Campus Curricula Committee Meeting Agenda
May 4, 2021
8:00am - 9:15am, Zoom
(For Faculty Senate Meeting of June 10, 2021)

Review of submitted Course Change forms:

File: 1018.6 CHEM 5810 : Introduction to Polymeric Materials
File: 466.8 CHEM ENG 4301 : Chemical Process Materials
File: 60.1 CHEM ENG 4311 : Professional Practice And Ethics
File: 4800 COMP SCI 5408 : Game Theory for Computing
File: 1237.4 ELEC ENG 5430 : Wireless Networks
File: 4801 ENGLISH 2232 : Comics and Graphic Novels
File: 1944.8 MIN ENG 4096 : Computer Aided Mine Design
File: 754.1 MIN ENG 5822 : Strata Control
File: 1120.1 MIN ENG 6133 : Mine Atmospheric Control II
File: 2176.1 MIN ENG 6735 : Sustainability In Mining
File: 4315.3 MIN ENG 6912 : Advanced Simulation of Mining Systems
File: 1501.1 MIN ENG 6936 : Surface Mine Design
File: 2371.6 NUC ENG 4496 : Nuclear System Design I

Review of submitted Program Change forms:

File: 146.27 BIO SC-BA : Biological Sciences BA
File: 148.42 BUS&MS-BS : Business and Mgmt Systems BS
File: 255.22 BUSAPPS-MI : Business Applications and Software Development Minor
File: 14.16 CH ENG-MS : Chemical Engineering MS
File: 15.12 CH ENG-PHD : Chemical Engineering PhD
File: 16.34 CHEM-BS : Chemistry BS
File: 24.2 COMM ST-MI : Communication Studies Minor
File: 247.22 CYBERMG-MI : Cybersecurity Management and Information Assurance Minor
File: 40.8 E&S COM-MI : Elect & Social Commerce Minor
File: 38.30 ECON-BA : Economics BA
File: 39.20 ECON-BS : Economics BS
File: 47.4 ENG MG-PHD : Engineering Management PhD
File: 374.8 ENGL TC-BS : English & Technical Communication BS
File: 50.8 ENTPRNS-MI : Entrepreneurship Minor
File: 256.9 FIN TCH-MI : Minor in Financial Technology, Analytics and Transformation
File: 259.6 GAME-MI : Game Studies (Minor)
File: 156.48 GE ENG-BS : Geological Engineering BS

File: 64.52 GL&GPH-BS : Geology and Geophysics BS
File: 166.25 GL&GPH-MS : Geology and Geophysics MS
File: 271.8 GL&GPH-PHD : Geology and Geophysics PhD
File: 235.7 HUM ENG-MI : Humanitarian Engineering and Science Minor
File: 75.32 IST-BS : Information Science and Tch BS
File: 77.2 L COMM-MI : Leadership Communication Minor
File: 138.13 MGMT-MI : Management Minor
File: 101.7 MOBLB&T-MI : Mobile Bus & Digital Transformation
File: 104.18 NU ENG-BS : Nuclear Engineering BS
File: 108.45 PE ENG-BS : Petroleum Engineering BS
File: 171.8 PE ENG-MS : Petroleum Engineering MS
File: 115.41 PHYSIC-BS : Physics BS
File: 344 PROPOSED : Education BS
File: 345 PROPOSED : Water Science and Engineering
File: 258.3 SOC MED-MI : Minor in Social Media in Industry
File: 133.13 TCH CM-MIG : Technical Communication Minor
File: 135.18 TCH COM-MS : Technical Communication MS

Review of submitted Certificate forms:
File: 296.2 DIGITMD-CT : Digital Media & Web Design CT
File: 298.10 E&S COM-CT : Elec & Social Commerce CT
File: 300.2 HCI-CT : Human Computer Interaction CT
File: 302.12 MOBLB&T-CT : Mobile Business and Digital Transformation CT
File: 303.2 TCH COM-CT : Technical Communication CT

Review of submitted Experimental Course forms:
File: 4803 GEO ENG 5001.006 : Remote Sensing Methods in Hydrology
File: 4802 MIN ENG 5001.001 : Simulation of Mining Systems

Informational Only Change forms, Governance approval not required:
File: 253.16 AI-MI : Minor in Artificial Intelligence and Machine Learning in Business
File: 295.19 CYBERMG-CT : Cyber Mgmt & Info Assurance CT
File: 73.12 IS&T-MS : Info Science & Tech MS
File: 81.18 MARKET-MI : Marketing Minor

Course Change Request

Date Submitted: 03/17/21 11:19 am

Viewing: **CHEM 5810 : Introduction to Polymeric Materials**

File: 1018.6

Last approved: 03/06/17 3:15 am

Last edit: 03/31/21 9:41 am

Changes proposed by: luksc

Requested Effective Change Date	**Fall 2021** ~~08/14/2017~~
Department	Chemistry
Discipline	Chemistry (CHEM)
Course Number	5810
Title	Introduction to Polymeric Materials
Abbreviated Course Title	Intro to Polymeric Materials

Catalog Description

In Workflow

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

Approval Path

1. 03/31/21 9:02 am Rainer Glaser (GlaserR): Approved for RCHEMIST Chair
2. 03/31/21 9:41 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary

3. 04/07/21 1:09 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair

History

1. Mar 6, 2017 by tschuman (1018.1)

A basic study of the organic chemistry of natural and synthetic high polymers, their inherent properties and their uses in plastic, fiber, rubber, resin, food, paper and soap industries. Credit may not be given for both Chem 5810 and Chem 4810.

Prerequisites

Chem 1320 or Met Eng 1210.

Field Trip Statement

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

Justification for change:

We want to add ChemEng 5810 as a co-listed course. I'm not sure how to do that. Do I need to do it as a new course or just add it in with Course Not Found or both? I took a stab at it.

Semesters previously offered as an experimental course

Co-Listed Courses:

MS&E 5810 - Introduction to Polymeric Materials

CHEM ENG 5810 - **Course Not Found**

Course Reviewer Comments

Key: 1018

Preview Bridge

Course Change Request

Date Submitted: 03/30/21 11:19 am

Viewing: **CHEM ENG 4301 ~~2300~~ : Chemical Process Materials**

File: 466.8

Last approved: 06/25/18 3:38 am

Last edit: 03/30/21 12:26 pm

Changes proposed by: luksc

Requested Effective Change Date	Spring **2022** ~~2019~~
Department	Chemical and Biochemical Engineering
Discipline	Chemical Engineering (CHEM ENG)
Course Number	**4301** ~~2300~~
Title	Chemical Process Materials
Abbreviated Course Title	Materials

Catalog Description

In Workflow

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

Approval Path

1. 03/30/21 12:23 pm
   Hu Yang (huyang): Approved for RCHEMENG Chair
2. 03/30/21 12:26 pm
   Marita Tibbetts (tibbettsmg):

Approved for CCC Secretary
3. 04/09/21 12:58 pm
Stephen Raper (sraper):
Approved for Engineering DSCC Chair

History

1. May 4, 2015 by luksc (466.1)
2. Jun 25, 2018 by forcinit (466.4)

Seminar to highlight the classification, properties, selection, and processing of engineering materials that may include polymers, electronic materials, biomaterials, and nanomaterials. Students will research related topics for presentation and discussion.

Prerequisites
Physics 1135.

Field Trip Statement

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

Justification for change:

The department plans to move this course to being required in the senior year with more advanced topics relating to the senior design courses. We will sign substitution waivers for current students to credit this appropriately.

Semesters previously offered as an experimental course

Co-Listed Courses:

Course Reviewer Comments

Key: 466

Preview Bridge

Course Change Request

Date Submitted: 03/30/21 11:24 am

Viewing: **CHEM ENG 4311 ~~2310~~ : Professional Practice And Ethics**

File: 60.1

Last edit: 04/09/21 12:56 pm

Changes proposed by: luksc

Requested Effective Change Date	**Spring 2022** ~~08/14/2018~~
Department	Chemical and Biochemical Engineering
Discipline	Chemical Engineering (CHEM ENG)
Course Number	**4311** ~~2310~~
Title	Professional Practice And Ethics
Abbreviated Course Title	Practice And Ethics

Catalog Description

In Workflow

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

Approval Path

1. 03/30/21 12:23 pm
   Hu Yang (huyang): Approved for RCHEMENG Chair
2. 03/30/21 12:29 pm
   Marita Tibbetts (tibbettsmg):

Approved for CCC Secretary
3. 04/09/21 12:56 pm
Stephen Raper (sraper):
Approved for Engineering DSCC Chair

Preparation for post-graduate activities including resume writing and job searching. Professional attitudes, practice, licensure, and ethics in the chemical engineering profession. Discussions led by visiting industrialists and other invited speakers. Discussion of professional development including professional and graduate programs. Generally offered **fall.** ~~fall semester only.~~

Prerequisites

Senior standing. ~~At least sophomore standing.~~

Field Trip Statement

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

Justification for change:

We wish to move this course to the senior year, closer to the time students take the FE exam. Our students have been performing poorly on this section of the FE exam.

Semesters previously offered as an

experimental
course

Co-Listed
Courses:

Course Reviewer
Comments

sraper (04/05/21 12:40 pm): Changed elective for major to "yes"

sraper (04/09/21 12:56 pm): changed to required for majors, but we should check at CCC.

Key: 60

Preview Bridge

Course Change Request

New Course Proposal

Date Submitted: 03/26/21 10:48 am

Viewing: **COMP SCI 5408 : Game Theory for Computing**

File: 4800

Last edit: 03/29/21 2:43 pm

Changes proposed by: zhupe

Requested Effective Change Date	Fall 2021
Department	Computer Science
Discipline	Computer Science (COMP SCI)
Course Number	5408
Title	Game Theory for Computing
Abbreviated Course Title	Game Theory for CS

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

Approval Path

1. 03/26/21 11:25 am
   Samuel Frimpong (frimpong): Approved for RCOMPSCI Chair
2. 03/29/21 2:43 pm
   Marita Tibbetts (tibbettsmg):

Approved for CCC Secretary
3. 04/09/21 12:58 pm
Stephen Raper (sraper): Approved for Engineering DSCC Chair

This course introduces the mathematical and computational foundations of game theory, and its applications to computer science (e.g., cybersecurity, robotics and networking). Topics include decision rationality, game representations, equilibrium concepts (e.g., Nash equilibrium), Bayesian games, dynamic games, cooperative game theory, and mechanism design.

