 Not Found</u>	
<u>SPANISH 4330</u>	<u>Course SPANISH 4330 Not Found</u>	
<u>SPANISH 4350</u>	<u>Course SPANISH 4350 Not Found</u>	
<u>SPANISH 4370</u>	<u>Survey Of Spanish Literature</u>	<u>3</u>
<u>SPANISH 4377</u>	<u>Spanish-American Novel And Short Story</u>	<u>3</u>

Additional coursework may count toward language emphasis areas with the approval of the student's advisor. These include:

<u>SPANISH 3000</u>	<u>Special Problems</u>	<u>0-6</u>
<u>SPANISH 3001</u>	<u>Special Topics</u>	<u>0-6</u>
<u>SPANISH 4000</u>	<u>Special Problems</u>	<u>0-6</u>
<u>SPANISH 4001</u>	<u>Special Topics</u>	<u>0-6</u>
<u>SPANISH 4010</u>	<u>Seminar</u>	<u>1-3</u>
<u>Courses taken in Spanish during study abroad</u>		

#### Justification for request

This change is to add two emphasis areas for the Multidisciplinary Studies, BA degree program.

#### Supporting Documents

[Department of Education Emphasis Area Approval.pdf](#)

[Program Change \(PC\) Form BAMS emphasis areas.docx](#)

#### Course Reviewer Comments

**tibbetmsg (12/13/21 2:59 pm):** Rollback: The approved emphasis areas need to be added to the DC form in CIM. mt

Key: 103

## Program Change Request

Date Submitted: 01/26/22 2:32 pm

Viewing: **NU ENG-BS : Nuclear Engineering  
BS**

File: 104.29

Last approved: 11/18/21 1:49 pm

Last edit: 02/23/22 12:33 pm

Changes proposed by: schlegelj

Catalog Pages Using this Program

[Nuclear Engineering](#)

Start Term

Fall 2022

Program Code

NU ENG-BS

Department

Mining & Nuclear Engineering

Title

Nuclear Engineering BS

### Program Requirements and Description

### In Workflow

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

### Approval Path

1. 02/23/22 12:18 pm  
AYODEJI Alajo  
(alajoa): Approved  
for NUC ENG Chair
2. 02/23/22 12:33 pm  
Marita Raper  
(tibbetmsg):  
Approved for CCC  
Secretary
3. 03/18/22 8:39 am  
Stephen Raper  
(sraper): Approved  
for Engineering  
DSCC Chair
4. 03/22/22 2:19 pm  
Marita Raper  
(tibbetmsg):  
Approved for  
Pending CCC  
Agenda post
5. 04/05/22 9:37 am  
Marita Raper  
(tibbetmsg):  
Approved for CCC  
Meeting Agenda
6. 04/05/22 12:25 pm

Stephen Raper  
(sraper): Approved  
for Campus  
Curricula  
Committee Chair

## History

1. Aug 6, 2014 by  
Lahne Black (lahne)
2. Jul 21, 2015 by  
pantaleoa
3. Mar 27, 2017 by  
Hyoung-Koo Lee  
(leehk)
4. Jul 6, 2020 by  
ershenb
5. Jun 11, 2021 by  
Joshua Schlegel  
(schlegelj)
6. Nov 18, 2021 by  
Joshua Schlegel  
(schlegelj)

## Bachelor of Science Nuclear Engineering

The nuclear engineering program at Missouri S&T is characterized by its focus on the scientific basics of engineering and its innovative application. 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.

~~Bachelor of Science Nuclear Engineering~~ Entering freshmen desiring to study nuclear engineering will be admitted to the Foundational Engineering and Computing Program. They will, however, be permitted, to state a nuclear engineering preference, which will be used as a consideration for available departmental scholarships. For the bachelor of science degree in nuclear engineering a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. A student must maintain an average of at least two grade points overall and for all courses taken in nuclear engineering.

Each student's program of study must contain a minimum of 21 credit hours of course work from the humanities and the social sciences areas and should be chosen according to the following rules:

1. All students are required to take one American history course and one economics course. The history course is to be selected from [HISTORY 1200](#), [HISTORY 1300](#), [HISTORY 1310](#), or [POL SCI 1200](#). The economics course may be either [ECON 1100](#) or [ECON 1200](#).
2. Students must take [ENGLISH 1120](#). Students must also take one communications elective, selected from [ENGLISH 1160](#), [ENGLISH 3560](#), or [SP&M S 1185](#).
3. The remaining nine hours must be taken in humanities or social sciences at the 1000 level or above. Foreign language courses numbered 1180 can be considered to be one of these courses. (Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 4000 level.)



