



Campus Curricula Committee Meeting Agenda
February 10, 2021
8:15am - 9:45am, Zoom
(For Faculty Senate Meeting of February 25, 2021)

Review of submitted Course Change forms:

File: 4770	GEOLOGY 5510 : Organic Geochemistry
File: 4767	HISTORY 3534 : History of Medieval and Early Modern Science
File: 4690	HISTORY 4580 : Issues in Science, Technology and Society
File: 961.7	IS&T 6641 : Advanced Digital Commerce and IoT Analytics
File: 2364.4	MET ENG 5480 : Refining Of Metals
File: 1630.1	NUC ENG 2406 : Reactor Operations I
File: 2295.1	NUC ENG 3205 : Fundamentals of Nuclear Engineering

Review of submitted Program Change forms:

File: 268.13	GEO ENG-MS : GEOLOGICAL ENGINEERING MS
File: 166.22	GL&GPH-MS : Geology and Geophysics MS
File: 171.6	PE ENG-MS : Petroleum Engineering MS
File: 374	PROPOSED : English & Technical Communication BS
File: 192.40	PSYCH-BA : Psychology BA
File: 193.38	PSYCH-BS : Psychology BS

Review of submitted Certificate forms:

File: 293.2	ANA&DTA-CT : Bus Analytics & Data Sci CT
File: 295.2	CYBERMG-CT : Cyber Mgmt & Info Assurance CT
File: 351.3	GEINTEL-CT : Geoanalytics and Geointelligence Certificate
File: 347.5	GEOPHY-CT : Geophysics Graduate CT
File: 291.5	MGTLEAD-CT : Management and Leadership
File: 348.4	PET SYS-CT : Petroleum Systems CT
File: 376	PROPOSED : UCT - Medieval and Renaissance Studies
File: 375	PROPOSED : UCT - Science, Technology, and Society

Review of submitted Experimental Course forms:

File: 4766	CIV ENG 5001.006 : Geotechnical In-Situ Soil Testing
File: 4768	COMP SCI 5001.013 : Theory of Reinforcement Learning

New Business:

Discuss and approve revised meeting dates from Wednesdays at 8:15 to either Tuesdays or Thursdays at 8am for the remainder of the Spring semester.

Course Change Request

New Course Proposal

Date Submitted: 01/07/21 10:28 am

Viewing: **GEOLOGY 5510 : Organic Geochemistry**

File: 4770

Last edit: 01/07/21 1:33 pm

Changes proposed by: borrokd

Requested Fall 2021

Effective Change
Date

Department Geosciences and Geological and Petroleum
Engineering

Discipline Geology (GEOLOGY)

Course Number 5510

Title
Organic Geochemistry

Abbreviated Organic Geochemistry
Course Title

In Workflow

1. **RGEOSNG 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. 01/07/21 10:29
am
David Borrok
(borrokd):
Approved for
RGEOSNG Chair
2. 01/07/21 1:34 pm
Marita Tibbetts
(tibbettsmg):

Catalog
Description

Approved for CCC
Secretary

3. 01/14/21 4:49 pm

Katie Shannon

(shannonk):

Approved for
Sciences DSCC
Chair

This course explores the carbon cycle, the history and inventory of organic matter on Earth, the transport of organic matter in aqueous systems, the burial of organic matter, the maturation of organic matter to become petroleum, and organic contaminants in the environment.

Prerequisites

Graduate standing or consent of instructor.

Field Trip

Statement

NA

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

No

Majors

Elective for

Yes

Majors

Justification for

new course:

I taught this as a special topics course (5001) twice previously with enrollments of 10 (spring 2018) and 8 (spring 2020) and would like to assign a permanent number prior to fall 2021. The original course was called "Petroleum Geochemistry", but it turned out that the content and background needed for the students was quite broad so it really became an "organic geochemistry" course. This is why I suggested this as the new title for the experimental course.

Semesters

previously

offered as an

experimental

course

Spring 2018 and Spring 2020

Co-Listed

Courses:

Course Reviewer

Comments

tibbettsmg (01/07/21 1:33 pm): 10 enrolled Sp18; 8 enrolled Sp20. Taught as
Petroleum Geochemistry. MT

Key: 4770

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 12/16/20 10:22 am

Viewing: **HISTORY 3534 : History of Medieval and Early Modern Science**

File: 4767

Last edit: 12/17/20 12:01 pm

Changes proposed by: dewittp

Programs
referencing this
course

[PROPOSED: UCT - Medieval and Renaissance Studies](#)

Requested	Fall 2021
Effective Change Date	
Department	History and Political Science
Discipline	History (HISTORY)
Course Number	3534
Title	History of Medieval and Early Modern Science
Abbreviated Course Title	Hist Medieval Science

Catalog
Description

In Workflow

- 1. RHISTORY 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. 12/16/20 10:24 am
Michael Bruening (bruening):
Approved for RHISTORY Chair
- 2. 12/17/20 12:02 pm
Marita Tibbetts

(tibbettsmg):
 Approved for CCC
 Secretary
 3. 12/17/20 12:06
 pm
 Petra Dewitt
 (dewittp):
 Approved for Arts
 & Humanities
 DSCC Chair

A history of developments in science during the medieval and early modern periods, covering the influence of Islamic thought on Western science, the twelfth-century rediscovery of Aristotle and other ancient scientific texts, advances in the Renaissance, and the Scientific Revolution.

Prerequisites

History 1100.

Field Trip

Statement

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

Justification for new course:

This course will be part of the Proposed undergraduate certificate in Medieval and Renaissance Studies (approved by Missouri Department of Higher Education and Workforce development), which will be submitted at the same time as this course proposal.

Semesters
previously
offered as an
experimental
course

Co-Listed
Courses:

Course Reviewer
Comments

Key: 4767

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 12/16/20 10:17 am

Viewing: **HISTORY 4580 : Issues in Science, Technology and Society**

File: 4690

Last edit: 12/17/20 12:01 pm

Changes proposed by: dewittp

Programs
referencing this
course

[PROPOSED: UCT - Science, Technology, and Society](#)

Requested Fall 2021

Effective Change
Date

Department History and Political Science

Discipline History (HISTORY)

Course Number 4580

Title
Issues in Science, Technology and Society

Abbreviated Issues in STS

Course Title

Catalog
Description

In Workflow

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

Approval Path

1. 02/06/20 1:36 pm
Shannon Fogg (sfogg): Rollback to Initiator
2. 12/16/20 10:24 am
Michael Bruening (bruening):

Approved for
RHISTORY Chair

3. 12/17/20 12:01
pm

Marita Tibbetts
(tibbettsmg):
Approved for CCC
Secretary

4. 12/17/20 12:06
pm

Petra Dewitt
(dewittp):
Approved for Arts
& Humanities
DSCC Chair

Interdisciplinary course introducing students to the main themes of Science and Technology Studies (STS). Using historical and current examples, they will critically analyze the influence of social groups on the development of science and technology and the effects of science and technology on society.

Prerequisites

Field Trip

Statement

No field trip required.

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

Total: 3

Required for

No

Majors

Elective for

No

Majors

Justification for
new course:

This is a required core course in the proposed undergraduate certificate in Science, Technology, and Society. This is a capstone course that will introduce students to theory and practice of STS. It would tie together the experiences that students have had in other interdisciplinary STS oriented courses in several departments and provide a topical summary of the field.

Semesters

previously

offered as an

experimental

course

Co-Listed

Courses:

PHIL 4580 - **Course Not Found**

Course Reviewer

Comments

sfogg (02/06/20 1:36 pm): Rollback: Can have permanent number as part of a certificate

Key: 4690

[Preview Bridge](#)

Course Change Request

Date Submitted: 12/05/20 9:33 am

Viewing: **IS&T 6641 : Advanced Digital Commerce and IoT Analytics** ~~the Internet of Things~~

File: 961.7
Last approved: 10/23/17 3:28 am
Last edit: 12/05/20 9:33 am
Changes proposed by: cecq8z

Programs
referencing this
course

- [ANA&DTA-CT: Bus Analytics & Data Sci CT](#)
- [CYBERMG-CT: Cyber Mgmt & Info Assurance CT](#)
- [E&S COM-CT: Elec & Social Commerce CT](#)
- [MOBLB&T-CT: Mobile Business and Digital Transformation CT](#)

Requested	Fall 2021 01/09/2018
Effective Change Date	
Department	Business and Information Technology
Discipline	Info Science & Technology (IS&T)
Course Number	6641
Title	Advanced Digital Commerce and IoT Analytics the Internet of Things
Abbreviated Course Title	Adv Dig Commerc & IoT

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

- Approval Path
1. 12/05/20 2:21 pm
siauk: Approved for RINFSCTE Chair
 2. 12/07/20 10:13 am
Marita Tibbetts (tibbettsmg): Approved for CCC Secretary

Catalog
Description

3. 12/07/20 10:26
am
Cecil Eng Huang
Chua (cchua):
Approved for
Social Sciences
DSCC Chair

History

1. Jun 30, 2014 by
lahne (961.1)

2. Oct 23, 2017 by
barryf (961.3)

We discuss methods and techniques of data analytics on data from eCommerce websites and Internet of Things (IoT) devices that help create understanding of online business or detect patterns of IoT sensors. Challenges of data collection, key digital marketing metrics, and results interpretation and communication will be covered. ~~Fundamental concepts of management and application to IT and support of commerce. Examines use of IT in business processes and everyday interactions such as IoT. Explores management issues of integrating IT into processes to run businesses better. Includes a major end-of-semester project.~~

Prerequisites

Knowledge of management information systems.

Field Trip
Statement

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

Justification for

change:

Update to reflect changes in market

Semesters

previously

offered as an

experimental

course

Co-Listed

Courses:

Course Reviewer

Comments

Key: 961

[Preview Bridge](#)

Course Change Request

Date Submitted: 12/22/20 9:00 am

Viewing: **MET ENG 5480 : Refining Of Metals**

File: 2364.4

Last approved: 06/23/18 3:42 am

Last edit: 12/23/20 9:25 am

Changes proposed by: smiller

Requested **Fall 2021** ~~08/14/2018~~

Effective Change

Date

Department Materials Science & Engineering

Discipline Metallurgical Engineering (MET ENG)

Course Number 5480

Title
Refining Of Metals

Abbreviated Refining Of Metals

Course Title

In Workflow

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

Catalog
Description

Approval Path

- 1. 12/22/20 9:22 am
Greg Hilmas (ghilmas):
Approved for RMATSENG Chair
- 2. 12/23/20 9:25 am
Marita Tibbetts (tibbettsmg):
Approved for CCC Secretary

3. 12/31/20 9:34 am
Stephen Raper
(sraper):
Approved for
Engineering DSCC
Chair

History

1. Apr 2, 2018 by
smiller (2364.1)
2. Jun 23, 2018 by
ershenb (2364.3)

Principles and applications of **refined** metal production by electrochemical methods.

The course will address basic copper and zinc **electrometallurgy. processing, electrometallurgy, anodes and anodic processes, cathode deposit control and contamination mechanisms, Faraday's Law and current efficiency, and current state of practice. This includes discussion of anodes and anodic processes, cathode deposit control and contamination mechanisms, Faraday's Law and current efficiency, and current state of practice.**

Prerequisites

Cer Eng **3230, 3230 and** Met Eng **3220, 3220 or** graduate **standing, or instructor approval. standing.**

Field Trip

Statement

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

Total: **3 2-3**

Required for
Majors No

Elective for
Majors Yes

Justification for
change:

Course was redesigned to provide instruction to senior and graduate level students on the electrochemical production of copper and zinc. These principles can be applied to many other metal production systems which will be needed to address critical materials needs for the pending energy transition.

This change reflects the modification of the course from an independent study course to a classroom lecture based course which can also be offered asynchronously and as part of future graduate certificates under design.

Semesters
previously
offered as an
experimental
course

Course was offered as an independent studies course in Fall 2018. Will be offered again in Fall 2021. Plan is to offer the course every other year as an elective course.

Co-Listed
Courses:

Course Reviewer

Comments

tibbettsmg (12/23/20 9:25 am): updated eff. term to FS21. mt

Key: 2364

[Preview Bridge](#)

Course Change Request

Date Submitted: 01/05/21 10:57 am

Viewing: **NUC ENG 2406 : Reactor Operations I**

File: 1630.1

Last edit: 01/12/21 2:51 pm

Changes proposed by: grahamjose

Programs
referencing this
course

[NU ENG-BS: Nuclear Engineering BS](#)

Requested **Fall 2021** ~~08/14/2018~~

Effective Change
Date

Department Mining & Nuclear Engineering

Discipline Nuclear Engineering (NUC ENG)

Course Number 2406

Title
Reactor Operations I

Abbreviated Reactor Operations I
Course Title

Catalog
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. CAT entry
11. Peoplesoft

Approval Path

1. 01/12/21 2:30 pm
AYODEJI Alajo
(alajoa):
Approved for NUC
ENG Chair
2. 01/12/21 2:51 pm
Marita Tibbetts
(tibbettsmg):
Approved for CCC
Secretary

3. 01/15/21 10:04
am
Stephen Raper
(srafer):
Approved for
Engineering DSCC
Chair

A first course in reactor operations training and practical approach to nuclear reactor concepts. Students will receive hands-on training and are encouraged to take the NRC Reactor Operator's Exam.