Prerequisites

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

Field Trip Statement

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

Justification for new course:

This course is relevant to the research performed by several faculty in our department and campus. Furthermore, it has been taught twice as an experimental course (CS 5001), and attracted both undergraduate and graduate student attention.

Semesters previously offered as an experimental course

This course is offered as an experimental course in FS2019 and FS2020.
FS2019 (enrollment: 27), FS2020 (enrollment: 24)

Co-Listed Courses:

Course Reviewer Comments

tibbettsmg (03/29/21 2:43 pm): enrollment confirmed;FS2019 (enrollment: 27), FS2020 (enrollment: 24) mt

Key: 4800

Preview Bridge

Course Change Request

Date Submitted: 04/01/21 8:15 pm

Viewing: **ELEC ENG 5430 : Wireless Networks**

File: 1237.4

Last approved: 10/23/17 3:28 am

Last edit: 04/02/21 9:41 am

Changes proposed by: stanleyj

Other Courses referencing this course

In The Catalog Description:

COMP ENG 5430 : Wireless Networks

SYS ENG 5323 : Wireless Networks

Requested Effective Change Date	**Spring 2022** ~~01/09/2018~~
Department	Electrical and Computer Engineering
Discipline	Electrical Engineering (ELEC ENG)
Course Number	5430
Title	Wireless Networks
Abbreviated Course Title	Wireless Networks

Catalog Description

In Workflow

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

Approval Path

1. 04/01/21 9:44 pm Watkins (watkins): Approved for RELECENG Chair
2. 04/02/21 9:41 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary

3. 04/09/21 12:59 pm
Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. Oct 23, 2017 by martins (1237.1)

Introduction to wireless communications and networking. Topics include transmission fundamentals, wireless channel, coding techniques and error control, satellite and cellular networks, cordless systems, mobile IP and management, multiple access techniques and wireless protocols, wireless LAN, IEEE 802.11, and adhoc and sensor networks.

Prerequisites

~~Elec Eng 3430 or~~ Comp Eng 3150.

Field Trip Statement

Credit Hours Total: 3	LEC: 2	LAB: 1	IND: 0	RSD: 0
Required for Majors	No			
Elective for Majors	Yes			

Justification for change:

In CourseLeaf when searching for Comp Eng 5430, Comp Eng 5430 is found but Elec Eng 5430 opened when trying to edit Comp Eng 5430.

Elec Eng 3420 is no longer offered and is not listed in the Undergraduate Catalog, so Elec Eng 3420 needs to be removed as a prerequisite. Comp Eng 3150 is the only prerequisite.

Semesters previously offered as an experimental course

Co-Listed Courses:

COMP ENG 5430 - Wireless Networks

SYS ENG 5323 - Wireless Networks

Course Reviewer Comments

tibbettsmg (04/02/21 6:20 am): updated eff term to Sp22. mt

tibbettsmg (04/02/21 9:41 am): also approved my EMSE chair; Dr. Long via 4/2/21 email. MT

Key: 1237

Preview Bridge

Course Change Request

New Course Proposal

Date Submitted: 03/30/21 1:28 pm

Viewing: **ENGLISH 2232 : Comics and Graphic Novels**

File: 4801

Last edit: 03/30/21 3:38 pm

Changes proposed by: kswenson

Programs referencing this course

GAME-MI: Game Studies (Minor)

Requested Effective Change Date	Fall 2021
Department	English and Technical Communication
Discipline	English (ENGLISH)
Course Number	2232
Title	Comics and Graphic Novels
Abbreviated Course Title	Comics and Graphic Novel

Catalog Description

In Workflow

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

Approval Path

1. 03/30/21 3:17 pm Kristine Swenson (kswenson): Approved for RENGLISH Chair
2. 03/30/21 3:33 pm Marita Tibbetts (tibbettsmg):

Approved for CCC Secretary
3. 03/30/21 3:38 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

Comics and graphic novels represent not only a distinct narrative form, but are also important cultural objects which engages complex questions of identity and culture. This class studies comics and the graphic novel as literature and as a popular art form.

Prerequisites
English 1120.

Field Trip Statement
n/a

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

Justification for new course:
This is a popular course that is part of the Game Studies Minor

Semesters previously offered as an experimental course
SP17, SP20

Co-Listed
Courses:

Course Reviewer
Comments

tibbettsmg (03/30/21 3:32 pm): can skip the EC process since part of the new proposed Game Studies minor. MT

dewittp (03/30/21 3:38 pm): updated Elective for Major

Key: 4801

Preview Bridge

Course Change Request

Date Submitted: 04/05/21 2:34 pm

Viewing: **MIN ENG 4096 : Computer Aided Mine Design**

File: 1944.8

Last approved: 06/26/17 3:15 am

Last edit: 04/09/21 1:57 pm

Changes proposed by: caseysc

Programs referencing this course

MI ENG-BS: Mining Engineering BS

Other Courses referencing this course

In The Prerequisites:

MIN ENG 4097 : Capstone Design Project

Requested Effective Change Date	**Spring 2022** ~~08/14/2017~~
Department	Mining & Nuclear Engineering
Discipline	Mining Engineering (MIN ENG)
Course Number	4096
Title	Computer Aided Mine Design

In Workflow

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

Approval Path

1. 04/09/21 12:53 pm
   Kwame Awuah-Offei (kwamea): Approved for MINEXP ENG Chair
2. 04/09/21 1:57 pm
   Marita Tibbetts

Abbreviated Course Title	Comp Aid Mine Design

(tibbettsmg): Approved for CCC Secretary
3. 04/16/21 10:46 am Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. May 2, 2014 by lahne (1944.1)
2. Feb 9, 2015 by cifarellit (1944.3)
3. Jun 26, 2017 by cifarellit (1944.6)

Catalog Description

Mine planning and design using commercial software. Orebody description. Surface mining: geometric design, pit limits, and production planning. Underground mining: development planning, opening and support design, ventilation and production planning. Group projects with real-world mining data. Preparation for capstone design project.

Prerequisites

Min Eng **5522,** ~~4522,~~ Min Eng **5932,** ~~4932,~~ and Min Eng **5933.** ~~4933.~~

Field Trip Statement

Credit Hours Total: 3	LEC: 0	LAB: 3	IND: 0	RSD: 0
Required for Majors	Yes			

Elective for Majors	No

Justification for change:

Changed prerequisites to match course catalog numbers that are currently offered.

Semesters previously offered as an experimental course

Co-Listed Courses:

Course Reviewer Comments

tibbettsmg (04/09/21 1:57 pm): updated term to Sp22. Updated prereq courses are required in BS plan prior to taking 4096. MT

Key: 1944

Preview Bridge

Course Change Request

Date Submitted: 04/05/21 2:35 pm

Viewing: **MIN ENG 5822 : Strata Control**

File: 754.1

Last edit: 04/09/21 2:07 pm

Changes proposed by: caseysc

Programs referencing this course

GE ENG-BS: Geological Engineering BS

Requested Effective Change Date	**Spring 2022** ~~08/01/2014~~
Department	Mining & Nuclear Engineering
Discipline	Mining Engineering (MIN ENG)
Course Number	5822
Title	Strata Control
Abbreviated Course Title	Strata Control

Catalog Description

In Workflow

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

Approval Path

1. 04/09/21 12:53 pm
   Kwame Awuah-Offei (kwamea): Approved for MINEXP ENG Chair
2. 04/09/21 2:08 pm
   Marita Tibbetts

(tibbettsmg): Approved for CCC Secretary

3. 04/16/21 10:46 am
   Stephen Raper (sraper): Approved for Engineering DSCC Chair

A detailed review of artificial ground support, both above and below ground, including slope stabilization techniques and shaft and tunnel liner design. The use of shotcrete, roofbolts, and solid liners and the principles of underground longwall and room and pillar mine support. Longwall and hydraulic mining practice is covered.

Prerequisites

Min Eng **5823.** ~~4823.~~

Field Trip Statement

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

Justification for change:

Changed prerequisite to match course catalog numbers that are currently offered.

Semesters previously offered as an

experimental
course

Co-Listed
Courses:

Course Reviewer
Comments

tibbettsmg (04/09/21 2:07 pm): updated eff. term to Sp22. mt

Key: 754

Preview Bridge

Course Change Request

Date Submitted: 04/05/21 2:39 pm

Viewing: **MIN ENG 6133 : Mine Atmospheric Control II**

File: 1120.1

Last edit: 04/09/21 2:08 pm

Changes proposed by: caseysc

Requested Effective Change Date	**Spring 2022** ~~08/01/2014~~
Department	Mining & Nuclear Engineering
Discipline	Mining Engineering (MIN ENG)
Course Number	6133
Title	Mine Atmospheric Control II
Abbreviated Course Title	Mine Atmospheric Ctrl II

Catalog Description

In Workflow

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

Approval Path

1. 04/09/21 12:53 pm
   Kwame Awuah-Offei (kwamea): Approved for MINEXP ENG Chair
2. 04/09/21 2:09 pm
   Marita Tibbetts

(tibbettsmg): Approved for CCC Secretary

3. 04/16/21 10:46 am
   Stephen Raper (sraper): Approved for Engineering DSCC Chair

Climatic measurements and temperature precalculations, emergency plans for fan failures and mine fires, mine air contaminants, mine noises, mine dust, refrigeration and cooling plant layout, radiation control.

Prerequisites

Min Eng **5113.** ~~4113.~~

Field Trip Statement

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

Justification for change:

Changed prerequisite to match course catalog numbers that are currently offered.