4. Skill courses are not allowed to meet humanities and social sciences requirements except in foreign languages. Students who select the foreign language option are urged to take more than one course.
5. Special topics, special problems courses and honors seminars are allowed only by petition to and approval by the student's department chair.

<b>Freshman Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">ENGLISH 1120</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
<a href="#">FR ENG 1100</a>	1	<a href="#">MATH 1215</a>	4
<a href="#">MATH 1214</a> or <a href="#">1211</a>	4	<a href="#">MECH ENG 1720</a>	3
<a href="#">NUC ENG 1105</a> <sup>1</sup>	1	<a href="#">PHYSICS 1135</a>	4
<a href="#">CHEM 1100</a>	1	Elective-Hum or Soc Sci <sup>2</sup>	3
<a href="#">CHEM 1310</a>	4		
<a href="#">CHEM 1319</a>	1		
	15		17
<b>Sophomore Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">CIV ENG 2200</a>	3	<a href="#">CIV ENG 2210</a>	3
<a href="#">COMP SCI 1972</a> , or <a href="#">1970</a> , or <a href="#">1971</a>	2	<a href="#">ECON 1100</a> or <a href="#">1200</a>	3
<a href="#">COMP SCI 1982</a> , or <a href="#">1980</a> , or <a href="#">1981</a>	1	<a href="#">MATH 3304</a>	3
<a href="#">MATH 2222</a>	4	<a href="#">MECH ENG 2519</a>	3
<a href="#">NUC ENG 2105</a>	2	<a href="#">NUC ENG 2406</a>	1
<a href="#">PHYSICS 2135</a>	4	<a href="#">NUC ENG 3103</a> , or <a href="#">PHYSICS 2305</a> , or <a href="#">PHYSICS 2311</a>	3
	16		16
<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">ELEC ENG 2800</a>	3	<a href="#">ENGLISH 1160</a> , or <a href="#">3560</a> , or <a href="#">SPM S 1185</a>	3
<a href="#">MET ENG 2110</a>	3	<a href="#">NUC ENG 4312</a> or <a href="#">5312</a>	3
<a href="#">NUC ENG 3205</a>	3	<a href="#">NUC ENG 3223</a>	3
<a href="#">NUC ENG 3221</a>	3	<a href="#">NUC ENG 4203</a> or <a href="#">5203</a>	3
<a href="#">COMP SCI 3200</a> (OR 3000 Level MATH, 5000 Level STAT)	3	<a href="#">STAT 3115</a> , or <a href="#">3111</a> , or <a href="#">3113</a> , or <a href="#">3117</a>	3
		Nuclear Engineering Elective <sup>3</sup>	3
	15		18
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<a href="#">NUC ENG 4207</a> or <a href="#">5207</a>	3	<a href="#">NUC ENG 4438</a> or <a href="#">5438</a>	2
<a href="#">NUC ENG 4241</a> or <a href="#">5241</a>	3	<a href="#">NUC ENG 4497</a>	3

<a href="#">NUC ENG 4428</a> or <a href="#">5428</a>	3	Technical Elective - 3000 or 4000 level <sup>4</sup>	3
<a href="#">NUC ENG 4496</a>	2	Technical Elective - 4000 Level	3
Nuclear Engineering Elective	3	Elective - Hum or Soc Sc	3
Elective-Hum or Soc Sc	3		
	17		14
Total Credits: 128			

~~The nuclear engineering program at Missouri S&T is characterized by its focus on the scientific basics of engineering and its innovative application. 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.~~ **Note:** Minimum credit hours for graduation is 128.

1

Nuclear Engineering students are expected to take Nuclear Technology Applications ([NUC ENG 1105](#)) during their Freshman year. However, transfer students are exempt. Students who attend the Nuclear Engineering Summer Camp as high school students may have this requirement waived.

2

Humanities and Social Science to be taken in accordance with the policy described above.

3

Any Nuclear Engineering course 4000 level or higher.

4

Any Math, Science, or Engineering courses at the appropriate level.

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

#### Justification for request

Updated language removing Freshmen Engineering Program.