Prerequisites

Math 1214 or Math **1208**. ~~1208, preceded or accompanied by Nuc Eng 1105.~~

Field Trip

Statement

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

Justification for change:

The pre-req/co-req NE 1105 was removed. Students who have participated in the nuclear engineering summer camp and transfer students are given waivers for NE 1105. In some semesters, a large portion of 2406 students have not taken/are not taking NE 1105. This also results in a large number of permission numbers being generated (relative to enrollment).

Semesters
previously
offered as an

experimental
course

Co-Listed

Courses:

Course Reviewer

Comments

tibbettsmg (01/12/21 2:51 pm): updated effective term to FS 21. MT

Key: 1630

[Preview Bridge](#)

Course Change Request

Date Submitted: 01/12/21 2:55 pm

Viewing: **NUC ENG 3205 : Fundamentals of Nuclear Engineering**

File: 2295.1

Last edit: 01/12/21 2:55 pm

Changes proposed by: alajoa

Programs
referencing this
course

[NU ENG-BS: Nuclear Engineering BS](#)

[NU ENG-MI: Nuclear Engineering Minor](#)

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

Other Courses
referencing this
course

In The Prerequisites:

[MET ENG 5170 : Nuclear Materials I](#)

[NUC ENG 4203 : Reactor Physics I](#)

[NUC ENG 4207 : Nuclear Fuel Cycle](#)

[NUC ENG 4229 : Nuclear Power Plant Systems](#)

[NUC ENG 4241 : Nuclear Materials I](#)

[NUC ENG 4251 : Reactor Kinetics](#)

[NUC ENG 4253 : Monte Carlo Approach to Reactor Analysis](#)

[NUC ENG 4259 : Licensing Of Nuclear Power Plants](#)

[NUC ENG 4281 : Probabilistic Risk Assessment I](#)

[NUC ENG 4312 : Nuclear Radiation Measurements and Spectroscopy](#)

[NUC ENG 4347 : Radiological Engineering](#)

[NUC ENG 5203 : Reactor Physics I](#)

In Workflow

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

Approval Path

1. 01/12/21 2:51 pm
AYODEJI Alajo
(alajoa):
Approved for NUC
ENG Chair
2. 01/12/21 2:54 pm
Marita Tibbetts
(tibbettsmg):
Rollback to
Initiator

[NUC ENG 3205 : Reactor Physics I](#)[NUC ENG 5207 : Nuclear Fuel Cycle](#)[NUC ENG 5241 : Nuclear Materials I](#)[NUC ENG 5251 : Reactor Kinetics](#)[NUC ENG 5281 : Probabilistic Risk Assessment I](#)[NUC ENG 5312 : Nuclear Radiation Measurements and Spectroscopy](#)[NUC ENG 5347 : Radiological Engineering](#)[NUC ENG 5365 : Radiation Protection Engineering](#)Requested **Fall 2021** ~~08/14/2018~~

Effective Change

Date

Department Mining & Nuclear Engineering

Discipline Nuclear Engineering (NUC ENG)

Course Number 3205

Title Fundamentals **of** ~~of~~ Nuclear Engineering

Abbreviated Fund/Nuclear Engineering

Course Title

Catalog

Description

An introduction to the principles and equations used in nuclear fission reactor technology including: reactor types; neutron physics and reactor theory; reactor kinetics and control; radiation protection; reactor safety and licensing; and environmental aspects of nuclear power.

Prerequisites

Math 3304; Preceded ~~Physics 2305~~ or **accompanied by Physics 2305 or 2311, or** Nuc Eng **3103.** ~~3103; Math 3304.~~

Field Trip

Statement

Credit Hours

LEC: 3

LAB: 0

IND: 0

RSD: 0

3. 01/12/21 2:55 pm

AYODEJI Alajo

(alajoa):

Approved for NUC
ENG Chair

4. 01/12/21 3:20 pm

Marita Tibbetts

(tibbettsmg):

Approved for CCC
Secretary

5. 01/15/21 10:04

am

Stephen Raper

(sraper):

Approved for
Engineering DSCC
Chair

Total: 3

Required for
Majors

Yes ~~No~~

Elective for
Majors

No

Justification for
change:

Historical records of Nuc Eng 3205 show that these course (Physics 2305, 2311 or Nuc Eng 3103 need not be prerequisite to Nuc Eng 3205. The elements of Physics 2305 or 2311 or Nuc Eng 3103, which are needed in the course are covered early in those co-requisites. The knowledge gained is primarily applicable to Nuc Eng 3205 during the second half of the semester.

Physics 2311 is included in the list as alternative co-requisite course because some students who double major in nuclear engineering and physics take Physics 2311 instead of Physics 2305. The addition of Physics 2311 prevents the need to perform course substitution of Physics 2311 for Physics 2305 for degree audit purposes.

Semesters
previously
offered as an
experimental
course

N/A

Co-Listed
Courses:

Course Reviewer

Comments

tibbettsmg (01/12/21 2:54 pm): updated effective date FS 21. MT

tibbettsmg (01/12/21 2:54 pm): Rollback: rollback per request. MT

Key: 2295

[Preview Bridge](#)

Program Change Request

Date Submitted: 12/11/20 11:32 am

Viewing: **GEO ENG-MS : GEOLOGICAL
ENGINEERING MS**

File: 268.13

Last approved: 07/01/20 1:38 pm

Last edit: 12/14/20 10:37 am

Changes proposed by: sbrower

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

Start Term

Fall **2021** ~~2020~~

Program Code

GEO ENG-MS

Department

Geosciences and Geological and Petroleum Engineering

Title

GEOLOGICAL ENGINEERING MS

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. Kristy Giacomelli-Feys

Approval Path

1. 12/11/20 12:17 pm
David Borrok
(borrokd): Approved for RGEOENG Chair
2. 12/14/20 10:37 am
Marita Tibbetts
(tibbettsmg): Approved for CCC Secretary
3. 12/16/20 1:36 pm
Stephen Raper
(sraper): Approved for Engineering DSCC Chair

History

1. May 20, 2019 by
Katherine Grote
(grotekr)
2. Jul 1, 2020 by
Leslie Gertsch
(gertschl)

Master of Science

Geological Engineering

A master's degree in geological engineering can be earned in any of several ways:

- Research Master of Science (MS), during which the student completes a research project under the direction of a graduate faculty member and writes a comprehensive thesis about the results.
- Non-thesis (also called coursework) MS. This consists of passing a selection of courses customized to serve the needs of the student.
- Master of Engineering (ME). This consists of a selective course curriculum in addition to a practice-oriented project, for which a comprehensive engineering report is written. Currently our program offers a ME degree in geotechnics that is completed online.

Research MS in Geological Engineering

The thesis MS program consists of a minimum of 30 credit hours, including at least 21 credit hours of lecture courses (at least 9 of which must be in geological engineering), 6 or more credit hours of Geo Eng 6099 (Research), and enrollment in Geo Eng 6010 (Geological Engineering Graduate Seminar) for a minimum of two semesters.

The research topic and the course schedule are selected by the student in consultation with the advisor, who is assigned during the first semester of the student's program. The research is conducted, and the thesis is written and defended, by the student. Details of departmental and campus-wide requirements for the research MS degree can be found in the GGPE Department and Graduate Studies section of this catalog, respectively.

Coursework MS in Geological Engineering

The non-thesis MS program consists of a minimum of 30 credit hours, including at least one course in each of the three core areas (first table below), plus one or more courses from each of the four emphasis areas following. No fewer than four courses of the total must be geological engineering courses. Course substitutions may be made on a case-by-case basis, especially if some of these courses have been completed as part of the undergraduate curriculum.

Core Geological Engineering Courses

Take all 3 (9 credit hours).

GEO ENG 5443	Subsurface Exploration	3
GEO ENG 5331	Subsurface Hydrology	3
or GEO ENG 5381	Intermediate Subsurface Hydrology And Contaminant Transport Mechs	
GEO ENG 5441	Engineering Geology And Geotechnics	3
or GEO ENG 6441	Geotechnical Construction Practice	
or GEO ENG 6625	Applications in Geological Engineering	

Engineering Geology and Geotechnics Emphasis Area

Choose 1-3 courses; at least one course must be in geological engineering (3 to 9 credit hours).

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

Environmental and Hydrology Emphasis Area

Chose 1-3 courses (3 to 9 credit hours).

GEO ENG 5233	Risk Assessment In Environmental Studies	3
GEO ENG 5235	Environmental Geological Engineering	3
GEO ENG 5237	Geological Aspects Of Hazardous Waste Management	3
GEO ENG 5381	Intermediate Subsurface Hydrology And Contaminant Transport Mechs	3
GEO ENG 6235	Advanced Concepts Of Environmental Geological Engineering	3
GEO ENG 6237	Advanced Geological & Geotechnical Design For Hazardous Waste Mgt	3
GEO ENG 6331	Advanced Subsurface Hydrology	3

Engineering Geophysics Emphasis Area

Choose 1 to 2 courses (3 to 6 credit hours).

GEO ENG 5736	Geophysical Field Methods	3
GEO ENG 5761	Transportation Applications of Geophysics	3
GEO ENG 5782	Environmental and Engineering Geophysics	3
GEO ENG 6782	Surface Waves (MASW) and Ground Penetrating Radar (GPR)	3
GEO ENG 6784	Advanced Engineering And Environmental Geophysics	3

Data Analysis Emphasis Area

Choose 1 to 2 courses (3 to 6 credit hours).

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

Justification for request

The Geological Engineering non-thesis master's degree will be offered online and main campus.

Supporting Documents

[MS&T PC November 2020 approval doc.pdf](#)

Course Reviewer Comments

tibbettsmg (12/14/20 10:37 am): updated term to FS21. mt

Key: 268

Program Change Request

Date Submitted: 12/11/20 11:30 am

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

File: 166.22

Last approved: 07/01/20 1:38 pm

Last edit: 12/14/20 10:39 am

Changes proposed by: sbrower

Catalog Pages Using this Program
[Geology and Geophysics](#)

Start Term

Fall **2021** ~~2020~~

Program Code

GL&GPH-MS

Department

Geosciences and Geological and Petroleum Engineering

Title

Geology and Geophysics MS

Program Requirements and Description

In Workflow

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

Approval Path

1. 12/11/20 12:17 pm
David Borrok
(borrokd): Approved for RGEOENG Chair
2. 12/14/20 10:39 am
Marita Tibbetts
(tibbettsmg): Approved for CCC Secretary
3. 01/10/21 2:13 pm
Katie Shannon
(shannonk): Approved for Sciences DSCC Chair

History

1. Jun 17, 2014 by [pantaleoa](#)
2. Jun 22, 2015 by [pantaleoa](#)
3. Jul 23, 2015 by [pantaleoa](#)
4. Jun 14, 2019 by [Sharon Lauck](#)

(laucks)

5. Oct 25, 2019 by
Sharon Lauck
(laucks)6. Jul 1, 2020 by
Kristy Giacomelli-
Feys (kristyg)

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

Research emphasis of the program is in:

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

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

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

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

Earth sciences have been an integral part of the university since its founding. The program has a long and proud history of faculty and students who have contributed to the advancement of the science, to mineral and hydrocarbon exploration, and to protecting the environment. The university was formerly the Missouri School of Mines. Because of the school's tradition and location near the Missouri Lead District, the emphasis of the program has been in exploration for mineral and petroleum resources. The program has expanded to include environmental geochemistry, geophysics, soft rock geology, and planetary geology. Our graduates find employment in the mining, petroleum, and environmental industries, as well as with government agencies and academia. The program provides students with diverse educational opportunities to prepare themselves to seek employment in any area of the earth sciences.

The program has a wide variety of equipment for research and exploration in geology, geochemistry, and geophysics. Interaction with mining engineering, geological engineering, petroleum engineering, metallurgy, environmental engineering, biological sciences and various other programs/departments is routine. Our faculty and graduate students commonly participate in collaborative research with other departments on campus as well as universities worldwide. In addition, cooperative research and internship opportunities with the Missouri Geological Survey, the U.S. Geological Survey's National Geospatial Technical Operations Center and the Mark Twain National Forest Service, all located in Rolla, are available. Cooperative programs with local mining companies, petroleum companies, or other industries are also possible. Thus, your research interests need not fall entirely within the interests of our faculty or within the bounds of the equipment directly available within the program.