Semesters previously offered as an experimental course

Co-Listed
Courses:

Course Reviewer
Comments

tibbettsmg (04/09/21 2:08 pm): updated term to Sp22. mt

Key: 1120

Preview Bridge

Course Change Request

Date Submitted: 04/05/21 2:40 pm

Viewing: **MIN ENG 6735 : Sustainability In Mining**

File: 2176.1

Last edit: 04/09/21 2:18 pm

Changes proposed by: caseysc

Programs referencing this course

MGTSUSB-CT: Mgt for Sustainable Business

MINEREC-CT: Mine Reclamation CT

SUSMINE-CT: Sustainability in Mining CT

Requested Effective Change Date	**Spring 2022** ~~08/01/2014~~
Department	Mining & Nuclear Engineering
Discipline	Mining Engineering (MIN ENG)
Course Number	6735
Title	Sustainability In Mining
Abbreviated Course Title	Sustainability In Mining

Catalog Description

In Workflow

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

Approval Path

1. 04/09/21 12:53 pm
   Kwame Awuah-Offei (kwamea): Approved for MINEXP ENG Chair
2. 04/09/21 2:18 pm
   Marita Tibbetts

(tibbettsmg): Approved for CCC Secretary

3. 04/16/21 10:46 am
   Stephen Raper (sraper): Approved for Engineering DSCC Chair

Sustainability defined: social, economic and environmental impacts. Mining as sustainable development interventions. Mine planning for sustainability, sustainability assessment and reporting, sustainable mine closure and post-mining land use. Case studies.

Prerequisites

Min Eng **5742.** ~~4742.~~

Field Trip Statement

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

Justification for change:

Changed prerequisite to match course catalog numbers that are currently offered.

Semesters previously offered as an

experimental
course

Co-Listed
Courses:

Course Reviewer
Comments
tibbettsmg (04/09/21 2:18 pm): updated term to Sp22. mt

Key: 2176

Preview Bridge

Course Change Request

Date Submitted: 04/01/21 2:07 pm

Viewing: **MIN ENG 6912 : Advanced Simulation of Mining Systems**

File: 4315.3

Last approved: 10/21/16 3:03 pm

Last edit: 04/09/21 12:58 pm

Changes proposed by: kabp3

Programs referencing this course	MINEPRO-CT: Mining Project Evaluation CT
Requested Effective Change Date	**Fall 2021** ~~08/14/2018~~
Department	Mining & Nuclear Engineering
Discipline	Mining Engineering (MIN ENG)
Course Number	6912
Title	**Advanced** Simulation of Mining Systems
Abbreviated Course Title	Sim Mining Sys
Catalog Description	

In Workflow

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

Approval Path

1. 04/01/21 5:50 pm Kwame Awuah-Offei (kwamea): Approved for MINEXP ENG Chair
2. 04/02/21 6:07 am Marita Tibbetts (tibbettsmg):

Approved for CCC Secretary
3. 04/09/21 12:58 pm
Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. Oct 21, 2016 by Kwame Awuah-Offei (kwamea)

Stochastic, discrete and discrete-continuous, Monte Carlo simulation. ~~Overview of stochasticsimulation.~~Model formulation using general purpose **discrete-event** ~~process~~ simulation software. Model verification and validation. Simulation experimentation.

Prerequisites

Stat 5643 ~~Graduate standing~~ or **graduate standing.** ~~Stat 5643.~~

Field Trip Statement

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

Justification for change:

This change allows Mining & Explosives Engineering to have advanced 6000-level course for graduate students.

Semesters previously offered as an experimental course

FS2011, FS2013

Co-Listed Courses:

Course Reviewer Comments

sraper (04/05/21 12:41 pm): Changed Elective for majors to no as it is a 6000 level course

sraper (04/09/21 12:58 pm): tried to reword justification as it used to say 5000 level.

Key: 4315

Preview Bridge

Course Change Request

Date Submitted: 04/09/21 12:57 pm

Viewing: **MIN ENG 6936 : Surface Mine Design**

File: 1501.1

Last edit: 04/09/21 2:19 pm

Changes proposed by: caseysc

Programs referencing this course

MINEPRO-CT: Mining Project Evaluation CT

Requested Effective Change Date	**Spring 2022** ~~08/01/2014~~
Department	Mining & Nuclear Engineering
Discipline	Mining Engineering (MIN ENG)
Course Number	6936
Title	Surface Mine Design
Abbreviated Course Title	Surface Mine Design

Catalog Description

In Workflow

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

Approval Path

1. 04/09/21 12:54 pm
   Kwame Awuah-Offei (kwamea): Rollback to Initiator
2. 04/09/21 12:57 pm
   Kwame Awuah-

Offei (kwamea): Approved for MINEXP ENG Chair
3. 04/09/21 2:19 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
4. 04/16/21 10:46 am Stephen Raper (sraper): Approved for Engineering DSCC Chair

This course will focus on the determinants of surface mine design, geomechanical and geometrical mine design for open pit and strip mining; mine layouts optimization; mine environmental systems; and research directions in surface mine design and optimization.

Prerequisites

Min Eng **5933** ~~4933~~ or **graduate standing.** ~~equivalent.~~

Field Trip Statement

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

Justification for change:

Changed prerequisite to match course catalog numbers that are currently offered.

Semesters previously offered as an experimental course

Co-Listed Courses:

Course Reviewer Comments

kabp3 (04/09/21 12:54 pm): Rollback: Steve, make the prereq on this Min Eng 5933 or graduate standing. Because some grad students take it who have not taken surface mining in their undergraduate.

tibbettsmg (04/09/21 2:19 pm): updated term to Sp22. mt

Key: 1501

Preview Bridge

Course Change Request

Date Submitted: 03/17/21 3:09 pm

Viewing: **NUC ENG 4496 : Nuclear System Design I**

File: 2371.6

Last approved: 02/08/21 6:01 am

Last edit: 04/07/21 1:18 pm

Changes proposed by: schlegelj

Catalog Pages referencing this course

Nuclear Engineering

Programs referencing this course

NU ENG-BS: Nuclear Engineering BS

Other Courses referencing this course

In The Prerequisites:

NUC ENG 4497 : Nuclear System Design II

Requested Effective Change Date	**Spring 2022** ~~Fall 2021~~
Department	Mining & Nuclear Engineering

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. 04/06/21 2:03 pm AYODEJI Alajo (alajoa): Approved for NUC ENG Chair
2. 04/07/21 1:18 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary

Discipline	Nuclear Engineering (NUC ENG)
Course Number	4496
Title	Nuclear System Design I
Abbreviated Course Title	Nuclear System Design I

3. 04/16/21 10:46 am
   Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. Jun 26, 2017 by castanoc (2371.1)
2. Feb 8, 2021 by schlegelj (2371.4)

Catalog Description

A preliminary design of a nuclear system (e.g. a fission or fusion nuclear reactor plant, a space power system, a radioactive waste disposal system).

Prerequisites

Nuc Eng 3223, Nuc Eng 4203; preceded or accompanied by Nuc Eng 4241.

Field Trip Statement

Credit Hours Total: **2** ~~1~~	LEC: **1** ~~0~~	LAB: 1	IND: 0	RSD: 0
Required for Majors	Yes			
Elective for Majors	No			

Justification for change:

Increased credit hours to more accurately reflect updated course content and workload.

Semesters previously offered as an experimental course

Co-Listed Courses:

Course Reviewer Comments

tibbettsmg (04/07/21 1:18 pm): updated effective term to Sp22. MT

Key: 2371

Preview Bridge

Program Change Request

Date Submitted: 03/31/21 1:51 pm

Viewing: BIO SC-BA : Biological Sciences BA

File: 146.27

Last approved: 02/03/21 10:51 am

Last edit: 04/01/21 11:07 am

Changes proposed by: shannonk

Catalog Pages Using this Program
Biological Sciences

Start Term
Fall 2021
Program Code
BIO SC-BA
Department
Biological Sciences
Title
Biological Sciences BA

Program Requirements and Description

In Workflow

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

Approval Path

1. 03/31/21 4:20 pm David Duvernell (duvernelld): Approved for RBIOLSCI Chair
2. 04/01/21 11:08 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/07/21 1:08 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair

History

1. Aug 1, 2014 by Katie Shannon (shannonk)
2. Jul 14, 2015 by pantaleoa
3. Oct 7, 2016 by Katie Shannon (shannonk)

4. Jun 28, 2017 by Katie Shannon (shannonk)
5. Nov 14, 2017 by Katie Shannon (shannonk)
6. Jun 18, 2018 by Katie Shannon (shannonk)
7. Jul 1, 2020 by Katie Shannon (shannonk)
8. Feb 3, 2021 by Katie Shannon (shannonk)

Bachelor of Arts Biological Sciences Degree Requirements

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

Core Courses		
BIO SCI 1201	Biological Sciences Freshman Seminar	1
BIO SCI 1113	General Biology	3
or BIO SCI 1213	Principles of Biology	
BIO SCI 1219	General Biology Lab	1
BIO SCI 1223	Biodiversity	3
BIO SCI 1229	Biodiversity Lab	1
BIO SCI 2213	Cell Biology	3
BIO SCI 2219	Cell Biology Laboratory	1
BIO SCI 2223	General Genetics	3
BIO SCI 2263	Ecology	3
BIO SCI 3233	Evolution	3
BIO SCI 4010	Seminar	1
Advanced courses, 2000 level or higher (at least one with laboratory and one 3000 or 4000 level)		9
Chemistry		
CHEM 1310 & CHEM 1319 & CHEM 1320 & CHEM 1100	General Chemistry I and General Chemistry Laboratory and General Chemistry II and Introduction To Laboratory Safety & Hazardous Materials	9
CHEM 2210 & CHEM 2220	Organic Chemistry I and Organic Chemistry II	6

Mathematics & Physical Science		
Various courses in mathematics, physics, and/or geology chosen in consultation with academic advisor. (Note: Proficiency in College Algebra must be demonstrated by a grade of "C" or better in a College Algebra course or by examination)		9
Computer Science/Statistics (Select one of the following:)		3-4
COMP SCI 1570 & COMP SCI 1580	Introduction To C++ Programming and Introduction To Programming Laboratory	
or COMP SCI 1971 & COMP SCI 1981	Introduction To Programming Methodology and Programming Methodology Laboratory	
STAT 3111	Statistical Tools For Decision Making	
STAT 3425	Introduction to Biostatistics	4
General Requirements for BA		
English Composition		6
ENGLISH 1120	Exposition And Argumentation	
One additional composition course		
Western Civilizations		6
HISTORY 1100	Early Western Civilization	
HISTORY 1200	Modern Western Civilization	
Foreign Language (three semesters of a foreign language)		12
Humanities (including one class in each of literature, philosophy, and fine arts)		12
Social Sciences (including classes in two of the following three subjects: economics, political science, psychology)		12

Elective credits: In consultation with his or her advisor, each student will elect sufficient additional courses to complete a minimum of 120 credit hours.