#### Supporting Documents

#### Course Reviewer Comments

**tibbettsmg (02/23/22 12:33 pm):** credit hours are listed correctly for Nuc Eng 4496/4428/5428. MR

Key: 104

## Program Change Request

Date Submitted: 02/11/22 2:09 pm

Viewing: **PE ENG-BS : Petroleum Engineering  
BS**

File: 108.52

Last approved: 10/28/21 10:37 am

Last edit: 02/16/22 12:52 pm

Changes proposed by: weim

Catalog Pages Using this Program

[Petroleum Engineering](#)

Start Term

Fall 2022

Program Code

PE ENG-BS

Department

Geosciences and Geological and Petroleum Engineering

Title

Petroleum Engineering BS

### Program Requirements and Description

### In Workflow

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

### Approval Path

1. 12/23/21 12:27 pm  
Jeff Cawfield (jdc):  
Approved for  
RGEOENG Chair
2. 12/23/21 2:05 pm  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Secretary
3. 02/11/22 1:26 pm  
Stephen Raper  
(sraper): Approved  
for Engineering  
DSCC Chair
4. 02/11/22 2:03 pm  
Marita Raper  
(tibbettsmg):  
Rollback to Initiator
5. 02/11/22 2:41 pm  
Jeff Cawfield (jdc):  
Approved for  
RGEOENG Chair
6. 02/16/22 12:53 pm  
Marita Raper  
(tibbettsmg):  
Approved for CCC

Secretary

7. 03/18/22 8:39 am  
Stephen Raper  
(sraper): Approved  
for Engineering  
DSCC Chair
8. 03/22/22 2:20 pm  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
9. 04/05/22 9:37 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
10. 04/05/22 12:25 pm  
Stephen Raper  
(sraper): Approved  
for Campus  
Curricula  
Committee Chair

## History

1. Sep 21, 2015 by  
reflori
2. Jun 18, 2018 by  
Shari Dunn-Norman  
(caolila)
3. Jun 14, 2019 by  
Sharon Lauck  
(laucks)
4. Mar 3, 2020 by  
ershenb
5. Jul 1, 2020 by  
Sharon Lauck  
(laucks)
6. Jun 10, 2021 by  
Sharon Lauck  
(laucks)
7. Oct 28, 2021 by  
Katherine Grote  
(grotekr)

For the

~~**Bachelor of Science Petroleum Engineering Entering freshmen desiring to study  
Petroleum Engineering will be admitted to the Foundational Engineering and**~~

~~Computing Program. They will, however, be permitted, if they wish, to state a Petroleum Engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Foundational Engineering and Computing 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. A grade point average of 2.80 or higher is required to enter the Petroleum Engineering program from the Foundational Engineering and Computing Program.~~ **Bachelor of Science**  
**Petroleum Engineering**

For the Bachelor of Science degree in [Petroleum Engineering](#) ~~Petroleum Engineering~~ a minimum of [129](#) ~~of 128~~ credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. A student must maintain at least two grade points per credit hour for all courses taken in Petroleum 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. Six credit hours of English: All students are required to take [ENGLISH 1120](#) and either [ENGLISH 3560](#) (preferred) or [ENGLISH 1160](#) or [ENGLISH 1600](#).
2. Nine credit hours of basic humanities and social sciences: All students are required to take one history course, one economics course and one humanities course. The history course is to be selected from [HISTORY 1200](#), [HISTORY 1300](#), [HISTORY 1310](#), or [POL SCI 1200](#). The economics course may be either [ECON 1100](#) or [ECON 1200](#). The humanities course selected must meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog.
3. Three credit hours as a depth requirement. Three credit hours must be taken in humanities or social sciences at the 2000-level or above and meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog. 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.
4. Three credit hours of elective humanities and social sciences must meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog..
5. Special topics and special problems and honors seminars are allowed only by petition to and approval by the student's department chair.

The Petroleum Engineering program at Missouri S&T consists of a strong foundation in math, sciences and engineering fundamentals, plus strong content in the traditional Petroleum Engineering core areas of drilling, production and reservoir engineering. ~~Two unique features of the curriculum are a strong sequence of courses in Geology and Geophysics, plus a two-course sequence in finite element analysis and mechanical earth modeling.~~ S&T Petroleum Engineering students are prepared to solve today's problems and tomorrow's. Students learn theory, have ample hands-on experiences in laboratories, and they learn many modern software packages used by the petroleum industry.

Students planning on majoring in petroleum engineering should take the following courses.