A B.S. degree is essential for professional practice in geology or geophysics in industry. Due to the increasing complexity of jobs in the geosciences, the M.S. degree is recognized as the "professional degree" for geoscientists desiring employment in the Petroleum, Minerals,

and many other industries. The Ph.D. degree is for those students that want to conduct original research with purpose of adding new knowledge in a specific area of the geosciences. Successful Ph.D. candidates find employment in academia or research centers in government agencies or corporate research labs.

Two M.S. degree options are available: thesis and non-thesis. All Geology and Geophysics MS students are required to take the Professional Geosciences Skills course ([GEOLOGY 5100](#)) and either Advanced Physical Geology ([GEOLOGY 5111](#)) or Global Tectonics ([GEOPHYS 5096](#)). For students whose native language is not English, a minimum score of 79 TOEFL, or a minimum of 53 PTE, or a minimum of 6.5 IELTS is generally required for admission. Suggested minimum GRE scores: Q150 and A(W) 3.0 and (verbal score + quantitative score = 300)

Justification for request

The Geology and Geophysics non-thesis master's degree will be offered online and main campus.

Supporting Documents

[MS&T PC November 2020.pdf](#)

Course Reviewer Comments

tibbettmsg (12/14/20 10:39 am): updated effective term to FS21. mt

Key: 166

Program Change Request

Date Submitted: 12/11/20 11:33 am

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

File: 171.6

Last approved: 07/01/20 1:39 pm

Last edit: 12/14/20 10:40 am

Changes proposed by: sbrower

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

Start Term

Fall **2021** ~~2020~~

Program Code

PE ENG-MS

Department

Geosciences and Geological and Petroleum Engineering

Title

Petroleum Engineering MS

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. **Kristy Giacomelli-Feys**

Approval Path

1. 12/11/20 12:17 pm
David Borrok
(borrokd): Approved for RGEOENG Chair
2. 12/14/20 10:40 am
Marita Tibbetts
(tibbetmsg): Approved for CCC Secretary
3. 12/16/20 1:36 pm
Stephen Raper
(sraper): Approved for Engineering DSCC Chair

History

1. Jul 24, 2015 by
[pantaleoa](#)
2. Jul 1, 2020 by
[Kristy Giacomelli-Feys \(kristyg\)](#)

The petroleum engineering program offers courses of study leading to the masters of science, doctor of philosophy, or doctor of engineering degrees. The master's degree can be earned with either a thesis option or a non-thesis option.

While the program encourages students with an undergraduate degree in petroleum engineering to pursue graduate study, many graduate students are accepted with backgrounds in other areas of engineering, such as chemical engineering, mechanical engineering, or geological engineering. The program accepts such students with the expectation that any remedial petroleum engineering coursework will be met by the student while in residence for the master's degree. Students with backgrounds in geology or geophysics will also need to complete all fundamental engineering courses required for a degree in engineering.

Graduate students studying for a masters degree with a thesis option typically find support for their study depending on current research projects and the availability of funding. Students preferring the non-thesis option are typically self-funding for their masters degree.

Each student's graduate degree program is designed around a set of core petroleum engineering courses and other courses selected to support the thesis topic of interest. Students identify their thesis topic by the end of their first semester.

Research specialties of the petroleum engineering program include reservoir enhancement, hydraulic fracturing, CO2 sequestration, gel treatments, drilling, well completion performance studies, and geomechanics of petroleum recovery.

The program emphasizes mechanical earth modeling (MEM) as a specialty. The MEM group owns part of the university numerical intensive computing cluster. Students with a strong background in geological engineering and geomechanics will likely find excellent opportunities for advanced studies.

The petroleum engineering laboratories contain modern equipment designed to study the many problems encountered in oil and gas production, as well as support research. The department laboratories include gas porosimeter and permeameter, liquid permeameter, viscometers, tensiometers, and a HPTP core flooding cell. The program also utilizes departmental facilities that include core cutting and preparation, laser ablation, XRD, SEM, and a triaxial and fracture cell and a direct shear apparatus for determining rock and fracture properties.

Students externally supported by international oil and gas operating companies may also suggest research topics related to their professional experience or special topics of interest to their companies.

Suggested minimum GRE scores: Q150 and A(W) 3.0 and (verbal score + quantitative score = 300)

For additional information regarding graduate study opportunity contact rocks@mst.edu. Additional information may also be found at the web pages at: <http://gse.mst.edu/> or <http://petroleum.mst.edu/>.

Justification for request

The Petroleum Engineering non-thesis master's degree will be offered online and main campus.

Supporting Documents

[MS&T PC November 2020 approval doc.pdf](#)

Course Reviewer Comments

tibbettsmg (12/14/20 10:40 am): updated effective term to FS21. mt

Key: 171

Program Change Request

New Program Proposal

Date Submitted: 12/15/20 8:26 pm

Viewing: **PROPOSED : English & Technical Communication BS**

File: 374

Last edit: 12/16/20 6:28 am

Changes proposed by: kswenson

Start Term
Fall 2021
Program Code
PROPOSED
Department
English and Technical Communication
Title
English & Technical Communication BS

Program Requirements and Description

In Workflow

- 1. **REGLISH 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. **Kristy Giacomelli-Feys**

Approval Path

- 1. 12/15/20 8:27 pm
Kristine Swenson (kswenson):
Approved for
REGLISH Chair
- 2. 12/16/20 6:30 am
Marita Tibbetts (tibbettsmg):
Approved for CCC Secretary
- 3. 12/16/20 8:00 am
Petra Dewitt (dewittp): Approved
for Arts & Humanities DSCC Chair

Students must complete a minimum of 120 hours for a Bachelor of Science in English & Technical Communication, and obtain a grade point average of 2.0. These requirements for the B.S. are in addition to credit received for basic ROTC.

Communications. Student must take the following 9 hours of courses:		
ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 2002	Critical Approaches To Literature	3

One writing intensive course out of major OR two writing emphasized courses out of major

3

Math and Sciences. Students must take **18 hours of math and science courses**, including at least one in biological science and one in the physical sciences and at least one math course at the level of college algebra or higher. In addition to these requirements, students may count [STAT 1115](#), up to 3 hours from psychology classes, and up to 3 hours from history of science and technology classes ([HISTORY 2510](#), [HISTORY 3510](#), or [HISTORY 3530](#)), but may not use them to satisfy another requirement.

Humanities. Students must complete **9 hours in humanities** with at least one course from each of the following: literature, philosophy, and fine arts (Art, Music, or Theater Appreciation).

Social Sciences. Students must complete **12 hours in social science courses**. Students must take at least one course in two of these four areas: economics, history, political science, and psychology.

One of the following courses must be taken to satisfy the requirement of the state of Missouri (the "Williams Law"); this course may count toward fulfilling the social sciences requirement

HISTORY 1200	Modern Western Civilization	3
HISTORY 1300	American History To 1877	3
HISTORY 1310	American History Since 1877	3
POL SCI 1200	American Government	3

English and Technical Communication. Students must complete **33 credit hours of courses in ENGLISH and/or TCH COM**. The student must earn a grade of C or better in these required courses.

All students must take the following 9 hours for the major:

ENGLISH 2410	Theory Of Written Communication	3
TCH COM 4410	Theory and Practice of Technical Communication	3
TCH COM 5620	Research Methods in Technical Communication	3

Each student chooses *at least* one of the following **CORE MODULES**, which helps define each student's focus for the degree and provides foundational skills within that focus:

I. Technical Communication (12 hours):

TCH COM 1600	Introduction to Technical Communication	3
TCH COM 2540	Layout and Design	3
TCH COM 5510	Technical Editing	3
One of the following:		
TCH COM 3550	Writing for Social Media	3
TCH COM 3580	Business Communication	3
TCH COM 3570	Writing in the Sciences	3
TCH COM 5560	Web-Based Communication	3

II. Literature (12 hours):

- One 1000 or 2000 level literature class
- One 2000 or 3000 level literature class with a "media" or "genre" designation
- One 3000 level literature class with a geographical designation
- One 3000 level literature class with a historical or cultural designation

III. **Linguistics** (12 hours):

ENGLISH 3301	A Linguistic Study Of Modern English	3
ENGLISH 3302	History And Structure Of The English Language	3
ENGLISH 3303	The Grammatical Structure of English	3
ENGLISH 3304	Language in Society	3

Students should choose the remaining required hours in E&TC in consultation with their advisor to complete specialized modules and certificates that correspond with their interests and future goals. Specialized modules are generally sets of 3-4 courses that allow students to pursue specialized areas of our degree program. Please refer to E&TC website and/or consult your advisor for a full list of current modules and certificates. Some of these include: Creative Writing, Professional Writing, Game Studies, English Education, Digital Presence Management.

Electives Credit. Each student will elect sufficient additional courses to complete a minimum of 120 credit hours, at the discretion of the major adviser. Electives housed in other departments can and should be used to fulfill requirements for interdisciplinary specialized modules and certificates. At least 9 hours of these electives must be at the 3000 or above level, although substitutions may be permitted at the discretion of the major adviser. All electives must accumulate to at least a 2.0 grade point average.

English Education Certification. The student will fulfill the general requirements for the bachelor of science degree, the requirements for the ETC major, and the requirements for Missouri certification in the teaching of English including a 3.0 in all content courses, a 2.75 cumulative GPA, and passage of the Missouri Content exam. Contact the Missouri S&T English & Tech Com department for advising. Students preparing for teacher certification should note that the major requirements for English certification are as follows:

1. [ENGLISH 1211](#) [ENGLISH 1211](#)[ENGLISH 1211](#)[ENGLISH 1211](#), [ENGLISH 1212](#)
[ENGLISH 1212](#)[ENGLISH 1212](#)[ENGLISH 1212](#), [ENGLISH 1221](#) [ENGLISH 1221](#)[ENGLISH 1221](#)[ENGLISH 1221](#), [ENGLISH 1222](#)
[ENGLISH 1222](#)[ENGLISH 1222](#)[ENGLISH 1222](#).
2. [ENGLISH 2002](#) [ENGLISH 2002](#)[ENGLISH 2002](#)[ENGLISH 2002](#) Critical Approaches to Literature.
3. Capstone course for major: [TCH COM 4410](#).
4. Fifteen hours of course work at the 2000 or 3000 level in English and American literature, including two courses in English Literature; and two American Literature courses, including literature for adolescents.
5. Six hours of linguistics.
6. Twelve hours of writing, including a course in the teaching of writing. Six of these hours will also be satisfied by the general education composition requirement for the B.S. degree; three of these hours will also be satisfied by the capstone course.
7. A minimum of fifteen hours must be at the 3000 level or above.

Graduate Track Pathway to MS in Technical Communication:

An undergraduate in the Department of English and Technical Communication at Missouri S&T, and select undergraduates in other departments, may opt to apply for the Graduate Track Pathway in Technical Communication (TC). This program allows a student to complete a bachelor's degree and then the MS in Tech Com in less time than if pursuing each degree consecutively. In this program, 9 hours of TC MS coursework may apply to both the BS and MS requirements. The credit hours transferred from their Missouri S&T bachelor's degree to their Technical Communication master's degree may be taken at the lower undergraduate tuition rate.

To be eligible for the GTP, an undergraduate must be one year from completion of their bachelor's degree (excluding the semester in which they are currently enrolled). They must have completed 9 credit hours of any combination of English and TC courses selected from 1160, 1600, 2002, 2410, 2540, 2560, and any 3000 or 4000 level English or TC course at Missouri S&T with at least a 3.50 GPA in those courses and a cumulative GPA of 3.0 or higher.

To be admitted, the student must complete the GTP Admission and Course Approval Form and must have the recommendation of a TC faculty member. Once admitted to the GTP, the student may transfer nine credit hours from their Missouri S&T bachelor's degree to their Technical Communication master's degree. Depending on the bachelor's program, some or all of those hours might also fulfill elective undergraduate categories. These nine hours of shared credit will be charged at the undergraduate tuition rate. The nine hours of shared-credit coursework must be approved by the academic advisor and must be courses approved to be part of the MS curriculum. Taking additional courses for graduate credit beyond these nine hours will require formal application and acceptance to the MS program. Acceptance to the MS program from the GTP is assured so long as the student maintains a 3.0 GPA or higher in TC coursework.

E&TC majors are encouraged to consult with their academic advisor during their sophomore or junior year about preparing for GTP admission.