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

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

CHEM 2219 & CHEM 2229	Organic Chemistry I Lab and Organic Chemistry II Lab	2
2 semesters of Physics and labs:		8-10
PHYSICS 1145	College Physics I	
or PHYSICS 1135	Engineering Physics I	
PHYSICS 2145	College Physics II	
or PHYSICS 2135	Engineering Physics II	

The following classes are highly recommended:

BIO SCI 3333	Human Anatomy and Physiology I	3
BIO SCI 3339	Human Anatomy Physiology I Lab	1

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

Bachelor of Arts
Biological Sciences
Secondary Education Emphasis Area
Degree Requirements

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

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

In order to successfully complete this emphasis area, students must ~~maintain a cumulative GPA of at least 2.75, and~~ attain at least a 3.0 GPA average for all biology courses and professional education **courses required by the Missouri Department of Elementary and Secondary Education for teacher certification.** ~~courses. Current Missouri S&T or transfer students who wish to pursue this emphasis area must meet both these GPA requirements to be accepted into theprogram.~~Students must also meet all requirements listed under the teacher education **website including passing the state-required assessments.**

~~program in this catalog.~~

~~Students who do not meet all the teacher certification requirements will not be eligible for the secondary education emphasis area, even if they have completed all required coursework.~~A degree in this emphasis area requires 131 credit hours. The required courses are provided below. A minimum grade of “C” is required by the department in all biological sciences courses counted toward this degree.

Humanities: 18 semester hours		
ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
or ENGLISH 3560	Technical Writing	
SP&M S 1185	Principles Of Speech	3
At least one course in each of the following: Literature, Philosophy and Fine Arts		9
Social Sciences: 15 semester hours		
HISTORY 3530	History of Science	3
HISTORY 1100	Early Western Civilization	3
HISTORY 1200	Modern Western Civilization	3
POL SCI 1200	American Government	3
PSYCH 1101	General Psychology	3
Mathematics/Physical Science: 9 semester hours		
MATH 1103	Fundamentals Of Algebra	3
PHYSICS 1145	College Physics I	3
or PHYSICS 1505	Introductory Astronomy	
GEOLOGY 1110	Physical And Environmental Geology	3
Computer Science/Statistics: 3 semester hours		

3 semester hours of Computer Science or Statistics		3
Chemistry: 17 semester hours		
CHEM 1310 & CHEM 1319 & CHEM 1320 & CHEM 1100	General Chemistry I and General Chemistry Laboratory and General Chemistry II and Introduction To Laboratory Safety & Hazardous Materials	9
CHEM 2210 & CHEM 2220	Organic Chemistry I and Organic Chemistry II	6
Biological Sciences: 27 semester hours		
BIO SCI 1201	Biological Sciences Freshman Seminar	1
BIO SCI 1213	Principles of Biology	3
or BIO SCI 1113	General Biology	
BIO SCI 1219	General Biology Lab	1
BIO SCI 1223 & BIO SCI 1229	Biodiversity and Biodiversity Lab	4
BIO SCI 1173	Introduction to Environmental Sciences	3
BIO SCI 2213 & BIO SCI 2219	Cell Biology and Cell Biology Laboratory	4
BIO SCI 2223	General Genetics	3
BIO SCI 2263	Ecology	3
BIO SCI 3233	Evolution	3
BIO SCI 4010	Seminar	1
Education: 42 semester hours		
EDUC 1040	Perspectives In Education	2
EDUC 1104	Teacher Field Experience I	1
EDUC 1164	Teacher Field Experience II	2
EDUC 1174	School Organization and Administration For Teachers	2
EDUC 2310	**Education Of The Exceptional Child**	**3**
EDUC 3216	Instructional Literacy in the Content Area	3
EDUC 3280	Instructional Strategies in the Content Area	3
EDUC 3298	**Course EDUC 3298 Not Found**	**1**
EDUC 3340	**Assessment of Student Learning**	**3**
EDUC 4298	Student Teaching Seminar	1
EDUC 4299	Student Teaching	12
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
PSYCH 2300/EDUC 2102	Educational Psychology	3
PSYCH 3310	Developmental Psychology	3
~~PSYCH 4310~~	~~Psychology Of The Exceptional Child~~	~~3~~

Justification for request

Supporting Documents

Course Reviewer Comments

tibbettsmg (04/01/21 11:07 am): updated course list formatting. mt

Key: 146

Program Change Request

Date Submitted: 03/30/21 7:08 am

Viewing: BUS&MS-BS : Business and Mgmt Systems BS

File: 148.42

Last approved: 11/02/18 11:29 am

Last edit: 03/31/21 12:00 pm

Changes proposed by: cecq8z

Catalog Pages Using this Program
Business and Management Systems

Start Term
Fall **2021** ~~2019~~
Program Code
BUS&MS-BS
Department
Business and Information Technology
Title
Business and Mgmt Systems BS

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. 03/30/21 11:20 pm siauk: Approved for RINFSCTE Chair
2. 03/31/21 12:00 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Aug 5, 2014 by Barry Flachsbart (barryf)
2. Jan 30, 2015 by Barry Flachsbart (barryf)
3. Jun 17, 2015 by pantaleoa
4. Jul 14, 2015 by pantaleoa

5. Mar 7, 2016 by Barry Flachsbart (barryf)
6. Nov 2, 2018 by Barry Flachsbart (barryf)

Bachelor of Science
Business and Management Systems

In Business and Management Systems, the Bachelor of Science degree consists of 120 credit hours. All undergraduate students in Business and Management Systems are required to complete a General Education Requirements Core, including courses in Humanities, Social Sciences, Mathematics, Science, and Communication Skills.

A common departmental core of courses in Management and Information Technology helps provide students with skills to succeed in a fast-changing and globalized environment. Business Core courses and Business Electives provide students with comprehensive knowledge in business disciplines.

A minimum grade of "C" is required in the Business Core, Business Electives, Management, and Information Technology courses. Students have 9 credit hours for free electives.

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
PSYCH 1101	3	~~MATH 1140~~	~~3~~
BUS 1810[1]	1	IS&T 1750	3
BUS 1110	3	**3 credit hours of Mathematical Science or Science[4]**	**3**
ENGLISH 1120	3	ENGLISH 1600 or TCH COM 1600	3
~~Science Elective[3]~~	~~3~~	ECON 1200	3
~~Laboratory w/ Science Elective[3]~~	~~1~~	Science Elective[3]	3
4 credit hours of Mathematical Science or Science[4]	**4**		
	14		15
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
BUS 1210	3	FINANCE 2150	3
MATH 1212	4	IS&T 1552	3
IS&T 1551	3	ERP 2110	3
ECON 1100	3	POL SCI 1200	3
SP&M S 1185	3	History Elective	3
	16		15
Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**

MKT 3110	3	BUS 5580	3
IS&T 4654	3	ENGLISH 2560 or TCH COM 2560	3
STAT 3111	3	BUS 3220	3
Business Elective	3	Business Electives	6
Free Elective	3		
	15		15
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
BUS 2910	3	BUS 5980[1]	3
BUS 5360	3	~~BUS 4111~~	~~3~~
MKT 5310	3	**BUS 5111**	**3**
Business Elective	3	Business Elective	3
Free Elective	3	Fine Art, Social Science, or Humanities Elective[2]	3
		Free Elective	3
	15		15
Total Credits: 120			

A grade of "C" or better is required in the following courses for graduation: IS&T 1551, IS&T 1552,IS&T 1750, IS&T 4654, ERP 2110, FIN 2150, MKT 3110, MKT 5310, ECON 1100, ECON 1200, BUS 1110, **BUS 1210, FIN** ~~BUS 1210,BUS~~ 2150 , BUS 2910 , BUS **3220,** ~~3220, BUS 4675, BUS 5360, BUS 5580,~~ BUS **5111, ,BUS 5360, BUS 5580, BUS** 5980, and all Business Electives.

1	Writing intensive course
2	Any course in the following areas not used for other degree requirements: Art, economics, English, foreign language, history, literature, music, philosophy, political science, psychology, sociology, theater.
3	Any course in the following areas: Biology, Chemistry, Geology, Geological Engineering, Physics.
4	**Mathematical Science is any MATH, STAT, COMPSCI or IST course not otherwise covered in the degree program** **For definition of science, refer to footnote 3.**

Areas of Concentration

All students are required to complete twelve credit hours chosen from 2000, 3000, 4000, or 5000-level courses in business, economics, finance, enterprise resource planning, information science & technology, or marketing. A "C" or better grade is required in all twelve credit hours. If the student chooses to designate an area of concentration for these courses, focusing at least 3 courses (9 credits) in one area, he or she may do so. Students are not required to choose a concentration area. Areas of concentration are:

E-Commerce

IS&T 5652	Advanced Web Development	3
IS&T 4641	Digital Commerce and IoT Analytics	3
IS&T 4642	E-Commerce Architecture	3
IS&T 4257	Network Economy	3
IS&T 5168	Law and Ethics in E-Commerce	3

Enterprise Resource Planning

Any 9 hours of ERP-designated courses at the 4000-level or above.	

Finance

FINANCE 5160	Corporate Finance II	3
FINANCE 5260	Investments I	3
~~ECON 4720~~	~~International Finance~~	~~3~~
~~Any other finance course at the 3000-level or above.~~		
FINANCE 5310	**Financial Technology and Analytics**	**3**
BUS 5230	**Financial Statement Analysis**	**3**

ECON 4410, and ECON 5337 cannot be used toward this concentration.