Freshman Year			
First Semester	Credits	Second Semester	Credits
<a href="#">FR ENG 1100</a>	1	<a href="#">MATH 1215</a> <sup>2</sup>	4
<a href="#">CHEM 1310</a> <sup>1</sup>	4	<a href="#">PHYSICS 1135</a>	4
<a href="#">CHEM 1319</a>	1	<a href="#">MECH ENG 1720</a>	3

<a href="#">MATH 1214</a> or <a href="#">1211</a> <sup>2</sup>	4	<a href="#">GEO ENG 1150</a> or <a href="#">GEOLOGY 1110</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	<a href="#">PET ENG 2510</a>	3
<a href="#">ENGLISH 1120</a>	3		
<a href="#">PET ENG 1120</a>	<u>1</u>		
	17		17
<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="#">PHYSICS 2135</a>	4	<a href="#">MECH ENG 2350</a>	2
<a href="#">GEOLOGY 3310</a> (Geol 3319-lab optional)	3	<a href="#">CIV ENG 2210</a>	3
<a href="#">PET ENG 3320</a>	3	<del><a href="#">GEOLOGY 3620</a></del>	<del>3</del>
<a href="#">HUMANITIES/SS ELECTIVES</a> <sup>4</sup>	<u>3</u>	<a href="#">ECON 1100</a> or <a href="#">1200</a>	3
<a href="#">CIV ENG 2200</a>	3	<a href="#">PET ENG 3520</a>	3
		<a href="#">PET ENG 3330</a>	<u>3</u>
	17		17
<b>Junior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<del><a href="#">GEOLOGY 5513</a></del>	<del>3</del>	<del><a href="#">PET ENG 3330</a></del>	<del>3</del>
<del><a href="#">GEOPHYS 4234</a></del>	<del>3</del>	<a href="#">PET ENG 4410</a>	3
<a href="#">CIV ENG 3330</a>	3	<del><a href="#">PET ENG 4590</a></del>	<del>3</del>
<del><a href="#">PET ENG Elective</a></del> <sup>3</sup>	<del>3</del>	<del><a href="#">PET ENG 4710</a></del>	<del>3</del>
<a href="#">PET ENG 4210</a> <sup>3</sup>	3	<del>Humanities/Social Sci Elective</del> <sup>4</sup>	<del>3</del>
<a href="#">CS PROGRAMMING ELECTIVE</a> <sup>6</sup>	<u>3</u>	<a href="#">PET ENG 4631</a>	<u>3</u>
<a href="#">HUMANITIES/SS ELECTIVES</a> <sup>4</sup>	<u>3</u>	<a href="#">MECH ENG 2527</a>	<u>3</u>
<a href="#">GEOLOGY 3310</a>	<u>3</u>	<a href="#">GEOLOGY 5513</a>	<u>3</u>
<a href="#">GEOLOGY 3319</a>	<u>1</u>	<a href="#">ENGLISH 1160</a> , or <a href="#">1600</a> , or <a href="#">3560</a>	<u>3</u>
	16		15
<b>Senior Year</b>			
<b>First Semester</b>	<b>Credits</b>	<b>Second Semester</b>	<b>Credits</b>
<del><a href="#">PET ENG 4010</a></del> <sup>5</sup>	<del>4</del>	<a href="#">PET ENG 4097</a>	3
<del><a href="#">MECH ENG 2527</a></del>	<del>3</del>	<a href="#">GEO ENG 4115</a>	3
<a href="#">PET ENG 4520</a>	3	Hum/Soc Sci Elective <sup>4</sup>	3
<a href="#">PET ENG 5801</a>	<u>3</u>	<del><a href="#">PET ENG Elective</a></del> <sup>3</sup>	<del>3</del>
<a href="#">PET ENG Elective</a> <sup>3</sup>	3	<del><a href="#">ENGLISH 1600</a></del> <sup>6</sup>	<del>3</del>
<del>Humanities/Social Sci Elective</del> <sup>4</sup>	<del>3</del>	<a href="#">PET ENG 4531</a>	<u>3</u>
<a href="#">PET ENG 4590</a>	<u>3</u>	<a href="#">PET ENG 5050</a>	<u>3</u>

PET ENG 4720	3	
	15	15
Total Credits: 129		

1

All freshmen Petroleum Engineering students must enroll in [CHEM 1100](#) (Intro to Lab Safety and Haz Mat).

2

[MATH 1208](#) or [MATH 1211](#) may be substituted for [MATH 1214](#). [MATH 1221](#) may be substituted for [MATH 1215](#).

3

Select Petroleum Engineering electives in accordance with interest and availability of courses. Courses include secondary recovery of petroleum, advanced drilling technology, well completion design and artificial lift.

4

Humanities/Social Science electives are to be selected from a list of approved courses to be taken in accordance with the University policy. Petroleum Engineering students are especially encouraged to study foreign languages

5

All Petroleum 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 to becoming a registered professional engineer. This requirement is part of Missouri S&T assessment process as described in Assessment Requirements found elsewhere in this catalog. Students must sign a release form giving the University access to their Fundamentals of Engineering Examination score.