Justification for request

The Department of English & Technical Communication is proposing these changes for several reasons:

- **Pedagogical efficacy:** Because the majority of our departmental faculty teach both English and tech com courses, we've recognized that our majors perform better, both in school and in their later careers, if they have a solid grounding in both. We are in our second year of an introduction to the department/major(s) that teaches literary study, linguistics, and technical communication as distinct but complementary fields. That course, English 2002, has been very successful and has encouraged us toward this combined major.
- **Career-readiness:** Technical writers with a strong background in composition, rhetoric, and textual analysis are better able to adapt to a changing work world. English majors with a background in technical editing and layout and design are more likely to win the entry-level positions from which they can advance.
- **Practical concerns:** Enrollments in humanities fields are shrinking across the country and across the state. Budgetary constraints are also shrinking humanities faculties. In E&TC, we feel we can offer a higher quality degree if we concentrate on what we do well rather than trying to offer several separate programs at once.
- **Institutional mission:** Our combined program will be unique in the Missouri System and within the state. It makes sense to take this technical focus at S&T and to play to the traditional strengths of our campus. Our majors do well after college when they can speak to the benefits of being an English & Tech Com major on a STEM-focused campus. We want to enhance their ability to do that.

Supporting Documents

[MS&T PC November 2020 HDME.pdf](#)

[English & Technical Communication Proposal \(short\).pdf](#)

Course Reviewer Comments

tibbettsmg (12/16/20 6:28 am): changed title to "English & Technical Communications BS" mt

Key: 374

Program Change Request

Date Submitted: 12/09/20 1:29 pm

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

File: 192.40

Last approved: 07/01/20 1:39 pm

Last edit: 12/11/20 6:27 am

Changes proposed by: burnsde

Catalog Pages Using this Program

[Psychology_](#)

Start Term

Fall **2021** ~~2020~~

Program Code

PSYCH-BA

Department

Psychological Science

Title

Psychology BA

Program Requirements and Description

In Workflow

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

Approval Path

1. 10/13/20 3:25 pm
Susan Murray
(murray): Approved for RPSYCHOL Chair
2. 10/14/20 11:55 am
Marita Tibbetts
(tibbettsmg): Rollback to Initiator
3. 12/10/20 2:55 pm
Susan Murray
(murray): Approved for RPSYCHOL Chair
4. 12/11/20 6:27 am
Marita Tibbetts
(tibbettsmg): Approved for CCC Secretary
5. 12/11/20 6:37 am
Cecil Eng Huang
Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Aug 4, 2014 by
nstone
2. Mar 20, 2015 by
nstone
3. Jun 19, 2015 by
nstone
4. Jul 21, 2015 by
pantaleoa
5. Jun 28, 2017 by
Nathan Weidner
(weidnern)
6. Jun 14, 2019 by
Susan Murray
(murray)
7. Jul 1, 2020 by
Devin Burns
(burnsde)

Bachelor of Arts Psychology

A minimum of 120 credit hours is required for a bachelor of arts degree in psychology and an average of at least two grade points per credit hour must be obtained. The psychology B.A. curriculum requires 6 hours of English Composition, 14 hours of math and science, 12 semester hours in humanities, 12 semester hours is required in social sciences, 11-16 hours of foreign language and a minimum of 35 hours are required in psychology. Up to 12 credit hours of advanced ROTC may be credited toward the degree. Specific requirements for the bachelor of arts degree are outlined in the sample program listed below.

1. [ENGLISH 1120](#) and one additional three hour composition course (6 hours).
2. Western civilization ([HISTORY 1100](#) and [HISTORY 1200](#)) (6 hours).
3. Foreign languages for at least 3 semesters of basic study in French, German, Russian, Spanish or an approved substitute; or one year of basic study in a foreign language in either French, German, Russian, Spanish, or an approved substitute, and a humanities or social sciences course taught in a foreign country and employing the language of that country; or one year of basic study in each of two of the foreign languages of French, German, Russian or Spanish or an approved substitute (11-16 hours).
4. Sciences. At least one course taken in biological (biological sciences) and physical (chemistry, geology and geophysics, physics) sciences. A laboratory course is required (and a lab offered in engineering also may count at the discretion of the student's major advisor) toward the total requirement. Stat 1115 is required, and an additional elective in Science or Math (14 hours).
5. Humanities and fine arts. Courses used to satisfy this requirement must include one course in each of the three areas of literature (English or American), philosophy, and fine arts (art, music or theater), but not to include studio and performance offerings (12 hours).
6. Social Sciences. At least two of the following social science areas are to be included: economics, political science, or history (6 hours).

7.	Psychology Courses (35 hours)		
	Required:*		
	General Skills Courses:		
	PSYCH 1100	Introduction to Psychology	1
	PSYCH 1101	General Psychology	3

PSYCH 2200	Research Methods	4
Content Courses:		
PSYCH 3310	Developmental Psychology	3
PSYCH 4400	Cognitive Psychology	3
PSYCH 4501	Abnormal Psychology	3
PSYCH 4600	Social Psychology	3
And one of the following 2 courses:		
PSYCH 4410	Neuroscience	3
PSYCH 4411	Sensation and Perception	3
Capstone Course:		
Select three credit hours from the Capstone courses:		
PSYCH 4010	Seminar	0-6
PSYCH 4099	Undergraduate Research	0-6
PSYCH 4200	Tests and Measurements	3
PSYCH 4590	Health Psychology	3
PSYCH 4994	Psychology in Media	3
PSYCH 4992	Cross-Cultural Psychology	3
PSYCH 4993	Psychology of Gender	3
PSYCH 4990	Internship	0-6
*These required courses total 26 hours.		
Elective Courses:		
Select an additional 9 hours of psychology electives to complete the 35 hour degree requirement.		

8. Major-field requirements: A cumulative grade point average of 2.0 must be earned in all course work taken in the major field. Upper-class (3000-4000-level) courses completed with grades of "D" may not be included in the course work for the major field without the approval of the chair of the department. At least nine hours of upper-class work in the major field must be completed in residence at Missouri S&T.
9. Minor: A minor will be selected from any discipline other than the major with the approval of the student's advisor. A total of at least 15 hours is required for the minor, but may include courses which also satisfy other requirements. At least nine hours must be beyond the introductory level. A cumulative grade point average of 2.0 must be earned in all course work required in the minor field. At least six hours of work in the minor field must be completed in residence at Missouri S&T.
10. Basic ROTC may be elected in the freshman and sophomore years, but is not creditable toward a degree. Up to 12 credit hours of advanced ROTC may be credited toward a degree.
11. Elective Credits: In consultation with his/her advisor, each student will elect sufficient additional courses to complete a minimum of 120 credit hours.

Emphasis Areas

Note: The following areas identify courses from which a student may opt to develop an emphasis area. It is not required that students obtain an emphasis specialty within psychology. **At least one class for each emphasis area is already required for all majors, so the remaining three may be taken as the additional 9 hours of required psychology electives. In this way, getting an emphasis requires no additional courses, just less flexibility in which courses you take.**

Industrial/Organizational Psychology		
PSYCH 4600	Social Psychology	3
PSYCH 4700	Industrial Psychology	3

PSYCH 4602	Organizational Psychology	3
And 1 of the following 4:		
PSYCH 4601	Group Dynamics	3
PSYCH 4610	Psychology of Leadership in Organizations	3
PSYCH 4500	Personality Theory	3
PSYCH 4200	Tests and Measurements	3
Health Psychology		
PSYCH 3311	Psychological & Educational Development Of The Adolescent	3
or PSYCH 3310	Developmental Psychology	
PSYCH 4501	Abnormal Psychology	3
And 3 of the following 4:		
PSYCH 4510	Clinical Psychology	3
PSYCH 4990	Internship	0-6
PSYCH 4590	Health Psychology	3
PSYCH 3501	Drugs and Behavior	3
Cognition and Neuroscience		
PSYCH 4400	Cognitive Psychology	3
And 3 of the following 4:		
PSYCH 4411	Sensation and Perception	3
PSYCH 3400	Theories Of Learning	3
PSYCH 4410	Neuroscience	3
PSYCH 3501	Drugs and Behavior	3
Human Factors		
PSYCH 2300	Educational Psychology	3
PSYCH 4400	Cognitive Psychology	3
PSYCH 4710	Human Factors	3
PSYCH 4720	Psychology of Social Technology	3
And 1 of the following 3:		
PSYCH 4411	Sensation and Perception	3
PSYCH 4700	Industrial Psychology	3
PSYCH 4602	Organizational Psychology	3
Diversity and Inclusion		
PSYCH 4600	Social Psychology	3
And 3 of the following 4:		
PSYCH 4993	Psychology of Gender	3
PSYCH 4500	Personality Theory	3
PSYCH 4992	Cross-Cultural Psychology	3
PSYCH 4310	Psychology Of The Exceptional Child	3

Bachelor of Arts Psychology (Secondary Education Emphasis Area)

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

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

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

A degree with this emphasis area requires 125 credit hours. The required courses are provided below.

Communications Skills: 6 semester hours		
ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
Humanities: 12 semester hours		
Art, Music, or Theatre course		3
Philosophy course		3
Literature course		3
One additional humanities from the above course groups, Foreign Language, or Etymology		3
Social Sciences: 21 semester hours		
HISTORY 1300	American History To 1877	3
HISTORY 1310	American History Since 1877	3
POL SCI 1200	American Government	3
POL SCI 3211	American Political Parties	3
or POL SCI 3300	Principles Of Public Policy	
or POL SCI 3760	The American Presidency	
or POL SCI 3763	Contemporary Political Thought	
PSYCH 1101	General Psychology	3
ECON 1100	Principles Of Microeconomics	3
or ECON 1200	Principles Of Macroeconomics	
Geography		3
Natural Science/Mathematics: 12 semester hours		
One course in Physics, Chemistry or Geology		3
Mathematics 1120, 1103, 1140+		3
STAT 1115	Statistics For The Social Sciences I	3
BIO SCI 1113	General Biology	3
Professional Requirements: 26 semester hours		

EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
EDUC 2251	Historical Foundation Of American Education	3
EDUC 3216	Teaching Reading in Content Area	3
EDUC 3280	Teaching Methods and Skills in Content Areas	6
EDUC 4298	Student Teaching Seminar	1
PSYCH 2300	Educational Psychology	3
PSYCH 3311	Psychological & Educational Development Of The Adolescent	3
PSYCH 4310	Psychology Of The Exceptional Child	3
Clinical Experience: 16 semester hours		
EDUC 1104	Teacher Field Experience I	2
EDUC 1164	Teacher Field Experience II	2
EDUC 4299	Student Teaching	12
Psychology Degree Requirements: 17 semester hours		
PSYCH 1100	Introduction to Psychology	1
PSYCH 2200	Research Methods	4
PSYCH 3400	Theories Of Learning	3
PSYCH 3310	Developmental Psychology	3
PSYCH 4501	Abnormal Psychology	3
or PSYCH 4500	Personality Theory	
PSYCH 4600	Social Psychology	3
Certification: 15 semester hours		
6 hours of American History from the following:		
HISTORY 3320	Colonial America	
HISTORY 3325	Revolutionary America, 1754-1789	
HISTORY 3340	Age Of Jefferson And Jackson	
HISTORY 3345	Civil War And Reconstruction	
HISTORY 3360	Recent United States History	
HISTORY 3425	History Of The Old South	
HISTORY 3426	History Of The Modern South	
HISTORY 3480	History Of Baseball	
HISTORY 3440	20th Century Americans In Combat	
HISTORY 3442	The United States in Vietnam	
HISTORY 3761	U.S. Diplomatic History to World War II	
HISTORY 4435	History of the American West	
9 hours of World History from the following:		
HISTORY 1100	Early Western Civilization	
HISTORY 1200	Modern Western Civilization	
HISTORY 2220	Making Of Modern Britain	

HISTORY 2222	The Making Of Modern France
HISTORY 2224	Making Of Modern Russia
HISTORY 3130	Medieval History I
HISTORY 3135	Medieval History II
HISTORY 3140	History Of Renaissance Thought
HISTORY 3230	Europe In The Age Of The French Revolution And Napoleon
HISTORY 3235	Foundations Of Contemporary Europe 1815-1914
HISTORY 3240	Contemporary Europe
HISTORY 3660	Modern East Asia

Justification for request

Updating based on different departmental focus and course offerings.