Human-Computer Interaction

IS&T 5652	Advanced Web Development	3
IS&T 5885	Human-Computer Interaction and User Experience	3
IS&T 5886	Prototyping Human-Computer Interactions	3
IS&T 5887	Human-Computer Interaction Evaluation	3

Management

BUS 5470	Human Resource Management	3
~~BUS 4111~~	~~Course BUS 4111 Not Found~~	~~3~~
BUS 5111	**Business Negotiations**	**3**
IS&T 5251	Management and Leadership of Technological Innovation	3

Marketing

MKT 3210	Consumer Behavior	3
~~MKT 4150~~	~~Course MKT 4150 Not Found~~	~~3~~
MKT 4580	Marketing Strategy	3
ERP 4610	Customer Relationship Management in ERP Environment	3
MKT 5150	**Customer Focus and Satisfaction**	**3**
MKT 5320	Marketing for Non-Profits	3

Bachelor of Science

Business and Management Systems

Secondary Education Emphasis Area

Degree Requirements

You may earn a B.S. degree in business and management systems from Missouri S&T and certification to teach at the secondary level in the schools of Missouri with this emphasis area. This program can be completed in four academic years and field experiences are arranged with public schools within 30 miles of the Rolla campus.

Students interested in this emphasis area should consult with the advisor for business and management systems education majors in the business and management systems department.

In order to successfully complete this emphasis area, students must maintain a cumulative GPA of at least 2.75, and attain at least a 3.0 GPA average for all business content and professional education courses required by the Missouri Department of Elementary and Secondary Education for teacher certification. Current Missouri S&T or transfer students who wish to pursue this emphasis area must meet both these GPA requirements to be accepted into the program. Students must also meet all requirements listed under the teacher education program in this catalog. Students who do not meet all the teacher certification requirements will not be eligible for the secondary education emphasis area, even if they have completed all required course work.

A degree in this emphasis area requires ~~134 to~~ 136 credit **hours.** ~~hours (the variance depends on the mathematics courses taken).~~ The required courses are listed below. A minimum grade of "C" is required by the department in all courses designated BUS, MKT, FINANCE, IS&T, ECON, or ERP that are counted toward this degree.

General Education

PSYCH 1101	General Psychology	3
PSYCH 2300	Educational Psychology	3
PSYCH 3310	Developmental Psychology	3
Science Elective [1]		3
~~Science Laboratory [1]~~		~~1~~
Mathematical Science or Science [2]		**7**
Fine Art, Social Science or Humanities Elective [3]		3
History Elective		3
ECON 1100	Principles Of Microeconomics	3
ECON 1200	Principles Of Macroeconomics	3
POL SCI 1200	American Government	3
~~MATH 1140~~	~~College Algebra~~	~~3-5~~
~~or MATH 1120~~	~~College Algebra~~	
MATH 1212	Survey of Calculus	4
STAT 3111	Statistical Tools For Decision Making	3
ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1600	Introduction to Technical Communication	3
IS&T 4654	Introduction to Web Design and Digital Media Studies	3

1	Any course in the following areas: Biology, Chemistry, Geology, Geological Engineering, Physics
2	Mathematical Science is any MATH, STAT, COMPSCI or IST course not otherwise covered in the degree program For definition of science, refer to footnote 1.
3	**Any course in the following areas not used for other degree requirements: Art, Economics, English, Foreign Language, History, Literature, Music, Philosophy, Political Science, Psychology, Sociology, Theater**

Common Core Courses and Management

IS&T 1750	Introduction to Management Information Systems	3
IS&T 1551	Implementing Information Systems: User Perspective	3

IS&T 1552	Implementing Information Systems: Data Perspective	3
ERP 2110	Introduction to Enterprise Resource Planning	3
BUS 1210	Financial Accounting	3
FINANCE 2150	Corporate Finance I	3
MKT 3110	Marketing	3
BUS 1110	Introduction to Management and Entrepreneurship	3
BUS 5980	Business Models for Entrepreneurship and Innovation	3
BUS 2910	Business Law	3
BUS 3220	Managerial Accounting	3
BUS 5360	Business Operations	3
BUS 5580	Strategic Management	3
MKT 5310	Digital Marketing and Promotions	3
~~BUS 4111~~	~~Course BUS 4111 Not Found~~	~~3~~
BUS 3115	Introduction to Teambuilding and Leadership	3
BUS 5111	**Business Negotiations**	**3**

Education

EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
EDUC 2310	**Education Of The Exceptional Child**	**3**
EDUC 3216	Instructional Literacy in the Content Area	3
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
EDUC 3280	Instructional Strategies in the Content Area	3
EDUC 3290	Coordination of Cooperative Education	3
EDUC 4298	Student Teaching Seminar	1
~~EDUC 4310~~	~~Course EDUC 4310 Not Found~~	~~3~~
EDUC 1104	Teacher Field Experience I	1
EDUC 1164	Teacher Field Experience II	2
EDUC 4299	Student Teaching	12

Justification for request

Corrections based on Course Not Found Error

Revised Math and Science based on changes to Math curriculum

Supporting Documents

Course Reviewer Comments

tibbettsmg (03/31/21 12:00 pm): updated credit hours for Educ 3280 and Educ 1104 per email from Dr. Chua. mt

Key: 148

Program Change Request

Date Submitted: 03/30/21 7:12 am

Viewing: BUSAPPS-MI : Business Applications and Software Development Minor

File: 255.22

Last approved: 02/03/21 10:51 am

Last edit: 03/30/21 7:12 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Business and Management Systems
Information Science and Technology

Start Term
Fall 2021
Program Code
BUSAPPS-MI
Department
Business and Information Technology
Title
Business Applications and Software Development Minor

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. 03/30/21 11:20 pm siauk: Approved for RINFSCTE Chair
2. 03/31/21 11:58 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Mar 21, 2018 by Barry Flachsbart (barryf)
2. Apr 19, 2018 by Brittany Parnell (ershenb)
3. Apr 19, 2018 by Brittany Parnell (ershenb)

4. May 2, 2019 by Zou Cui (tracyzou)
5. Feb 3, 2021 by Cecil Eng Huang Chua (cchua)

Minor in Business Applications and Software Development

The Minor requires 15 credit hours, as follows:

Required Courses:		6
IS&T 3420	Introduction to Data Science and Management	
~~IS&T 4680~~	~~Course IS&T 4680 Not Found~~	
IS&T 5680	**Digital Media Development and Interactive Design**	

And three courses from the following list:		9
IS&T 1552	Implementing Information Systems: Data Perspective	
or IS&T 1562	Java and Data Structures	
IS&T 3131	Computing Internals and Operating Systems	
IS&T 3423	Database Management	
IS&T 3443	Database Applications in Business	
ERP 5240	Enterprise Application Development and Software Security	
IS&T 5520	Data Science and Machine Learning with Python	

Justification for request
Reconcile issues in catalog
Supporting Documents
Course Reviewer Comments

Key: 255

Program Change Request

Date Submitted: 04/01/21 11:26 am

Viewing: CH ENG-MS : Chemical Engineering MS

File: 14.16

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

Last edit: 04/09/21 12:48 pm

Changes proposed by: jcwang

Catalog Pages Using this Program
Chemical & Biochemical Engineering

Start Term
Fall **2021** ~~2020~~
Program Code
CH ENG-MS
Department
Chemical and Biochemical Engineering
Title
Chemical Engineering MS

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/01/21 11:30 am Hu Yang (huyang): Approved for RCHEMENG Chair
2. 04/01/21 11:46 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/09/21 12:49 pm Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. Aug 4, 2014 by pantaleoa
2. Oct 7, 2016 by Daniel Forciniti (forcinit)
3. Feb 28, 2018 by Crystal Wilson (wilsoncry)
4. Jun 18, 2018 by marlene

5. Jul 1, 2020 by Christi Luks (luksc)

The departmental core courses for the graduate program are CHEM ENG 5100, CHEM ENG 5110, CHEM ENG 5150 and CHEM ENG 5220. All students, except for those in their first semester and in their last semester **as** ~~for~~ PhD **students,** ~~candidates,~~ need to register for 1 credit hour **of CHEM ENG 6015** ~~of CHEM ENG 6015~~ Lecture **Series every semester.** ~~Series.~~ Lecture Series can be used for a total of 3 hours towards **graduate students'** ~~the students~~ 6000 level **course requirements.** ~~requirement.~~

The master of science thesis program consists of a minimum of 30 semester hours, including **12** ~~18-24~~ hours **from the departmental graduate core course requirement plus 6-12 hours** of **additional coursework. A M.S.** ~~coursework, in which CHEM ENG 5100, CHEM ENG 5110, CHEM ENG 5150 and CHEM ENG 5220 are required. In addition, a~~ thesis from research ~~that is equivalent to 6-12 credit hours in the major area~~ must **also** be prepared and **defended, which shall include 6-12 credit hours of CHEM ENG 6099.** ~~defended.~~

A master of science non-thesis program consists of 30 semester hours of coursework, including **12** ~~CHEM ENG 5100, CHEM ENG 5150, CHEM ENG 5110, CHEM ENG 5220 and a minimum of 24~~ hours **from** ~~of coursework within~~ the **departmental graduate core course requirement plus 12 hours of additional coursework within the** department. The program of study must include **a minimum of 9** ~~nine~~ credit hours **of 6000-level courses in or out of the department, of which up to three can come from CHEM ENG 6015 .** ~~of 6000 level courses.~~

Justification for request

To clarify repetitions and confusions due to accumulation of updates in recent years

Supporting Documents

Course Reviewer Comments

sraper (04/09/21 12:48 pm): edits suggested by committee and approved by Jee C Wang.