6

selection can be [COMP SCI 1972](#) and [COMP SCI 1982](#), or [COMP SCI 2300](#), or be replaced by formal online program course credits.

The total number of credit hours required for a degree in Petroleum Engineering is 129. ~~128~~.

Petroleum Engineering students must earn the grade of "C" or better in all Petroleum Engineering courses to receive credit toward graduation.

## Accelerated BS/MS Program Option for Petroleum Engineering Majors

Missouri S&T Petroleum Engineering undergraduate students may opt to apply for an accelerated BS/MS program where a student can earn both the BS and MS degrees in Petroleum Engineering faster than if pursuing the degrees separately. The degrees awarded will be a BS & MS (non-thesis or thesis) in Petroleum Engineering.

The benefits for undergraduate students admitted to the program are:

- Undergraduate and graduate courses may be chosen with greater flexibility,
- Up to nine hours of 5000-level or above Petroleum Engineering coursework may apply to both the BS and MS requirements,
- The classes taken for shared BS/MS credit may be taken at the lower undergraduate tuition rate,
- The GRE is not required for admission,
- Other graduate courses can be taken any time after entering the program as a dual enrolled student,
- Work on a thesis project may begin before the BS requirements are completed.

To be eligible for the accelerated BS/MS Petroleum Engineering program, a Petroleum Engineering undergraduate must be at or beyond the junior level standing with a minimum of 48 credit hours. They must have successfully completed the Chemistry and Math requirements and have completed 21 credit hours of Petroleum Engineering courses at Missouri S&T with at least a 3.2 GPA in the Petroleum Engineering courses. To be admitted, the student must complete the program application and non-thesis MS students must have the recommendation of a Petroleum Engineering faculty member, while thesis MS students must have the recommendation of a Petroleum Engineering faculty member who agrees to serve as the graduate thesis advisor. All other MS degree requirements remain the same. The program may be combined with existing honors research, emphasis areas, and certificate options. Admitted students will have both undergraduate and graduate records in the Registrar's Office.

The Accelerated Program application must be completed within one semester after shared-credit courses are completed. Courses taken for shared credit will be identified on the application form. These courses will also be listed on the student's Graduate Form 1 to be submitted after the student enters the graduate program. The nine hours of shared-credit coursework, to be taken as undergraduate credit, must be approved by the academic advisor, and may not be undergraduate research, special problems, or transfer courses. An additional six credit hours of coursework for graduate credit (beyond the shared BS/MS credits) can be taken while in the undergraduate program by applying for dual undergraduate/graduate enrollment. Taking additional courses for graduate credit as a dual enrolled student will require formal application to the graduate program. Upon application, acceptance to the Petroleum Engineering MS degree from the Accelerated Program is automatic so long as the student remains in good standing (GPA above 3.0 and B's or better in all graduate courses) within the program. To remain in the Accelerated Program, the student must meet Petroleum Engineering graduate student academic performance requirements and must maintain continuous enrollment at Missouri S&T. If the student exits the program before completion of the MS degree requirements, or fails to maintain continuous enrollment at Missouri S&T, the shared-credit courses may not apply toward graduate requirements in the event of future readmission.

It is the student's responsibility to check on how dual-enrollment status and graduate coursework affects scholarships and other financial aid. As a graduate student, you **are not** eligible for Federal Pell Grants. You are still eligible for Federal Financial Aid. You may be eligible for fellowships and teaching/research assistantships. It is the International student's responsibility to check with international affairs during completion of an accelerated BS/MS to ensure immigration status will be maintained throughout the program.