Supporting Documents

[MS&T PC November 2020.pdf](#)

Course Reviewer Comments

tibbettsmg (10/14/20 11:55 am): Rollback: Please attach supporting documents/MDHE approval with proposed program change. MT

tibbettsmg (12/11/20 6:27 am): updated effective term to FS21. MT

Key: 192

Program Change Request

Date Submitted: 12/11/20 9:38 am

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

File: 193.38

Last approved: 07/01/20 1:39 pm

Last edit: 12/11/20 11:30 am

Changes proposed by: burnsde

Catalog Pages Using this Program
[Psychology_](#)

Start Term

Fall **2021** ~~2020~~

Program Code

PSYCH-BS

Department

Psychological Science

Title

Psychology BS

Program Requirements and Description

In Workflow

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

Approval Path

- 1. 10/13/20 3:27 pm
Susan Murray
(murray): Rollback to Initiator
- 2. 10/14/20 3:31 pm
Susan Murray
(murray): Rollback to Initiator
- 3. 12/10/20 2:55 pm
Susan Murray
(murray): Approved for RPSYCHOL Chair
- 4. 12/11/20 6:38 am
Marita Tibbetts (tibbettsmg): Rollback to Initiator
- 5. 12/11/20 10:31 am
Susan Murray
(murray): Approved for RPSYCHOL Chair
- 6. 12/11/20 11:31 am
Marita Tibbetts (tibbettsmg): Approved for CCC Secretary

7. 12/11/20 11:39 am
 Cecil Eng Huang
 Chua (cchua):
 Approved for Social
 Sciences DSCC
 Chair

History

1. May 6, 2014 by nstone
2. Jul 8, 2014 by pantaleoa
3. Jul 8, 2014 by pantaleoa
4. Mar 20, 2015 by nstone
5. Jun 19, 2015 by nstone
6. Jul 21, 2015 by pantaleoa
7. Jun 28, 2017 by Nathan Weidner (weidnern)
8. Jun 14, 2019 by Susan Murray (murray)
9. Jul 1, 2020 by Devin Burns (burnsde)

Bachelor of Science Psychology

A minimum of 120 credit hours is required for a bachelor of science degree in psychology and a cumulative grade point average of 2.0 must be obtained. These requirements for the B.S. degree are in addition to credit received for basic ROTC.

The psychology bachelor of science curriculum requires six hours of English composition; 20 hours of math, science and computer science; twelve semester hours in the humanities; and twelve semester hours in the social sciences. Specific requirements for the bachelor degree are outlined in the sample program listed below.

1. [ENGLISH 1120](#) and [ENGLISH 1160](#) (entering students will normally take [ENGLISH 1120](#) either semester of the first year.) (6 hours)
2. A total of 20 hours in biological, physical, (chemistry, geology and geophysics, and physics), and mathematical (mathematics/statistics and computer science or information science & technology) sciences, to include at least one course taken in the biological and one in the physical sciences. Of the biological and physical science offerings, at least one must be a laboratory course. Stat 1115 is required. Engineering courses may, at the discretion of the student's major advisor, also count toward this total requirement. (20 hours)
3. 12 hours in humanities and fine arts (literature, philosophy, art, music, or theater). Foreign language courses may count toward fulfilling this requirement. Courses used to satisfy this requirement must be taken in at least two humanities areas. (12 hours)

4. 12 hours in at least two social sciences fields outside the major area (economics or history or political science). A course in Modern Western Civilization ([HISTORY 1200](#)), American History To 1877 ([HISTORY 1300](#)) or American History Since 1877 ([HISTORY 1310](#)), or American Government ([POL SCI 1200](#)) must be taken to satisfy the requirement of the state of Missouri (the "Williams Law"), and this course may count toward fulfilling the social sciences requirement. (12 hours)
5. Minor: A minor will be selected from any discipline other than the major with the approval of the student's advisor. A total of at least 15 hours is required for the minor, but may include courses which also satisfy other requirements. At least nine hours must be beyond the introductory level.
6. Basic ROTC may be elected in the freshman and sophomore years, but is not creditable toward a degree. Six credit hours of advanced ROTC may be credited toward a degree.
7. Elective Credits: In consultation with his/her advisor, each student will elect sufficient additional courses to complete a minimum of 120 credit hours which may include [MATH 1160](#) and one of [MATH 1120](#) or [MATH 1140](#).

8.	Psychology Courses (35 hours)		
	Required:*		
	General Skills Courses:		
	PSYCH 1100	Introduction to Psychology	1
	PSYCH 1101	General Psychology	3
	PSYCH 2200	Research Methods	4
	Content Courses:		
	PSYCH 3310	Developmental Psychology	3
	PSYCH 4400	Cognitive Psychology	3
	PSYCH 4501	Abnormal Psychology	3
	PSYCH 4600	Social Psychology	3
	And one of the following 2 courses:		
	PSYCH 4410	Neuroscience	3
	PSYCH 4411	Sensation and Perception	3
	Capstone Course:		
	Select three credit hours from the following Capstone courses:		
	PSYCH 4010	Seminar	0-6
	PSYCH 4099	Undergraduate Research	0-6
	PSYCH 4200	Tests and Measurements	3
	PSYCH 4590	Health Psychology	3
	PSYCH 4994	Psychology in Media	3
	PSYCH 4992	Cross-Cultural Psychology	3
	PSYCH 4993	Psychology of Gender	3
	PSYCH 4990	Internship	0-6
	*These required courses total 26 hours.		
	Elective Courses:		
	Select an additional 9 hours of psychology electives to complete the 35 hour degree requirement.		

9. A cumulative grade point average of 2.0 must be earned in all course work taken in the major field. Upper class (3000-level and above) courses completed with grades of "D" may not be included in the course work for the major field without the approval of the advisor and the chair of the department concerned.

Emphasis Areas

Note: The following areas identify courses from which a student may opt to develop an emphasis area. It is not required that students obtain an emphasis specialty within **psychology**. **At least one class for each emphasis area is already required for all majors, so the remaining three may be taken as the additional 9 hours of required psychology electives.** ~~psychology~~. In this way, getting an emphasis requires no additional courses, just less flexibility in which courses you take.

Industrial/Organizational Psychology		
PSYCH 4600	Social Psychology	3
PSYCH 4700	Industrial Psychology	3
PSYCH 4602	Organizational Psychology	3
And 1 of the following 4:		
PSYCH 4601	Group Dynamics	3
PSYCH 4500	Personality Theory	3
PSYCH 4610	Psychology of Leadership in Organizations	3
PSYCH 4200	Tests and Measurements	3
Health Psychology		
PSYCH 3314	Psychological & Educational Development Of The Adolescent	3
or PSYCH 3310	Developmental Psychology	
PSYCH 4501	Abnormal Psychology	3
And 3 of the following 4:		
PSYCH 4510	Clinical Psychology	3
PSYCH 3501	Drugs and Behavior	3
PSYCH 4590	Health Psychology	3
PSYCH 4990	Internship	0-6
Cognition and Neuroscience		
PSYCH 4400	Cognitive Psychology	3
PSYCH 4410	Neuroscience	3
PSYCH 4411	Sensation and Perception	3
And 1 of the following 2:		
PSYCH 3400	Theories Of Learning	3
PSYCH 3501	Drugs and Behavior	3
Human Factors		
PSYCH 2300	Educational Psychology	3
PSYCH 4400	Cognitive Psychology	3
PSYCH 4710	Human Factors	3
PSYCH 4720	Psychology of Social Technology	3
And 1 of the following 3:		
PSYCH 4700	Industrial Psychology	3
PSYCH 4602	Organizational Psychology	3
PSYCH 4411	Sensation and Perception	3
Diversity and Inclusion		

PSYCH 4600	Social Psychology	3
And 3 of the following 4:		
PSYCH 4993	Psychology of Gender	3
PSYCH 4992	Cross-Cultural Psychology	3
PSYCH 4310	Psychology Of The Exceptional Child	3
PSYCH 4500	Personality Theory	3

Bachelor of Science Psychology (Secondary Education Emphasis Area)

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

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

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

A degree in this emphasis area requires **125** ~~128~~ credit hours. The required courses are provided below.

Communications Skills: 3 semester hours		
ENGLISH 1120	Exposition And Argumentation	3
Humanities: 12 semester hours		
Art, Music, or Theatre course		3
Philosophy course		3
Literature course		3
One additional humanities from the above course groups, Foreign Language, or Etymology		3-4
Social Sciences: 21 semester hours		
HISTORY 1300	American History To 1877	3
HISTORY 1310	American History Since 1877	3
POL SCI 1200	American Government	3
POL SCI 3211	American Political Parties	3
or POL SCI 3300	Principles Of Public Policy	
or POL SCI 3760	The American Presidency	
or POL SCI 3763	Contemporary Political Thought	
PSYCH 1101	General Psychology	3
ECON 1100	Principles Of Microeconomics	3
or ECON 1200	Principles Of Macroeconomics	
HISTORY 2110	World Regional Geography	3

Natural Sciences/Mathematics: 15 semester hours		
One course in Physics, Chemistry or Geology		3
Mathematics 1120, 1130, 1140+		3
BIO SCI 1113	General Biology	3
STAT 1115	Statistics For The Social Sciences I	3
5 additional hours of Math &/or Science courses		5
3 additional hours of Math &/or Science courses		3
Professional Requirements: 26 semester hours		
EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
EDUC 2251	Historical Foundation Of American Education	3
EDUC 3216	Teaching Reading in Content Area	3
EDUC 3280	Teaching Methods and Skills in Content Areas	6
EDUC 4298	Student Teaching Seminar	1
PSYCH 2300	Educational Psychology	3
PSYCH 3311	Psychological & Educational Development Of The Adolescent	3
PSYCH 4310	Psychology Of The Exceptional Child	3
Clinical Experience: 16 semester hours		
EDUC 1104	Teacher Field Experience I	2
EDUC 1164	Teacher Field Experience II	2
EDUC 4299	Student Teaching	12
Psychology Degree Requirements: 17 semester hours		
PSYCH 1100	Introduction to Psychology	1
PSYCH 2200	Research Methods	4
PSYCH 3400	Theories Of Learning	3
PSYCH 3310	Developmental Psychology	3
PSYCH 4501	Abnormal Psychology	3
or PSYCH 4500	Personality Theory	
PSYCH 4600	Social Psychology	3
Certification: 15 semester hours		
6 hours of American History from the following:		
HISTORY 3320	Colonial America	
HISTORY 3325	Revolutionary America, 1754-1789	
HISTORY 3340	Age Of Jefferson And Jackson	
HISTORY 3345	Civil War And Reconstruction	
HISTORY 3360	Recent United States History	
HISTORY 3425	History Of The Old South	
HISTORY 3426	History Of The Modern South	
HISTORY 3480	History Of Baseball	

HISTORY 3440	20th Century Americans In Combat
HISTORY 3442	The United States in Vietnam
HISTORY 3761	U.S. Diplomatic History to World War II
HISTORY 4435	History of the American West
9 hours of World History from the following:	
HISTORY 1100	Early Western Civilization
HISTORY 1200	Modern Western Civilization
HISTORY 2220	Making Of Modern Britain
HISTORY 2222	The Making Of Modern France
HISTORY 2224	Making Of Modern Russia
HISTORY 3130	Medieval History I
HISTORY 3135	Medieval History II
HISTORY 3140	History Of Renaissance Thought
HISTORY 3230	Europe In The Age Of The French Revolution And Napoleon
HISTORY 3235	Foundations Of Contemporary Europe 1815-1914
HISTORY 3240	Contemporary Europe
HISTORY 3660	Modern East Asia

Justification for request

Updating emphases to reflect changes in departmental focus and offerings.

We also reduced the number of math and science electives in the secondary education emphasis to bring the total credit burden down to 125, in line with the BA.

Supporting Documents

[MS&T PC November 2020.pdf](#)

Course Reviewer Comments

murray (10/13/20 3:27 pm): Rollback: please fix the error I told you about, thanks

murray (10/14/20 3:31 pm): Rollback: as requested

tibbettsmg (12/11/20 6:38 am): Rollback: credit hours on secondary education emphasis require correction. MT

tibbettsmg (12/11/20 11:30 am): updated eff term to FS21. mt

Key: 193

Program Change Request

Date Submitted: 01/07/21 1:35 pm

Viewing: **ANA&DTA-CT : Bus Analytics & Data Sci CT**

File: 293.2

Last approved: 06/12/19 10:03 am

Last edit: 01/11/21 1:20 pm

Changes proposed by: cecq8z

Catalog Pages Using this Program
[Information Science and Technology](#)

Start Term

Fall **2021** ~~2019~~

Program Code

ANA&DTA-CT

Department

Business and Information Technology

Title

Bus Analytics & Data Sci CT

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/20/20 9:14 pm
siauk: Rollback to Initiator
2. 08/29/20 11:13 am
siauk: Approved for RINFSCTE Chair
3. 08/31/20 11:58 am
Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
4. 08/31/20 12:06 pm
Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair
5. 09/15/20 11:59 am
Marita Tibbetts (tibbettsmg): Approved for Pending CCC Agenda post
6. 10/07/20 10:08 am
Marita Tibbetts (tibbettsmg): Rollback to Initiator

7. 10/19/20 3:47 pm
siauk: Approved for
RINFSCTE Chair
8. 10/19/20 4:22 pm
Marita Tibbetts
(tibbettsmg):
Rollback to Initiator
9. 10/20/20 4:00 pm
siauk: Approved for
RINFSCTE Chair
10. 10/21/20 9:53 am
Marita Tibbetts
(tibbettsmg):
Rollback to Initiator
11. 10/28/20 4:03 pm
siauk: Approved for
RINFSCTE Chair
12. 10/29/20 8:48 am
Marita Tibbetts
(tibbettsmg):
Rollback to Initiator
13. 01/09/21 5:42 pm
siauk: Approved for
RINFSCTE Chair
14. 01/11/21 1:20 pm
Marita Tibbetts
(tibbettsmg):
Approved for CCC
Secretary
15. 01/11/21 2:05 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC
Chair

History

1. Jun 12, 2019 by
[Brittany Parnell](#)
(ershenb)

Business Analytics and Data Science

Data analytics facilitates realization of objectives by identifying trends, creating predictive models for forecasting, and optimizing business processes for enhanced performance. Three main categories of analytics are:

- Descriptive - the use of data to find out what happened in the past.
- Predictive - the use of data to find out what could happen in the future.
- Prescriptive - the use of data to prescribe the best course of action for the future.