Key: 14

Program Change Request

Date Submitted: 04/01/21 11:34 am

Viewing: CH ENG-PHD : Chemical Engineering PhD

File: 15.12

Last approved: 07/23/15 8:49 am

Last edit: 04/09/21 12:54 pm

Changes proposed by: jcwang

Catalog Pages Using this Program
Chemical & Biochemical Engineering

Start Term
Fall 2021 ~~08/17/2015~~
Program Code
CH ENG-PHD
Department
Chemical and Biochemical Engineering
Title
Chemical Engineering PhD

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/01/21 12:03 pm Hu Yang (huyang): Approved for RCHEMENG Chair
2. 04/01/21 1:06 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/09/21 12:54 pm Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. Jul 22, 2015 by kleb6b
2. Jul 23, 2015 by pantaleoa

A candidate for the Ph.D. degree normally follows a program of 72 semester hours beyond the **B.S.** ~~BS degree or 42 semester hours beyond the MS degree.~~ **degree or 42 semester hours beyond the M.S. degree.** Research for M.S. and Ph.D. may be coordinated, or a

Ph.D. may be pursued without an M.S. ~~degree.~~**degree.** The Ph.D. ~~degree with an additional 6 credit hours of 6000-level coursework must satisfy the departmental core course requirements for the~~M.S.coursework **must satisfy the departmental graduate core course requirement and must include CHEM ENG 6100, CHEM ENG 6110, and at least 6 additional hours of 6000-level courses in or out ~~for a minimum~~** of **the department for a minimum of twelve ~~12,~~** 6000-level credit hours. **To maintain PhD candidacy, a minimum GPA of 3.0 from 5000- and 6000-level courses on campus is required.**

In addition to ~~coursework must satisfy~~ the ~~departmental core~~ course requirements, all Ph.D. ~~requirements for the M.S. In addition to these course requirements, a candidate must prepare and defend a dissertation based on analytical and/or experimentalresearch.AllPh.D.~~students must pass the qualifying **exam, ~~exam~~** which consists of written and oral assignments specified by the department. ~~At least three members of the advisory committee have to be ChEfaculty.~~The comprehensive examination, consisting of ~~a~~ written and oral presentation of a research proposal, should be **taken ~~taken in the semester~~** following the completion of **all required coursework ~~their course work~~** and **at least 12 weeks ~~no later than six months~~** prior to the final examination. The final examination, consisting of the dissertation **defense based on PhD research, should be ~~defense, is~~** conducted according to the rules of the graduate faculty, College of Engineering and Computing, and the **department. A PhD candidate, in consultation with the candidates research advisor, should form an advisory committee for comprehensive exam and dissertation defense. ~~department.~~ The advisory committee is chaired by ~~At least three members of~~ the research advisor and must include at least three CHEM ENG faculty members. ~~advisory committee have to be ChE faculty.~~**

Justification for request

Updating the catalog information to clarify confusions and incorporate newly approved changes related to the Chemical Engineering PhD program.

Supporting Documents

Course Reviewer Comments

kleb6b (04/08/16 6:46 am): Update effective term

kleb6b (04/08/16 8:12 am): Rollback: Rollback

tibbettsmg (04/01/21 1:06 pm): updated formatting. MT

sraper (04/09/21 12:54 pm): edits suggested by committee and approved by Jee Wang.

Key: 15

Program Change Request

Date Submitted: 04/01/21 1:22 pm

Viewing: CHEM-BS : Chemistry BS

File: 16.34

Last approved: 09/02/20 2:03 pm

Last edit: 04/07/21 1:30 pm

Changes proposed by: tschuman

Catalog Pages Using this Program
Chemistry

Start Term
Fall **2021** ~~2020~~
Program Code
CHEM-BS
Department
Chemistry
Title
Chemistry BS

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/06/21 4:23 pm Rainer Glaser (GlaserR): Approved for RCHEMIST Chair
2. 04/07/21 1:30 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/16/21 4:05 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair

History

1. Apr 28, 2014 by Thomas Schuman (tschuman)
2. Jun 19, 2015 by woelk (woelkk)
3. Jun 28, 2017 by Thomas Schuman (tschuman)

4. May 3, 2018 by Thomas Schuman (tschuman)
5. Dec 3, 2019 by Thomas Schuman (tschuman)
6. Sep 2, 2020 by Crystal Wilson (wilsoncry)

Bachelor of Science
Chemistry

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

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

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	CHEM 1510	2
CHEM 1100	1	MATH 1215	4
CHEM 1110	1	Electives	6
MATH 1214 or 1210 ***and*** 1211	4		
ENGLISH 1120	3		
HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3		
	17		15
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 2210	3	CHEM 2220	3
CHEM 2219	1	CHEM 2229	1
MATH 2222	4	CHEM 3410	3
PHYSICS 1135	4	PHYSICS 2135	4
Electives	4	Select one of the following sequences:	3
		COMP SCI 1972 & COMP SCI 1982	
		IS&T 1561 or COMP SCI 1500	
		COMP SCI 1971 & COMP SCI 1981	

	16		14
Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 2310	3	CHEM 2319	1
CHEM 2510	4	CHEM 2320	3
CHEM 3430	3	CHEM 3420	3
STAT 3113 or 3115	3	CHEM 3459	2
ENGLISH 1160 or 3560	3	Electives	6
	16		15
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 3510	4	CHEM 4010 or 4099	1
CHEM 4010 or 4099	1	CHEM 4297	3
CHEM 4610	3	Electives	12
CHEM 4810	3		
Electives	7		
	18		16
Total Credits: 127			

Notes:

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

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

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

~~humanities.~~

~~Three (3) of the humanities hours must be literature.~~ Chemistry Biochemistry Emphasis Area

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	CHEM 1510	2
CHEM 1100	1	MATH 1215	4
CHEM 1110	1	BIO SCI 2213	3
ENGLISH 1120	3	BIO SCI 2219	1
MATH 1214 or 1210 ***and*** 1211	4	Electives	3
HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3		
	17		16

Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 2210	3	CHEM 2220	3
CHEM 2219	1	CHEM 2229	1
MATH 2222	4	CHEM 3410	3
PHYSICS 1135	4	PHYSICS 2135	4
Electives	4	Select one of the following sequences:	3
		COMP SCI 1972 & COMP SCI 1982	
		IS&T 1561 or COMP SCI 1500	
		COMP SCI 1971 & COMP SCI 1981	
	16		14
Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 2310	3	CHEM 2319	1
CHEM 3430	3	CHEM 2320	3
CHEM 4610	3	CHEM 2510	4
CHEM 4619	2	CHEM 3420	3
STAT 3113 or 3115	3	CHEM 3459	2
ENGLISH 1160 or 3560	3	CHEM 4620	3
	17		16
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 3510	4	CHEM 4010 or 4099	1
CHEM 4010 or 4099	1	CHEM 4297	3
CHEM 4810	3	Electives	12
CHEM 4630	3		
Electives	4		
	15		16
Total Credits: 127			

Notes:

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

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

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

~~humanities.~~

~~Three (3) of the humanities hours must be literature.~~ Polymer & Coatings Science Emphasis Area

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	CHEM 1510	2
CHEM 1100	1	MATH 1215	4
CHEM 1110	1	Electives	6
MATH 1214 or 1210 ***and*** 1211	4		
ENGLISH 1120	3		
HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3		
	17		15
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 2210	3	CHEM 2220	3
CHEM 2219	1	CHEM 2229	1
MATH 2222	4	**CHEM 2319**	**1**
PHYSICS 1135	4	CHEM 3410	3
~~Electives~~	~~4~~	PHYSICS 2135	4
CHEM 2310	**3**	Select one of the following sequences:	3
		COMP SCI 1972 & COMP SCI 1982	
		IS&T 1561 or COMP SCI 1500	
		COMP SCI 1971 & COMP SCI 1981	
	15		15
Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 2510	4	**CHEM 2320**	**3**
CHEM 3430	3	CHEM 3420	3
CHEM 4810	3	CHEM 3459	2
STAT 3113 or 3115	3	CHEM 4099	1
ENGLISH 1160 or 3560	3	CHEM 4819	1
		CHEM 4850	3
		Elective	3
	16		16
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
~~CHEM 2310~~	~~3~~	~~CHEM 2319~~	~~1~~

CHEM 3510	4	~~CHEM 2320~~	~~3~~
CHEM 4610	3	CHEM 4297	3
PHYSICS 4523	3	**CHEM 4099**	**1**
CHEM 4099	**1**	Electives	12
Electives	6		
	17		16
Total Credits: 127			

Notes:

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

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

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

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

~~humanities.~~

~~Three (3) of the humanities hours must beliterature.~~Pre-medicine Emphasis Area

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	CHEM 1510	2
CHEM 1100	1	MATH 1215	4
CHEM 1110	1	BIO SCI 1113	3
MATH 1214 or 1210 ***and*** 1211	4	BIO SCI 1219	1
HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3	ENGLISH 1120	3
	14		16
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 2210	3	CHEM 2220	3
CHEM 2219	1	CHEM 2229	1
MATH 2222	4	CHEM 3410	3
PHYSICS 1135	4	PHYSICS 2135	4
BIO SCI 2213	3	Select one of the following sequences:	3
BIO SCI 2219	1	COMP SCI 1972 & COMP SCI 1982	
		IS&T 1561 or COMP SCI 1500	
		COMP SCI 1971 & COMP SCI 1981	
	16		14

Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 3430	3	CHEM 2510	4
CHEM 4610	3	CHEM 3420	3
CHEM 4619	2	CHEM 4620	3
CHEM 4010 or 4099	1	STAT 3113 or 3115	3
BIO SCI 3333	3	BIO SCI 3343	3
BIO SCI 3339	1	BIO SCI 3349	1
ENGLISH 1160 or 3560	3		
	16		17
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 2310	3	CHEM 2319	1
CHEM 3510	4	CHEM 2320	3
CHEM 3459	2	**CHEM 4099**	**1**
CHEM 4010 or 4099	1	CHEM 4297	3
CHEM 4810	3	Electives	9
Electives	4		
	17		17
Total Credits: 127			

Notes:

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

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

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

Justification for request

Math department created new courses as path to credit for calculus I, including algebra and trigonometry

Dept is adding equivalency for python from Comp sci or IST

A literature humanity requirement is lifted to allow any humanity to facillitate transfer credit and is within ACS accreditation requirements.

A recent course change in biology 1219 lab to 1 from 2 crhr is made up as research (Chem 4099) in the premed emphasis

No changes in degree credit hours.