#### Justification for request

Curriculum adjustment based on alumni and industrial board input

#### Supporting Documents

#### Course Reviewer Comments

**tibbetmsg (12/23/21 2:04 pm):** updated formatting. mt

**sraper (02/11/22 1:26 pm):** Program approval to remove statement regarding FECF.

**tibbetmsg (02/11/22 2:03 pm):** Rollback: Rollback per phone discussion for additional changes.

Submit at same time as PE 5801. mt

**tibbetmsg (02/16/22 12:52 pm):** updated formatting. all courses not found are currently in workflow for approval. MR

Key: 108



## Program Change Request

### New Program Proposal

Date Submitted: 12/16/21 5:06 pm

Viewing: **PROPOSED : Carbon Management Engineering CT**

File: 386

Last edit: 04/05/22 9:28 am

Changes proposed by: jcwang

Start Term

Fall 2022

Program Code

PROPOSED

Department

Chemical and Biochemical Engineering

Title

Carbon Management Engineering CT

### Program Requirements and 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. **Evie Sherlock**

### Approval Path

1. 12/16/21 6:43 pm  
Hu Yang (huyang):  
Approved for  
RCHEMENG Chair
2. 03/03/22 11:02 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Secretary
3. 03/18/22 8:40 am  
Stephen Raper  
(sraper): Approved  
for Engineering  
DSCC Chair
4. 03/22/22 2:21 pm  
Marita Raper  
(tibbettsmg):  
Approved for  
Pending CCC  
Agenda post
5. 04/05/22 9:28 am  
Marita Raper  
(tibbettsmg):  
Approved for CCC  
Meeting Agenda
6. 04/05/22 12:26 pm

Stephen Raper  
(sraper): Approved  
for Campus  
Curricula  
Committee Chair

The Carbon Management Engineering Certificate Program introduces the students to carbon management strategies related to the engineering principles of carbon capture, transformation, and storage. It is open to all persons holding a B.S., M.S., or Ph.D. degree in chemical engineering, petroleum engineering, mechanical engineering, or a closely allied discipline, including those who are currently accepted into a graduate degree program at Missouri S&T. It requires the students to complete three newly developed carbon management courses offered by Chemical and Biochemical Engineering (ChBE), Mechanical and Aerospace Engineering (MAE), and Geosciences and Geological and Petroleum Engineering (GGPE), respectively, plus an additional course to be selected from a variety of existing courses from these same departments.

In order to be admitted, a student must have an overall GPA of 3.0, or 2.75 with a minimum of one year of work experience. Once admitted to the program, the student must take the four designated courses. To receive the certificate, the student must have an average cumulative grade point of 3.0 or better in the certificate courses. Once admitted to the certificate program, a student will be given three years to complete the program.

Students admitted to the Carbon Management Engineering Certificate Program will have non-degree graduate status but will earn graduate credit for the courses they complete. If the students complete the four-course sequence with a grade of B or better in each of the courses taken, they, upon application, will be automatically admitted to the non-thesis MS degree program that is appropriate based on the undergraduate program from which they graduated in either Chemical Engineering, Petroleum Engineering, or Mechanic Engineering. Students may also apply and be considered for admission to thesis-based MS or PhD programs in the same areas. The certificate credits taken by the students admitted to any of these degree programs will count towards their degree requirements.

The following three courses are required:

<b>CHEM ENG 5325</b>	<b>Course CHEM ENG 5325 Not Found</b>
<b>PET ENG 5050</b>	<b>Course PET ENG 5050 Not Found</b>
<b>MECH ENG 5535</b>	<b>Course MECH ENG 5535 Not Found</b>

One 3-credit course selected from the following list:

<a href="#">CHEM ENG 4540</a>	Energy Economics	3
<a href="#">CHEM ENG 5100</a>	Intermediate Transport Phenomena	3
<a href="#">CHEM ENG 5110</a>	Intermediate Chemical Reactor Design	3
<a href="#">CHEM ENG 5120</a>	Interfacial Phenomena In Chemical Engineering	3
<a href="#">CHEM ENG 5150</a>	Intermediate Process Computing	3
<a href="#">CHEM ENG 5161</a>	Intermediate Molecular Engineering	3
<a href="#">CHEM ENG 5170</a>	Physical Property Estimation	3
<a href="#">CHEM ENG 5190</a>	Plantwide Process Control	3
<a href="#">CHEM ENG 5220</a>	Intermediate Engineering Thermodynamics	3
<a href="#">CHEM ENG 5330</a>	Alternative Fuels	3