Big data is an emerging phenomenon. Computing systems today are generating 15 petabytes of new information every day—eight times more than the combined information in all the libraries in the U.S.; about 80% of the data generated every day is textual and unstructured data.

This graduate certificate is one of three graduate certificates offered by cooperating departments at Missouri S&T to fulfill the needs in the area described as "big data." The other two graduate certificates are:

- Big Data and Security
- Big Data Management and Analytics

Required Core Courses:	
<u>IS&T 5420</u>	Business Analytics and Data Science
<u>IS&T 5450</u>	Course IS&T 5450 Not Found
One course from the following:	
<u>BUS 5730</u>	Machine Learning and Artificial Intelligence for Business
<u>IS&T 5520</u>	Data Science and Machine Learning with Python
<u>ERP 5410</u>	Use of Business Intelligence
<u>COMP SCI 5204</u>	Regression Analysis
<u>COMP SCI 5402</u>	Introduction to Data Mining
<u>COMP SCI 6304</u>	Cloud Computing and Big Data Management
<u>COMP ENG 6330</u>	Clustering Algorithms
<u>STAT 5814</u>	Applied Time Series Analysis
One course from the following:	
<u>IS&T 5445</u>	Course IS&T 5445 Not Found
<u>IS&T 5535</u>	Machine Learning Algorithms and Applications
<u>IS&T 6443</u>	Information Retrieval and Analysis
<u>IS&T 6641</u>	Advanced Digital Commerce and the Internet of Things
<u>IS&T 6444</u>	Essentials of Data Warehouses
<u>IS&T 6448</u>	Building the Data Warehouse
<u>IS&T 6887</u>	Research Methods in Business and IS&T
<u>ERP 5210</u>	Performance Dashboard, Scorecard and Data Visualization
<u>ERP 6610</u>	Advanced Customer Relationship Management in ERP Environment
<u>ERP 6220</u>	Data Modeling & Visualization Prototyping for Enterprise Decision Dashboards
<u>BUS 6425</u>	Supply Chain and Project Management

~~A student admitted to this graduate certificate must complete four courses:-~~

IS&T 5420	Business Analytics and Data Science
IS&T 6450	Information Visualization
One course from the following:	
IS&T 5004	Special Topics (Data Methodologies Using Python)
ERP 5410	Use of Business Intelligence
COMP SCI 5204	Regression Analysis
COMP SCI 5402	Introduction to Data Mining

COMP SCI 6304	Cloud Computing and Big Data Management
COMP ENG 6330	Clustering Algorithms
STAT 5814	Applied Time Series Analysis
One course from the following:	
IS&T 6443	Information Retrieval and Analysis
IS&T 6444	Essentials of Data Warehouses
IS&T 6445	Database Marketing
IS&T 6448	Building the Data Warehouse
IS&T 6887	Research Methods in Business and IS&T
ERP 5210	Performance Dashboard, Scorecard and Data Visualization
ERP 6610	Advanced Customer Relationship Management in ERP Environment
ERP 6220	Data Modeling & Visualization Prototyping for Enterprise Decision Dashboards
BUS 6425	Supply Chain and Project Management

Justification for request

Course number has changed. Added various analytics and business intelligence courses to the mix.

Supporting Documents

[Grad CT Revised.pdf](#)

Course Reviewer Comments

siauk (04/20/20 9:14 pm): Rollback: Is IST 6443 supposed to be in the third block?

tibbettsmg (10/07/20 10:08 am): Rollback: rollback from CCC meeting. also change term to FS21.

tibbettsmg (10/19/20 4:20 pm): changed term to FS21. MT

tibbettsmg (10/19/20 4:22 pm): Rollback: Please attach approval documents and resubmit at the same time as IS&T 4641 CC. MT

tibbettsmg (10/21/20 9:53 am): Rollback: We still need the approval documents.

tibbettsmg (10/29/20 8:48 am): Rollback: approval documents still not provided. mt

tibbettsmg (01/11/21 1:20 pm): IS&T 5450 and 5445 are both now approved courses. mt

Key: 293

Program Change Request

Date Submitted: 01/07/21 1:39 pm

Viewing: **CYBERMG-CT : Cyber Mgmt & Info Assurance CT**

File: 295.2

Last approved: 06/12/19 11:51 am

Last edit: 01/07/21 1:39 pm

Changes proposed by: cecq8z

Catalog Pages Using this Program
[Information Science and Technology](#)

Start Term

Fall **2021** ~~2019~~

Program Code

CYBERMG-CT

Department

Business and Information Technology

Title

Cyber Mgmt & Info Assurance CT

Program Requirements and Description

In Workflow

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

Approval Path

1. 08/29/20 11:15 am
siauk: Approved for RINFSCTE Chair
2. 08/31/20 11:59 am
Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 08/31/20 12:06 pm
Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair
4. 09/15/20 12:03 pm
Marita Tibbetts (tibbettsmg): Approved for Pending CCC Agenda post
5. 10/07/20 10:11 am
Marita Tibbetts (tibbettsmg): Rollback to Initiator
6. 10/19/20 3:53 pm
siauk: Approved for RINFSCTE Chair

- 7. 10/19/20 4:30 pm
Marita Tibbetts
(tibbettsmg):
Rollback to Initiator
- 8. 10/20/20 5:04 pm
siauk: Approved for
RINFSCTE Chair
- 9. 10/21/20 9:52 am
Marita Tibbetts
(tibbettsmg):
Rollback to Initiator
- 10. 10/28/20 4:04 pm
siauk: Approved for
RINFSCTE Chair
- 11. 10/29/20 8:48 am
Marita Tibbetts
(tibbettsmg):
Rollback to Initiator
- 12. 01/09/21 5:42 pm
siauk: Approved for
RINFSCTE Chair
- 13. 01/11/21 1:21 pm
Marita Tibbetts
(tibbettsmg):
Approved for CCC
Secretary
- 14. 01/11/21 2:05 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC
Chair

History

- 1. Jun 12, 2019 by
Brittany Parnell
(ershenb)

Cybersecurity and Information Assurance Management

Cybersecurity is one of the fastest growing employment segments in IT. As technology grows and progresses, with our devices and lives becoming more and more interconnected, the challenges of cybersecurity and information assurance will continue to grow. This presents a career to those with the necessary skills that will be exciting, rewarding, fast-paced, and highly sought after.

A student admitted to this graduate certificate must complete four courses:

Required core courses:	
BUS 5910	Privacy and Information Security Law
IS&T 6780	Adv Human and Organizational Factors in Cybersecurity

Two courses from the following list:

ERP 5240	Enterprise Application Development and Software Security
IS&T 6335	Mobile Technology for Business
IS&T 6336	Foundations of Internet Computing
IS&T 6641	Advanced Digital Commerce and the Internet of Things

Justification for request

Course numbering change. Added course with information assurance component to elective mix.

Supporting Documents

[Grad CT Revised.pdf](#)

Course Reviewer Comments

tibbettsmg (08/31/20 11:52 am): updated term to Sp21-mt

tibbettsmg (10/07/20 10:11 am): Rollback: rollback from CCC meeting. also change term to FS21.

tibbettsmg (10/19/20 4:28 pm): Changed term to FS21. MT

tibbettsmg (10/19/20 4:30 pm): Rollback: 5780 and 5335 are pending FS Approval on 10/22, but you will need to attach approval documents and resubmit with the IST 4641 CC. MT

tibbettsmg (10/21/20 9:52 am): Rollback: We still need the approval documents.

tibbettsmg (10/29/20 8:48 am): Rollback: approval documents still not provided. mt

Key: 295

Program Change Request

Date Submitted: 01/13/21 11:40 am

Viewing: **GEINTEL-CT : Geoanalytics and Geointelligence Certificate**

File: 351.3

Last approved: 07/01/20 1:38 pm

Last edit: 01/13/21 11:40 am

Changes proposed by: sbrower

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

Start Term

Fall **2021** ~~2020~~

Program Code

GEINTEL-CT

Department

Geosciences and Geological and Petroleum Engineering

Title

Geoanalytics and Geointelligence Certificate

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. **Kristy Giacomelli-Feys**

Approval Path

1. 12/11/20 2:44 pm
David Borrok
(borrokd): Approved for RGEOENG Chair
2. 12/14/20 10:36 am
Marita Tibbetts
(tibbettsmg): Approved for CCC Secretary
3. 12/16/20 1:36 pm
Stephen Raper
(sraper): Approved for Engineering DSCC Chair
4. 01/13/21 10:51 am
Marita Tibbetts
(tibbettsmg): Rollback to Initiator
5. 01/13/21 11:54 am
David Borrok
(borrokd): Approved for RGEOENG Chair
6. 01/13/21 11:56 am
Marita Tibbetts
(tibbettsmg):

Approved for CCC
Secretary

7. 01/15/21 10:04 am
Stephen Raper
(sraper): Approved
for Engineering
DSCC Chair

History

1. Jul 1, 2020 by
Sharon Lauck
(laucks)

The graduate certificate in Geoanalytics and Geointelligence is designed to provide formalized education in the areas of geoanalytics, geospatial data analysis, and geointelligence.

The Geoanalytics and Geointelligence Certificate Program is open to all persons holding a B.S., M.S., or Ph.D. degree in Geology, Geophysics, Geological Engineering, Geotechnics, Civil Engineering, or similar programs or who are currently accepted into a graduate degree program in one of these fields at Missouri S&T. Once admitted to the program, the student must take the four designated courses (provided in the curriculum section). In order to receive a Graduate Certificate, the student must have an average cumulative grade point of 3.0 or better in the certificate courses. Once admitted to the program, a student will be given three years to complete the program.

Students admitted to the Geoanalytics and Geointelligence Certificate Program will have non-degree graduate status, however, they will earn graduate credit for the courses they complete. If the student completes the four-course sequence with a grade of B or better in each of the courses taken, they, upon application, will be admitted to their choice of non-thesis M.S. degree programs in either Geological Engineering or Geology and Geophysics. The certificate credits taken by the students admitted to the M.S. degree program will count towards their master's degree. Students who do not have all of the prerequisite courses necessary to begin the courses in the Geoanalytics and Geointelligence Certificate Program will be allowed to take "bridge" courses at either the graduate or undergraduate level to prepare for the formal certificate courses.

Required Course:		
GEO ENG 5144	Remote Sensing Technology	3
Three of the following courses are required:		
POL SCI 4500	Geopolitics and International Security	3
PET ENG 4111	Fundamental Digital Applications In Petroleum Engineering	3
GEO ENG 4115	Statistical Methods in Geology and Engineering ¹	3
or GEO ENG 5315	Advanced Statistical Methods in Geology and Engineering	
GEO ENG 5146	Applications Of Geographic Information Systems	3
GEOPHYS 5261	Computational Geophysics	3
COMP SCI 5402	Introduction to Data Mining ²	3
or COMP SCI 5400	Introduction To Artificial Intelligence	
GEO ENG 5642	Military Geology	3
GEO ENG 6146	Advanced Remote Sensing And Image Processing	3
GEOLOGY 4831	Computational Geology	3

<u>IS&T 5535</u>	Machine Learning Algorithms and Applications	3
<u>SYS ENG 6213</u>	Deep Learning and Advanced Neural Networks	3

1. Only one of the listed courses may count toward completion of this certificate.

2. Only one of the listed courses may count toward completion of this certificate.

Justification for request

1. Modality Change: The Geoanalytics and Geointelligence certificate is offered online and main campus.

2. Course Additions: The purpose of the revision is to add the following two graduate courses to the Geoanalytics and Geointelligence certificate's required course options: IST 5535 "Machine Learning Algorithms and Applications"; Sys Eng 6213 "Deep Learning and Advanced Neural Networks".