Supporting Documents

Course Reviewer Comments

tibbettsmg (04/07/21 1:30 pm): updated effective term to FS21. MT

Key: 16

Program Change Request

Date Submitted: 03/30/21 1:05 pm

Viewing: COMM ST-MI : Communication Studies Minor

File: 24.2

Last approved: 05/07/14 11:11 am

Last edit: 04/01/21 10:29 am

Changes proposed by: kswenson

Catalog Pages Using this Program
Speech and Media Studies

Start Term
Fall 2021 ~~08/01/2014~~
Program Code
COMM ST-MI
Department
English and Technical Communication ~~Arts, Languages, & Philosophy~~
Title
Communication Studies Minor

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/01/21 10:09 am Audra Merfeld-Langston (audram): Approved for RPHILOSO Chair
2. 04/01/21 10:29 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/01/21 10:39 am Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

History

1. May 7, 2014 by Lahne Black (lahne)

Communication Studies

Core Requirements:		3
SP&M S 2181	Communication Theory	
Elective requirements, select four of the following:		12
SP&M S 1185	Principles Of Speech	
SP&M S 2000	Special Problems	
SP&M S 2001	Special Topics	
SP&M S 3000	Special Problems	
SP&M S 3001	Special Topics	
SP&M S 3235	Intercultural Communication	
SP&M S 3250	Interpersonal Communication	
SP&M S 3255	Discussion And Conference Methods	
SP&M S 3275	Foundations of Media Communication	
~~SP&M S 3282~~	~~Course SP&M S 3282 Not Found~~	
SP&M S 3283	**Business And Professional Communication**	
Advisor or approved substitute for one of the above.		

Justification for request

Supporting Documents

Course Reviewer Comments

tibbettsmg (04/01/21 10:28 am): updated eff term to FS21 and changed dept to English&TechCom

tibbettsmg (04/01/21 10:29 am): updated course list formatting only. mt

Key: 24

Program Change Request

Date Submitted: 03/30/21 7:10 am

Viewing: CYBERMG-MI : Cybersecurity Management and Information Assurance Minor

File: 247.22

Last approved: 02/03/21 10:51 am

Last edit: 03/30/21 7:10 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Business and Management Systems
Information Science and Technology

Start Term
Fall 2021
Program Code
CYBERMG-MI
Department
Business and Information Technology
Title
Cybersecurity Management and Information Assurance Minor

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. 03/30/21 11:20 pm siauk: Approved for RINFSCTE Chair
2. 03/31/21 12:01 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Apr 7, 2017 by Barry Flachsbart (barryf)
2. Jun 26, 2017 by Kristy Giacomelli-Feys (kristyg)
3. Jun 26, 2017 by Crystal Wilson (wilsoncry)

4. Feb 3, 2021 by Cecil Eng Huang Chua (cchua)

Minor in Cybersecurity Management and Information Assurance

This minor requires the following 15 hours of coursework:

The following three courses are required:

BUS 5910	Privacy and Information Security	3
IS&T 5780	Human and Organizational Factors in Cybersecurity	3
IS&T 3333	Data Networks and Information Security	3

Two of the following courses must also be taken:		**6**
ERP 5240	Enterprise Application Development and Software Security	
IS&T 3420	Introduction to Data Science and Management	
IS&T 4641	Digital Commerce and IoT Analytics	
BUS 5910	Privacy and Information Security	

~~Two of the following courses must also betaken:~~

Justification for request
Reconcile issues in catalog
Supporting Documents
Course Reviewer Comments

Key: 247

Program Change Request

Date Submitted: 03/30/21 7:12 am

Viewing: E&S COM-MI : Elect & Social Commerce Minor

File: 40.8

Last approved: 10/28/20 7:41 am

Last edit: 04/02/21 1:03 pm

Changes proposed by: cecq8z

Catalog Pages Using this Program
Business and Management Systems
Information Science and Technology

Start Term
Fall ~~Spring~~ 2021
Program Code
E&S COM-MI
Department
Business and Information Technology
Title
Elect & Social Commerce Minor

Program Requirements and Description

In Workflow

1. **RBUSADMN 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. 04/02/21 12:52 pm siauk: Approved for RBUSADMN Chair
2. 04/02/21 1:04 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/02/21 1:09 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Aug 5, 2014 by pantaleoa
2. Jun 17, 2015 by pantaleoa
3. Jul 14, 2015 by pantaleoa
4. Oct 28, 2020 by Marita Tibbetts (tibbettsmg)

Minor in Electronic and Social Commerce

The minor in electronic and social commerce requires the following 15 hours of coursework:

IS&T 4641	Digital Commerce and IoT Analytics	3
BUS 1414	The Inclusive Workplace	3
Three courses from the following list:		9
~~IS&T 4335~~	~~Course IS&T 4335 Not Found~~	
IS&T 5251	Management and Leadership of Technological Innovation	
IS&T 5335	**Fundamentals of Mobile Technology for Business**	
IS&T 5652	Advanced Web Development	
IS&T 5168	Law and Ethics in E-Commerce	
IS&T 5885	Human-Computer Interaction and User Experience	
IS&T 5886	Prototyping Human-Computer Interactions	
MKT 5310	Digital Marketing and Promotions	
MKT 4580	Marketing Strategy	

Justification for request

Reconcile issues in catalog

Supporting Documents

Course Reviewer Comments

tibbettsmg (04/02/21 1:03 pm): updated term to FS21. mt

Key: 40

Program Change Request

Date Submitted: 04/02/21 4:18 pm

Viewing: ECON-BA : Economics BA

File: 38.30

Last approved: 06/18/18 12:29 pm

Last edit: 04/02/21 4:18 pm

Changes proposed by: davismc

Catalog Pages Using this Program
Economics

Start Term
Fall **2021** ~~2018~~
Program Code
ECON-BA
Department
Economics
Title
Economics BA

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/02/21 4:19 pm Michael Davis (davismc): Approved for RECONOMI Chair
2. 04/05/21 11:21 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/05/21 11:26 am Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Aug 14, 2014 by Lahne Black (lahne)
2. Jul 20, 2015 by pantaleoa
3. Nov 18, 2015 by Marcy Scott (marcys)

4. Aug 14, 2017 by Crystal Wilson (wilsoncry)
5. Jun 18, 2018 by Marcy Scott (marcys)

Bachelor of Arts
Economics

In addition to the general university requirements for a bachelor of arts degree, a student must complete:

1. ECON 1100, ECON 1200, ECON 2100 and ECON 2200 with a minimum grade of “C” in each.
2. At least 18 additional hours of economics electives, at or above the 2000 level, with a minimum grade of “C” in each.
3. BUS 1210; and STAT 1115 or ECON 1300; and ECON 4300.

Bachelor of Arts
Economics (Secondary Education Emphasis Area)

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

Students interested in this emphasis area should consult with the minor advisor in the economics department.

In order to successfully complete this emphasis area, students must ~~maintain a cumulative GPA of at least 2.75, and~~ attain at least a 3.0 GPA in content courses and **professional education** ~~Professional EDUC~~ courses. ~~Current Missouri S&T or transfer students who wish to pursue this emphasis area must meet both these GPA requirements to be accepted into theprogram.~~Students must also meet all requirements listed under the teacher education section of 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 **135-137** ~~136-138~~ credit hours. The required courses are provided below. A minimum grade of ”C” is required by the department in all mathematics and statistics courses counted toward this degree.

Communications Skills: 9 semester hours		
ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
or ENGLISH 3560	Technical Writing	
SP&M S 1185	Principles Of Speech	3
Humanities: 9 semester hours		
Must include 9 hours from each of the following 3 areas: Art, Music or Theatre, Philosophy, Literature		9
Social Sciences: 21 semester hours		
HISTORY 1300	American History To 1877	3
HISTORY 1310	American History Since 1877	3
HISTORY 2110	World Regional Geography	3
HISTORY 4435	History of the American West	3

POL SCI 1200	American Government	3
PSYCH 1101	General Psychology	3
PSYCH 4600	Social Psychology	3
Natural Sciences: 7 semester hours (including 1 lab)		
Physics or Geology w/Lab		4
BIO SCI 1113	General Biology	3
Mathematics: 3 semester hours		
MATH 1120	College Algebra	3-5
or MATH 1140	College Algebra	
or higher		
Professional Requirements: 23 semester hours		
EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
EDUC 3216	Instructional Literacy in the Content Area	3
EDUC 3280	Instructional Strategies in the Content Area	3
EDUC 4298	Student Teaching Seminar	1
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
PSYCH 2300	Educational Psychology	3
or EDUC 2102	Educational Psychology	
PSYCH 3310	Developmental Psychology	3
PSYCH 4310	Psychology Of The Exceptional Child	3
or EDUC 2310	Education Of The Exceptional Child	
Clinical Experience: 15 semester hours		
EDUC 1104	Teacher Field Experience I	1
EDUC 1164	Teacher Field Experience II	2
EDUC 4299	Student Teaching	12
Economics: 30 semester hours		
ECON 1100	Principles Of Microeconomics	3
ECON 1200	Principles Of Macroeconomics	3
ECON 2100	Intermediate Microeconomic Theory	3
ECON 2200	Intermediate Macroeconomic Theory	3
ECON 4300	Research Methods and Applications in Economics and Business	3
Econ Electives (3000 or 4000 level)		12
BUS 1210	Financial Accounting	3
Certification: 18 semester hours		
Am History (from approved DESE list)		6
European History (from approved DESE list)		9
Upper Pol Sci (from approved DESE list)		3

Justification for request

Changing degree listings to correspond to Education department changes.

Supporting Documents

Course Reviewer Comments

Key: 38

Program Change Request

Date Submitted: 04/02/21 11:51 am

Viewing: ECON-BS : Economics BS

File: 39.20

Last approved: 08/14/17 12:35 pm

Last edit: 04/05/21 11:29 am

Changes proposed by: davismc

Catalog Pages Using this Program

Economics

Start Term

Fall 2021 ~~08/22/2016~~

Program Code

ECON-BS

Department

Economics

Title

Economics BS

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/02/21 11:52 am Michael Davis (davismc): Approved for RECONOMI Chair
2. 04/05/21 11:30 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/05/21 11:39 am Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. May 28, 2015 by pantaleoa
2. May 28, 2015 by pantaleoa
3. Nov 18, 2015 by Marcy Scott (marcys)

4. Aug 14, 2017 by Crystal Wilson (wilsoncry)

Bachelor of Science
Economics

In Economics, the Bachelor of Science degrees consist of 120 credit hours. First, all undergraduate students in Economics are required to complete a prescribed General Education Requirements Core that corresponds to the recommendations of the Missouri State Coordinating Board for Higher Education and consists of 42 credit hours in the areas of Individual Expression, Natural Systems, and Human Institutions. In addition, **there** ~~all undergraduate students~~ are **a** required **24** ~~to complete a 39~~ credit hour core consisting of courses in Information Technology, Management, Quantitative Skills, and Communication **Skills. Finally, each degree includes 28 credit hours of free electives.** ~~Skills.~~

~~A minimum grade of "C" is required for courses in both the Information Technology and the Managementareas.Finally, each degree includes 19 credit hours of freeelectives.~~The remaining **33** ~~27~~ credit hours of the required 120 credit hours for the Economics degree are divided into a prescribed **15** ~~18~~ credit hour degree core **(ECON 1100, 1200, 2100, 2200** and **4300) and 18** ~~9~~ credit hours of specific degree electives. A minimum grade of "C" is required in **the 15 credit core** ~~these~~ courses. The Economics degree requires courses in advanced Micro, Macro and Statistics. The electives for this degree consist of courses from areas such as Law and Economics, Money and Banking, Energy Economics and E-Commerce.