<a href="#">CHEM ENG 5340</a>	Principles of Environmental Monitoring	3
<a href="#">CHEM ENG 5350</a>	Environmental Chemodynamics	3
<a href="#">CHEM ENG 6150</a>	Molecular Modeling and Simulation	3
<a href="#">CHEM ENG 6180</a>	Advanced Applications of Computational Fluid Dynamics	3
<a href="#">CHEM ENG 6241</a>	Intermediate Chemical Process Safety	3
<a href="#">GEOPHYS 4231</a>	Seismic Interpretation	3
<a href="#">GEOPHYS 5202</a>	Exploration and Development Seismology	3
<a href="#">GEOLOGY 5311</a>	Depositional Systems	3
<a href="#">GEOLOGY 5511</a>	Applied Petroleum Geology	3
<a href="#">GEOLOGY 5513</a>	Petroleum Geology	3
<a href="#">GEOLOGY 5661</a>	Advanced Stratigraphy and Basin Evolution	3
<a href="#">GEOLOGY 6511</a>	Advanced Petroleum Geology	3
<a href="#">GEOLOGY 6621</a>	Clastic Sedimentary Petrology	3
<a href="#">GEOLOGY 6811</a>	Sedimentary Basin Analysis	3
<a href="#">PET ENG 4111</a>	Fundamental Digital Applications In Petroleum Engineering	3
<a href="#">PET ENG 4210</a>	Drilling and Well Integrity	3
<a href="#">PET ENG 4311</a>	Reservoir Characterization	3
<a href="#">PET ENG 4590</a>	Subsurface Energy Economics	3
<a href="#">PET ENG 4720</a>	Reservoir Geomechanics	3
<a href="#">PET ENG 6621</a>	Advanced Applied Reservoir Simulation	3
<a href="#">PET ENG 6711</a>	Geodynamics	3
<a href="#">MECH ENG 5229</a>	Smart Materials And Sensors	3
<a href="#">MECH ENG 5420</a>	Signal Processing for Instrumentation and Control	3
<a href="#">MECH ENG 5523</a>	Transport Phenomena In Manufacturing Processes	3
<a href="#">MECH ENG 5527</a>	Combustion Processes	3
<a href="#">MECH ENG 5533</a>	Internal Combustion Engines	3
<a href="#">MECH ENG 5537</a>	Fuel Cell Principles	3
<a href="#">MECH ENG 5541</a>	Applied Energy Conversion	3
<a href="#">MECH ENG 5543</a>	Energy Efficiency of Vehicles	3
<a href="#">MECH ENG 5544</a>	Non-Intrusive Measurement Methods	3
<a href="#">MECH ENG 5566</a>	Solar Energy Technology	3
<a href="#">MECH ENG 5571</a>	Environmental Controls	3
<a href="#">MECH ENG 5757</a>	Integrated Product And Process Design	3
<a href="#">MECH ENG 5764</a>	Introduction to Decision Analysis	3

Justification for request

CIP Code: 140701

Climate change has called for scientific, engineering, and policy solutions to manage and mitigate the impact of carbon emission from human activities. This certificate program is a joint effort between three engineering departments to introduce the students to important carbon management strategies and help them become carbon conscious engineers with a multifaceted understanding of relevant problems and solutions. The students targeted for this certificate are on-campus graduate students and early-career or mid-career working professionals who are looking for additional education and credentialing related to carbon management engineering. This certificate program will aid their professional development and make them more marketable in the green engineering job sector. It will also give them a gateway into MS and PhD programs in Chemical and Biochemical Engineering and related disciplines. The Chemical and Biochemical Engineering Department will market this certificate to national and international students. This effort will increase the visibility of our department and our university.

#### Supporting Documents

[Graduate Certificate Carbon Management Engineering.pdf](#)

[MS&T PC November 2021.pdf](#)

#### Course Reviewer Comments

**tibbettsmg (12/17/21 8:54 am):** CC for Chem Eng 5325 is submitted. waiting on CC for Pet Eng 5050 and ME 5535 to proceed further in workflow.

**tibbettsmg (04/05/22 9:28 am):** added "CT" to end of title. MR

Key: 386

## Program Change Request

### New Program Proposal

Date Submitted: 02/21/22 12:00 pm

Viewing: **PROPOSED : Intercultural Studies CT**

File: 388

Last edit: 02/21/22 12:00 pm

Changes proposed by: msp7h

Start Term

Fall 2022

Program Code

PROPOSED

Department

Arts, Languages, & Philosophy

Title

Intercultural Studies CT

### Program Requirements and 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. FS Meeting Agenda
8. Faculty Senate Chair
9. Registrar
10. Evie Sherlock

### Approval Path

1. 03/01/22 11:34 am  
Audra Merfeld-Langston (audram):  
Approved for RPHILOSO Chair
2. 03/09/22 12:53 pm  
Marita Raper (tibbetmsg):  
Approved for CCC Secretary
3. 03/09/22 2:50 pm  
Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 03/22/22 2:22 pm  
Marita Raper (tibbetmsg):  
Approved for Pending CCC Agenda post
5. 04/05/22 9:37 am  
Marita Raper (tibbetmsg):  
Approved for CCC

Meeting Agenda  
 6. 04/05/22 12:26 pm  
 Stephen Raper  
 (sraper): Approved  
 for Campus  
 Curricula  
 Committee Chair

This certificate program is for students from any major who wish to expand their knowledge of intercultural issues from a multidisciplinary perspective, and develop the knowledge, skills and aptitudes necessary to work successfully in today's global and interconnected world. Students select four courses from an approved list in consultation with their certificate advisor. Many of the courses also fulfill requirements for degree programs.