Supporting Documents

~~[Approval Ltrs Grad CT in Geoanalytics and Geointelligence.pdf](#)~~

~~[MDHE Approvals DEC 2019.pdf](#)~~

[MS&T PC October 2020 approval doc.pdf](#)

[Geoanalytics & Geintel course adds Provost apprvd JAN 11 2021.pdf](#)

Course Reviewer Comments

tibbettsmg (12/14/20 10:36 am): updated term to FS21. mt

tibbettsmg (01/13/21 10:51 am): Rollback: rollback per request for additional edits. MT

Key: 351

Program Change Request

Date Submitted: 12/11/20 11:27 am

Viewing: **GEOPHY-CT : Geophysics Graduate CT**

File: 347.5

Last approved: 03/04/20 9:09 am

Last edit: 12/14/20 10:38 am

Changes proposed by: sbrower

Catalog Pages Using this Program
[Geology and Geophysics](#)

Start Term

Fall **2021** ~~2020~~

Program Code

GEOPHY-CT

Department

Geosciences and Geological and Petroleum Engineering

Title

Geophysics Graduate CT

Program Requirements and Description

In Workflow

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

Approval Path

1. 12/11/20 12:17 pm
David Borrok
(borrokd): Approved for RGEOENG Chair
2. 12/14/20 10:39 am
Marita Tibbetts
(tibbettsmg): Approved for CCC Secretary
3. 01/10/21 2:02 pm
Katie Shannon
(shannonk): Approved for Sciences DSCC Chair

History

1. Mar 4, 2020 by
Sharon Lauck
(laucks)

The graduate certificate in Geophysics is designed to provide graduate students who want to emphasize this area of research with course guidance and a formal recognition. A certificate in Geophysics will give students an advantage when applying for careers in oil and gas, mining, and other fields.

The Geophysics Certificate Program is open to all persons holding a B.S., M.S., or Ph.D. degree in Geology, Geophysics, Geological Engineering, Petroleum Engineering, or Civil Engineering or are currently accepted into a graduate degree program in one of these fields at Missouri S&T. Once admitted to the program, the student must take the four designated courses (provided in the curriculum section). In order to receive a Graduate Certificate, the student must have an average cumulative grade point of 3.0 or better in the certificate courses. Once admitted to the program, a student will be given three years to complete the program.

Students admitted to the Geophysics Certificate Program will have non-degree graduate status, however, they will earn graduate credit for the courses they complete. If the student completes the four-course sequence with a grade of B or better in each of the courses taken, they, upon application, will be admitted to the non-thesis M.S. degree program in Geology and Geophysics. The certificate credits taken by the students admitted to the M.S. degree program will count towards their master's degree. Students who do not have all of the prerequisite courses necessary to begin the courses in the Geophysics Certificate Program will be allowed to take "bridge" courses at either the graduate or undergraduate level to prepare for the formal certificate courses.

Four of the following courses are required:		
GEOPHYS 4231	Seismic Interpretation	3
GEOPHYS 5096	Global Tectonics	3
GEOPHYS 5202	Exploration and Development Seismology	3
GEOPHYS 5211	Seismic Stratigraphy	3
GEOPHYS 5221	Wave Propagation	3
GEOPHYS 5231	Seismic Data Processing	3
GEOPHYS 5241	Advanced Electrical And Electromagnetic Methods In Geophysical Exp	3
GEOPHYS 5261	Computational Geophysics	3
GEOPHYS 5736	Geophysical Field Methods	3
GEOPHYS 5761	Transportation Applications of Geophysics	3
GEOPHYS 5782	Environmental and Engineering Geophysics	3
GEOPHYS 6211	Advanced Seismic Interpretation	3
GEOPHYS 6231	Advanced Seismic Data Processing	3
GEOPHYS 6241	The Theory of Elastic Waves	3
GEOPHYS 6251	Geophysical Inverse Theory	3
GEO ENG 6782	Surface Waves (MASW) and Ground Penetrating Radar (GPR)	3

Justification for request

The Geophysics certificate will now be offered online and main campus.

Supporting Documents

~~[Graduate Certificate in Geophysics 11-7-2018.pdf](#)~~

~~[MDHE approval.pdf](#)~~

[MS&T PC November 2020.pdf](#)

Course Reviewer Comments

tibbettsmg (12/14/20 10:38 am): updated effective term to FS21. mt

Program Change Request

Date Submitted: 01/07/21 1:40 pm

Viewing: **MGTLEAD-CT : Management and Leadership**

File: 291.5

Last approved: 07/01/20 1:39 pm

Last edit: 01/11/21 1:26 pm

Changes proposed by: cecq8z

Catalog Pages Using this Program
[Business Administration](#)

Start Term

Fall **2021** ~~2020~~

Program Code

MGTLEAD-CT

Department

Business and Information Technology

Title

Management and Leadership

Program Requirements and Description

In Workflow

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

Approval Path

1. 08/29/20 11:28 am
siauk: Approved for RINFSCTE Chair
2. 08/31/20 12:05 pm
Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 08/31/20 12:06 pm
Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair
4. 09/15/20 12:14 pm
Marita Tibbetts (tibbettsmg): Approved for Pending CCC Agenda post
5. 10/07/20 10:12 am
Marita Tibbetts (tibbettsmg): Rollback to Initiator
6. 10/19/20 3:56 pm
siauk: Approved for RINFSCTE Chair

History

1. Jun 12, 2019 by
Brittany Parnell
(ershenb)

2. Jul 1, 2020 by Cecil
Eng Huang Chua
(cchua)

Management and Leadership

This certificate is designed to prepare students to be the leaders of the future, by enabling them to manage through the use of technology. Understanding technology is becoming ever more critical in business as a tool used by efficient and effective managers. These leaders not only understand the managerial process and how to inspire others, but also know how to harness technology to expedite the process. The certificate incorporates management theories, technological savvy, and leadership skills to create a student who is ready for the challenges of a fast paced managerial position.

A student admitted to this graduate certificate must complete four courses:

Required Core Course:	
BUS 6121	Teambuilding and Leadership
Elective courses (choose three):	
BUS 5580	Strategic Management
BUS 5111	Course BUS 5111 Not Found
BUS 5470	Human Resource Management
BUS 6425	Supply Chain and Project Management
BUS 6723	Artificial Intelligence, Robotics, and Information Systems Management
IS&T 6261	Advanced Information Systems Project Management

IS&T 5251	Technological Innovation Management and Leadership
IS&T 5168	Law and Ethics in E-Commerce
MKT 5150	Course MKT 5150 Not Found
ENG MGT 5320	Project Management

Required Core Course: BUS 6121 Team-building and Leadership Elective Courses
 (Choose Three): BUS 5580: Strategic Management IST 5251 Technological Innovation Mgmt and Leadership IST 6261: Advanced Information Systems Project Management IST/PHILOS 5168—Law and Ethics in E-Commerce BUS 6111—Business Negotiations MKT 6150—Advanced Customer Focus and Satisfaction BUS 5470—Human Resource Management EMGT 5320—Project Management BUS 6425—Supply Chain and Project Management BUS 6723—Artificial Intelligence, Robotics, and Information Systems Management

Justification for request

Course renumbering. Expansion of elective offerings.

Supporting Documents

[Grad CT Revised.pdf](#)

Course Reviewer Comments

tibbettsmg (10/07/20 10:12 am): Rollback: rollback from CCC meeting. also change term to FS21.

tibbettsmg (10/20/20 9:01 am): changed term to FS21. MT

tibbettsmg (10/20/20 9:04 am): Rollback: Please attach supporting documents and submit at the same time as Bus 5111 (sitting in Chair workflow) and Mkt 5150. MT

tibbettsmg (01/11/21 1:26 pm): Bus 5111 Mkt 5150 are on the 1/28/21 FS agenda for approval. MT

Key: 291

Program Change Request

Date Submitted: 12/11/20 11:35 am

Viewing: **PET SYS-CT : Petroleum Systems CT**

File: 348.4

Last approved: 03/04/20 9:10 am

Last edit: 12/14/20 10:40 am

Changes proposed by: sbrower

Catalog Pages Using this Program

[Geology and Geophysics](#)

Start Term

Fall **2021** ~~2020~~

Program Code

PET SYS-CT

Department

Geosciences and Geological and Petroleum Engineering

Title

Petroleum Systems CT

Program Requirements and Description

In Workflow

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

Approval Path

1. 12/11/20 12:17 pm
David Borrok
(borrokd): Approved for RGEOENG Chair
2. 12/14/20 10:41 am
Marita Tibbetts
(tibbettsmg): Approved for CCC Secretary
3. 01/10/21 2:13 pm
Katie Shannon
(shannonk): Approved for Sciences DSCC Chair

History

1. Mar 4, 2020 by Sharon Lauck (laucks)

The graduate certificate in Petroleum Systems is designed to provide graduate students in the geosciences, geological engineering, and petroleum engineering with the key interdisciplinary backgrounds they will need to be successful in the oil and gas industry.

The Petroleum Systems Certificate Program is open to all persons holding a B.S., M.S., or Ph.D. degree in Geology, Geophysics, Geological Engineering, or Petroleum Engineering or are currently accepted into a graduate degree program in one of these fields at Missouri S&T. Once admitted to the program, the student must take the four designated courses (provided in the curriculum section). In order to receive a Graduate Certificate, the student must have an average cumulative grade point of 3.0 or better in the certificate courses. Once admitted to the program, a student will be given three years to complete the program.

Students admitted to the Petroleum Systems Certificate Program will have non-degree graduate status, however, they will earn graduate credit for the courses they complete. If the student completes the four-course sequence with a grade of B or better in each of the courses taken, they, upon application, will be admitted to the non-thesis M.S. degree program in Geology and Geophysics. The certificate credits taken by the students admitted to the M.S. degree program will count towards their master's degree. Students who do not have all of the prerequisite courses necessary to begin the courses in the Petroleum Systems Certificate Program will be allowed to take "bridge" courses at either the graduate or undergraduate level to prepare for the formal certificate courses.

Required Courses:		
GEOLOGY 5513	Petroleum Geology	3
One of the following Geophysics courses:		
GEOPHYS 4231	Seismic Interpretation	3
GEOPHYS 5202	Exploration and Development Seismology	3
GEOPHYS 5211	Seismic Stratigraphy	3
GEOPHYS 5231	Seismic Data Processing	3
GEOPHYS 5261	Computational Geophysics	3
One of the following Geology courses:		
GEOLOGY 5311	Depositional Systems	3
GEOLOGY 5511	Applied Petroleum Geology	3
GEOLOGY 5631	Carbonate Petrology	3
GEOLOGY 5661	Advanced Stratigraphy and Basin Evolution	3
GEOLOGY 5671	Clay Mineralogy	3
GEOLOGY 5741	Micropaleontology	3
GEOLOGY 6311	Advanced Structural Geology	3
GEOLOGY 6321	Analytical Structural Geology	3
GEOLOGY 6511	Advanced Petroleum Geology	3
GEOLOGY 6621	Clastic Sedimentary Petrology	3
GEOLOGY 6811	Sedimentary Basin Analysis	3
One of the following Petroleum Engineering courses:		
PET ENG 4111	Fundamental Digital Applications In Petroleum Engineering	3
PET ENG 4210	Drilling and Well Design	3
PET ENG 4311	Reservoir Characterization	3
PET ENG 4590	Petroleum Economics and Asset Valuation	3
PET ENG 4720	Mechanical Earth Modeling	3
PET ENG 6711	Geodynamics	3

Justification for request

The Petroleum Systems certificate will be offered online and main campus.