Students must meet regular Missouri S&T undergraduate admission requirements.

#### Certificate Requirements

##### Choose one:

<a href="#">HISTORY 1200</a>	Modern Western Civilization	3
<a href="#">ENGLISH 1212</a>	British Literature II 1800 To Present	3

##### Choose three additional courses:

<a href="#">SP&amp;M S 3235</a>	Intercultural Communication	3
<a href="#">PSYCH 4992</a>	Cross-Cultural Psychology	3
<a href="#">HISTORY 2110</a>	World Regional Geography	3
<a href="#">HISTORY 2220</a>	Making Of Modern Britain	3
<a href="#">HISTORY 2221</a>	Making of Modern Germany	3
<a href="#">HISTORY 2222</a>	The Making Of Modern France	3
<a href="#">HISTORY 2224</a>	Making Of Modern Russia	3
<a href="#">HISTORY 3240</a>	Contemporary Europe	3
<a href="#">HISTORY 3660</a>	Modern East Asia	3
<a href="#">POL SCI 2500</a>	International Relations	3
<a href="#">POL SCI 4500</a>	Geopolitics and International Security	3
<a href="#">POL SCI 4510</a>	The Politics of the Third World	3
<a href="#">ENGLISH 2002</a>	Critical Approaches To Literature	3
<a href="#">ENGLISH 3219</a>	The British Novel II	3
<a href="#">ENGLISH 3233</a>	Contemporary British Literature	3
<a href="#">ENGLISH 3304</a>	Language in Society	3
<a href="#">TCH COM 4450</a>	International Dimensions of Technical Communication	3
<a href="#">ECON 4642</a>	Introduction to Global Eco- and Social-preneurship and Innovation	3

**Justification for request**

This certificate will increase student familiarity with different cultures, improve their global literacy, and support student confidence in interacting with others. This certificate will also help prepare students who are interested in study abroad or international internship opportunities by providing important contextual, cultural, and interpersonal skills.

**Supporting Documents**

[InterculturalStudiesCT\\_Undergraduate\\_Proposal\\_2021\\_11\\_12.pdf](#)

[MS&T PC December 2021.pdf](#)

**Course Reviewer Comments**

Key: 388

# Course Change Request

## New Experimental Course Proposal

Date Submitted: 03/02/22 5:41 pm

Viewing: **PHYSICS 6001.002 : Advanced**

## Problem Solving

File: 4865

Last edit: 03/07/22 11:44 am

Changes proposed by: vojtat

Requested	Fall 2022
Effective Change Date	
Department	Physics
Discipline	Physics (PHYSICS)
Course Number	6001
Topic ID	002
Experimental Title	

### 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. CAT entry
8. Registrar

### Approval Path

1. 03/02/22 5:41 pm  
Thomas Vojta (vojtat): Approved for RPHYSICS Chair
2. 03/07/22 11:44 am  
Marita Raper (tibbettsmg): Approved for CCC Secretary
3. 03/21/22 9:55 am  
Katie Shannon (shannonk):



Approved for  
Sciences DSCC  
Chair

4. 03/22/22 2:23 pm

Marita Raper  
(tibbettsmg):

Approved for  
Pending CCC  
Agenda post

5. 04/05/22 9:36 am

Marita Raper  
(tibbettsmg):

Approved for CCC  
Meeting Agenda

6. 04/05/22 12:26  
pm

Stephen Raper  
(sraper):

Approved for  
Campus Curricula  
Committee Chair

## Advanced Problem Solving

Experimental      Advanced Problem Solving

Abbreviated

Course Title

Instructors      Dr. Aleksandr Chernatynskiy

Experimental

Catalog

Description

This course discusses advanced problem solving techniques and strategies in graduate-level physics. Example problems are taken from previous PhD qualifying exams.

**Prerequisites**

Physics 6101, Physics 6111, and Physics 6201.

**Field Trip****Statement****Credit Hours****LEC: 0****LAB: 0****IND: 0****RSD: 1****Total: 1****Justification for****new course:**

This course formalizes the preparation for the PhD qualifying exam that has been taught in various informal ways over the years. It is aimed at PhD students in the semester before the qualifying exam.

**Semester(s)****previously taught****Co-Listed****Courses:****Course Reviewer****Comments**

Key: 4865

[Preview Bridge](#)