Supporting Documents

~~Grad Certificate in Petroleum Systems 11-7-2018.pdf~~

~~MDHE approval.pdf~~

MS&T PC November 2020 approval doc.pdf

Course Reviewer Comments

tibbettsmg (12/14/20 10:40 am): updated effective term to FS21. mt

Key: 348

Program Change Request

New Program Proposal

Date Submitted: 12/16/20 10:22 am

Viewing: **PROPOSED : UCT - Medieval and Renaissance Studies**

File: 376

Last edit: 12/16/20 10:22 am

Changes proposed by: dewittp

Start Term

Fall 2021

Program Code

PROPOSED

Department

History and Political Science

Title

UCT - Medieval and Renaissance Studies

Program Requirements and Description

In Workflow

1. RHISTORY 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. Kristy Giacomelli-Feys

Approval Path

1. 12/16/20 10:25 am
Michael Bruening
(bruening):
Approved for
RHISTORY Chair
2. 12/17/20 12:03 pm
Marita Tibbetts
(tibbettsmg):
Approved for CCC
Secretary
3. 12/17/20 12:06 pm
Petra Dewitt
(dewittp): Approved
for Arts &
Humanities DSCC
Chair

Interest among students in the pre-modern era remains strong, but the undergraduate humanities programs at Missouri S&T are oriented chiefly around the modern era. This certificate allows students to learn more about pre-modern history, literature, or philosophy of the period between approximately 500 to 1700 CE. By taking an interdisciplinary approach and combining the faculty who teach pre-modern subject from three departments, this certificate will provide a meaningful academic program for students interested in that era. The developments of these eras were instrumental in shaping the modern world, from the emergence of representative government and the middle class to religious toleration and secular literature, theater, and art.

Take FOUR courses from at least TWO different disciplines		
HISTORY 3130	Medieval History I	3
HISTORY 3135	Medieval History II	3
HISTORY 3140	History Of Renaissance Thought	3
HISTORY 3150	Tudor and Stuart England	3
HISTORY 3534	Course HISTORY 3534 Not Found	
HISTORY 4145	The Reformation	3
ENGLISH 1211	British Literature I: The Beginnings To 1800	3
ENGLISH 3210	Survey Of Old And Middle English Literature	3
ENGLISH 3211	Chaucer	3
ENGLISH 3212	Sixteenth Century English Literature	3
ENGLISH 3213	Seventeenth Century English Literature	3
ENGLISH 3214	The Plays Of William Shakespeare	3
ENGLISH 3234	Myth & Folklore	3
PHILOS 3302	Medieval Philosophy	3
MUSIC 3251	History and Analysis of Music I	3

Justification for request

Students at Missouri S&T are very interested in pre-modern history but existing undergraduate programs focus primarily on the modern era and students have limited options if they wish to study pre-modern history, literature, and philosophy. This certificate offers an interdisciplinary approach by combining faculty who teach pre-modern subject matter from three different departments. This certificate will also advance Missouri S&T's core value of inclusion by enabling students to be better able to respond to white nationalists and others who has misappropriated the period in recent years in pursuit of their exclusionary agendas.

Supporting Documents

[MST PC October 2020.pdf](#)

[ProposalMedievalRenaissanceStudies.pdf](#)

Course Reviewer Comments

Key: 376

Program Change Request

New Program Proposal

Date Submitted: 12/16/20 10:16 am

Viewing: **PROPOSED : UCT - Science, Technology, and Society**

File: 375

Last edit: 12/16/20 10:16 am

Changes proposed by: dewittp

Start Term

Fall 2021

Program Code

PROPOSED

Department

History and Political Science

Title

UCT - Science, Technology, and Society

Program Requirements and Description

In Workflow

1. RHISTORY 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. Kristy Giacomelli-Feys

Approval Path

1. 12/16/20 10:25 am
Michael Bruening
(bruening):
Approved for
RHISTORY Chair
2. 12/17/20 12:03 pm
Marita Tibbetts
(tibbettsmg):
Approved for CCC
Secretary
3. 12/17/20 12:06 pm
Petra Dewitt
(dewittp): Approved
for Arts &
Humanities DSCC
Chair

The undergraduate certificate in Science, Technology, and Science (STS) is designed to provide students with background in the understanding of the field of science, technology, and society. Students who complete this certificate will understand more fully how integrated the perspectives of humanities and the social sciences are in shaping the technological world. Students will learn the valuable quality of knowing how their work is shaped by, and in turn shapes, social values and contexts in an increasingly interconnected world.

REQUIREMENTS:

Required Course		
HISTORY 4580	Course HISTORY 4580 Not Found	
or PHIL 4580	Course PHIL 4580 Not Found	
3 credit hours from		
HISTORY 2510	History of Technology	3
HISTORY 3530	History of Science	3
POL SCI 4320	Course POL SCI 4320 Not Found	
6 credit hours from (as approved by certificate advisor)		
BIO SCI 1163	Biotechnology in Film	3
BIO SCI 2263	Ecology	3
BIO SCI 2372	Issues in Public Health	3
ECON 4540	Energy Economics	3
ECON 4820	Labor Economics	3
ENGLISH 2243	Science Fiction	3
ENG MGT 4330	Human Factors	3
or PSYCH 4710	Human Factors	
ENV ENG 5640	Environmental Law And Regulations	3
GEO ENG 1175	Geological Engineering in Popular Media	3
HISTORY 2510	History of Technology	3
HISTORY 3510	Twentieth Century Technology And Society	3
HISTORY 3530	History of Science	3
HISTORY 3443	The American Military Experience	3
HISTORY 4470	American Environmental History	3
HISTORY 4550	Architecture, Technology and Society; 1750 to Present	3
HISTORY 4551	Chicago: Architecture, Technology, Culture	3
IS&T 5885	Human-Computer Interaction	3
PHILOS 3223	Bioethics	3
PHILOS 3225	Engineering Ethics	3
PHILOS 4320	Minds And Machines	3
PHILOS 4345	Philosophy Of Science	3
PHILOS 4350	Environmental Ethics	3
POL SCI 3300	Principles Of Public Policy	3
POL SCI 4320	Course POL SCI 4320 Not Found	
PSYCH 4602	Organizational Psychology	3
PSYCH 4700	Industrial Psychology	3
PSYCH 4720	Psychology of Social Technology	3
TCH COM 3570	Writing in the Sciences	3
TCH COM 5610	History of Technical Communication	3

Justification for request

This certificate introduces students to the theory and practices of STS and offers an interdisciplinary approach to exploring the connections between science, engineering, and the human experience.

Supporting Documents

[MST PC November 2020.pdf](#)

[Proposal_Science Technology and Soceity.pdf](#)

Course Reviewer Comments

Key: 375

Course Change Request

New Experimental Course Proposal

Date Submitted: 12/10/20 11:35 am

Viewing: **CIV ENG 5001.006 : Geotechnical In-Situ Soil Testing**

File: 4766

Last edit: 12/10/20 1:08 pm

Changes proposed by: seelyj

Requested	Summer 2021
Effective Change Date	
Department	Civil, Architectural, and Environmental Engineering
Discipline	Civil Engineering (CIV ENG)
Course Number	5001
Topic ID	006
Experimental Title	Geotechnical In-Situ Soil Testing
Experimental Abbreviated Course Title	Geo InSit Soil
Instructors	Kevin McLain

Experimental Catalog Description

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

- Approval Path
- 1. 12/10/20 12:18 pm
Joel Burken (burken):
Approved for RCIVILEN Chair
 - 2. 12/10/20 1:08 pm
Marita Tibbetts (tibbettsmg):
Approved for CCC Secretary
 - 3. 12/11/20 10:01 am
Stephen Raper (sraper):

Approved for
Engineering DSCC
Chair

Lectures topics will focus on fundamental soil science and relation to in-situ testing to assess soil properties as related to geotechnical engineering for infrastructure.

Lecture material will relate the soil properties to a breadth of field testing approaches and methods to assess data collection, data assessment and interpretation, and impacts to design.

Prerequisites

Civ Eng 3715 or Graduate standing.

Field Trip

Statement

Field trips to deep soil site that are assisted by professionals in the field of in-situ testing methods development and application. Students will interact with technical staff.

Credit Hours

LEC: 2

LAB: 1

IND: 0

RSD: 0

Total: 3

Justification for

new course:

This course will cover soil exploration methods where the soil is tested in-place by instruments and/or equipment that are placed in a borehole or penetrate the ground. The course will also examine the use of direct measurement and empirical correlations from in-situ testing.

Semester(s)

previously taught

0

Co-Listed

Courses:

ENV ENG 5001 - Special Topics

Course Reviewer

Comments

[Preview Bridge](#)

Course Change Request

New Experimental Course Proposal

Date Submitted: 01/12/21 11:12 pm

Viewing: **COMP SCI 5001.013 : Theory of Reinforcement Learning**

File: 4768

Last edit: 01/13/21 3:58 pm

Changes proposed by: zhupe

Requested Fall 2021

Effective Change
Date

Department Computer Science

Discipline Computer Science (COMP SCI)

Course Number 5001

Topic ID 013

Experimental
Title

Theory of Reinforcement Learning

Experimental Reinforcement Learning

Abbreviated

Course Title

Instructors Ardhendu Tripathy

Experimental
Catalog
Description

In Workflow

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

Approval Path

1. 01/13/21 3:54 pm
Samuel Frimpong (frimpong):
Approved for RCOMPSCI Chair
2. 01/13/21 3:59 pm
Marita Tibbetts (tibbettsmg):
Approved for CCC Secretary
3. 01/15/21 10:04 am
Stephen Raper (sraper):
Approved for

This course introduces the fundamentals of Reinforcement Learning (RL) theory from a Machine Learning perspective. Iterative algorithms to solve problems in RL will be described. Exploration strategies based on Upper Confidence Bounds and Monte Carlo sampling will be discussed. Sample complexity of algorithms will be theoretically analyzed and quantified.

Prerequisites

A grade of "C" or better in both Comp Sci 1575 and Math 3108, and in one of Stat 3113, Stat 3115, Stat 3117, or Stat 5643.

Field Trip Statement

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

Justification for new course:

The theory of Reinforcement Learning (RL) has seen renewed research interest, partly because of their recent impressive successes. This has brought new perspectives into the field. Currently the Computer Science department doesn't have a RL course offered regularly. This course will be a first step for graduate students wanting to do RL research, or apply RL algorithms in their area of research. It will also be a natural elective course for students wanting to learn more in Machine Learning. Interest from students in other departments such as Electrical and Computer Engineering, Information Science & Technology, Mathematics and Statistics, and others is expected.

Semester(s) previously taught

Co-Listed Courses:

Course Reviewer
Comments

Key: 4768

[Preview Bridge](#)

CCC INFORMATION	Department submission to Registrar <i>Fridays</i>	DSCC submission to Registrar <i>Fridays</i>	CCC Meeting <i>Thursdays</i>	Faculty Senate Meeting <i>Thursdays</i>
EC forms for Fall 2020	July 10, 2020	July 24, 2020	August 12, 2020	September 10, 2020
Affecting CC forms for Spring 2021	August 21, 2020	September 4, 2020	October 7, 2020	October 22, 2020
Non-affecting CC forms for Spring 2021	September 18, 2020	October 2, 2020	October 28, 2020	November 19, 2020
EC forms for Spring 2021	November 06, 2020	November 20, 2020	December 16, 2020	January 28, 2021
Affecting CC forms for Summer 2021 & Fall 2021	January 4, 2021	January 15, 2021	February 10, 2021 March 3* (if needed) March 4	February 25, 2021 March 18, 2021
Non-affecting CC forms for Summer 2021	March 5, 2021	March 19, 2021	April 14, 2021 April 15, 2021	April 29, 2021
EC forms for Summer 2020	April 2, 2021	April 16, 2021	May 5, 2021 May 6, 2021	June 10, 2021
DC forms & Non-affecting CC forms for Fall 2021	April 2, 2021	April 16, 2021	May 5, 2021 May 6, 2021	June 10, 2021
EC forms for Fall 2021				TBD

Official dates for Spring 2021 CCC meetings will be determined at a later date.

CCC INFORMATION	Department submission to Registrar <i>Fridays</i>	DSCC submission to Registrar <i>Fridays</i>	CCC Meeting <i>Tuesdays</i>	Faculty Senate Meeting <i>Thursdays</i>
EC forms for Fall 2020	July 10, 2020	July 24, 2020	August 12, 2020	September 10, 2020
Affecting CC forms for Spring 2021	August 21, 2020	September 4, 2020	October 7, 2020	October 22, 2020
Non-affecting CC forms for Spring 2021	September 18, 2020	October 2, 2020	October 28, 2020	November 19, 2020
EC forms for Spring 2021	November 06, 2020	November 20, 2020	December 16, 2020	January 28, 2021
Affecting CC forms for Summer 2021 & Fall 2021	January 4, 2021	January 15, 2021	February 10, 2021 March 3* (if needed) March 2	February 25, 2021 March 18, 2021
Non-affecting CC forms for Summer 2021	March 5, 2021	March 19, 2021	April 14, 2021 April 13, 2021	April 29, 2021
EC forms for Summer 2020	April 2, 2021	April 16, 2021	May 5, 2021 May 4, 2021	June 10, 2021
DC forms & Non-affecting CC forms for Fall 2021	April 2, 2021	April 16, 2021	May 5, 2021 May 4, 2021	June 10, 2021
EC forms for Fall 2021				TBD

Official dates for Spring 2021 CCC meetings will be determined at a later date.