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
ENGLISH 1120[1]	3	PSYCH 1101	3
MATH 1140	3	MATH 1212	4
~~Free Electives~~	~~3~~	History	3
BIO SCI 1113, or 1173, or 1223, or 1943	3	~~IS&T 1750~~	~~3~~
Lab w/Living or Physical Science Course	1	~~ECON 1100 or 1200~~[4]	~~3~~
ECON 1100[4]	**3**	**ECON 1200**[4]	**3**
		IS&T 1551 or 1561	**3**
		OR	
		COMP SCI 1980 or 1981	
	13		16
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
~~BUS 1110~~	~~3~~	BUS 1210	3
SP&M S 1185	3	~~ECON 1100 or 1200~~[4]	~~3~~
STAT 3111	3	Chemistry, Geol, Ge Eng, or Physics	3
~~IS&T 1551~~	~~3~~	ART 1180, or 1185, or MUSIC 1150, or THEATRE 1190	3
ENGLISH 1211, or 1212, or 1231, or 1221, or 1222, or 2230, or 1223	3	Free Electives	3

ECON 2100[4]	**3**	**ECON 2200[4]**	**3**
Free Elective	**3**		
	15		15

Junior Year

First Semester	Credits	Second Semester	Credits
ENGLISH 1600	3	SP&M S 2181	3
FINANCE 2150	3	~~ECON 2200[4]~~	~~3~~
~~ECON 2100[4]~~	~~3~~	~~Emphasis Area Electives[2]~~	~~9~~
POL SCI 1200	3	**Economics Electives[2]**	**6**
~~ECON 2300~~	~~3~~	**Free Elective**	**6**
Economics Elective[2]	**6**		
	15		15

Senior Year

First Semester	Credits	Second Semester	Credits
~~ENGLISH 2560~~	~~3~~	Free Electives	10
Culture, Sociology, Religion[3]	3	~~ECON 4860~~	~~3~~
~~Emphasis Area Electives[2]~~	~~9~~	**Economics Elective[2]**	**3**
Economics Electives[2]	**3**	**ECON 4300**	**3**
Free Electives	**9**		
	15		16
Total Credits: 120			

1	In-Major Writing Intensive
2	Economics Emphasis Electives 18 hours of which 12 hours must be Economics to be selected from ECON 2114, ECON 3810,ECON 3880 or at or above 3000 level Econ Lecture course and accumulate 6 hours from the following PSYCH 4700, PSYCH 4601, PSYCH 4602 or BUS 2910 or any 3000 or 4000 or 5000 level Business or Finance Lecture courses.
3	ECON 3830,ENGLISH 2242,ENGLISH 2245, ENGLISH 2410, ENGLISH 3215, ENGLISH 4290, Foreign Language Beyond Second Semester, HISTORY 3321,, PHILOS 3225, PHILOS 3235, PHILOS 1175, PHILOS 4340, Any Political Science, PSYCH 4600, PSYCH 4992, Any Sociology, SP&M S 3235.
4	A Grade of "C" or better is required for ECON 1100, ECON 1200, ECON 2100, ECON 2200, and ECON 4300.

Justification for request

Dropping three out-of-department courses to make it easier for students to graduate, especially those changing majors from Engineering.

A number of changes to clean up broken course links or incorrectly listed classes.

Improving the sequencing of the core Economics classes to make it easier for the student to complete the degree.

Supporting Documents

Course Reviewer Comments

tibbettsmg (04/05/21 11:29 am): updated formatting and effective term to FS21. mt

Key: 39

Program Change Request

Date Submitted: 04/07/21 9:07 am

Viewing: ENG MG-PHD : Engineering Management PhD

File: 47.4

Last approved: 07/23/15 9:19 am

Last edit: 04/07/21 12:10 pm

Changes proposed by: cornss

Catalog Pages Using this Program
Engineering Management

Start Term
Fall 2021 ~~08/17/2015~~
Program Code
ENG MG-PHD
Department
Engineering Management and Systems Engineering
Title
Engineering Management PhD

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/07/21 9:23 am Suzanna Long (longsuz): Approved for RENGMNGT Chair
2. 04/07/21 12:10 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/16/21 10:46 am Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. Aug 5, 2014 by pantaleoa
2. Jul 23, 2015 by pantaleoa

A candidate for the Ph.D. in engineering management must complete the equivalent of at least three years of full-time work beyond the bachelor's degree. The content of all Ph.D. programs is individually structured by the student in consultation with and approved by the student's advisory committee. All requirements for the degree must normally be completed within an eight-year period. ~~Each candidate must normally spend at least two sequential semesters in full-time residence at MissouriS&T.The department does have special conditions for satisfying residency and meeting research requirements for full time working engineers that meet all admissionstandards.~~At appropriate points in their program, Ph.D. students must pass both a qualifying examination and a comprehensive examination. Ph.D. students must conduct original research under the supervision of a doctoral advisor, and write and successfully defend the dissertation. Some recent Ph.D. dissertation titles include:

- **Balancing Labor Requirements in a Manufacturing Environment**
- **Enabling Flexibility Using System of Systems Engineering - Theories, Models, & Applications**
- **Development of a Modeling Algorithm to Predict Lean Implementation Success**
- **Critical Success Factors and Risk Mitigation Strategy for New Product Development**
- **The Development of a Project Typology and Selection Tool to Improve Decision-Making in Sustainable Projects**

~~Development and Analysis of Intelligent Computation Based Stock Forecasting and Trading An Analysis of Intermodal Transportation Mode Selection Considering Stochastic System Parameters Surviving the Change to a Competitive Market Place in the Small Local Exchange Carrier Telecommunications Industry The Relationship Between R&D Spending and Shareholder Returns in High Technology Industries Global Stock Index Forecasting Using Multiple Generalized Regression Neural Networks with a Gating Network The Development of Efficient Delivery Routes in Extremely Short Product Life-Cycle Environments Quantification of Attribute Driven Cannibalization Induced by New Product Introduction Cost Allocation Using Intelligent Agents for New Transmission Investment Under Electricity Deregulation~~

Justification for request

Update residency requirements to match the standards set by graduate faculty and update list of dissertation titles.

Supporting Documents

Course Reviewer Comments

tibbettsmg (04/07/21 12:10 pm): removed extra period in description. MT

Key: 47

Program Change Request

Date Submitted: 03/29/21 9:14 pm

Viewing: ENGL TC-BS : English & Technical Communication BS

File: 374.8

Last approved: 03/04/21 10:03 am

Last edit: 04/01/21 1:23 pm

Changes proposed by: kswenson

Catalog Pages Using this Program
English

Start Term
Fall 2021
Program Code
ENGL TC-BS
Department
English and Technical Communication
Title
English & Technical Communication BS

Program Requirements and Description

In Workflow

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

Approval Path

1. 03/30/21 7:50 am Kristine Swenson (kswenson): Approved for RENGLISH Chair
2. 04/01/21 1:24 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/01/21 3:03 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

History

1. Mar 4, 2021 by Kristine Swenson (kswenson)

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 **professional requirement GPA, and** passage of the Missouri Content exam. **Missouri S&T allows students to choose their student teaching placement, if the district agrees and a qualified cooperating teacher is available. This program is approved by the Missouri Department of Elementary and Secondary Education for initial teacher certification. Students intending to teach in other states are responsible for investigating the reciprocity agreement of that state agency.** 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 1212, ENGLISH 1221, ENGLISH 1222.**
2. **ENGLISH 2002 Critical Approaches to Literature.**

~~1. ENGLISH 1211 ENGLISH 1211 ENGLISH 1211 ENGLISH 1211 ENGLISH 1211 , ENGLISH 1212 ENGLISH 1212 ENGLISH 1212 ENGLISH 1212 ENGLISH 1212 , ENGLISH 1221 ENGLISH 1221 ENGLISH 1221 ENGLISH 1221 ENGLISH 1221 , ENGLISH 1222 ENGLISH 1222 ENGLISH 1222 ENGLISH 1222 ENGLISH 1222.2. ENGLISH 2002 ENGLISH 2002 ENGLISH 2002 ENGLISH 2002 ENGLISH 2002 Critical Approaches toLiterature.~~ 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

Supporting Documents

~~MS&T PC November 2020 HDME.pdf~~

~~English & Technical Communication Proposal (short).pdf~~

Course Reviewer Comments

tibbettsmg (04/01/21 1:19 pm): updated formatting. MT

tibbettsmg (04/01/21 1:20 pm): additional formatting updates. mt

tibbettsmg (04/01/21 1:23 pm): additional formatting updates. mt

Key: 374

Program Change Request

Date Submitted: 03/30/21 7:10 am

Viewing: ENTPRNS-MI : Entrepreneurship Minor

File: 50.8

Last approved: 10/28/20 7:31 am

Last edit: 03/30/21 7:10 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Business and Management Systems
Information Science and Technology

Start Term
Fall ~~Spring~~ 2021
Program Code
ENTPRNS-MI
Department
Business and Information Technology
Title
Entrepreneurship Minor

Program Requirements and Description

In Workflow

1. **RBUSADMN 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. 04/02/21 12:52 pm siauk: Approved for RBUSADMN Chair
2. 04/02/21 1:04 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/02/21 1:09 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Aug 5, 2014 by pantaleoa
2. Jun 17, 2015 by pantaleoa
3. Jun 18, 2015 by pantaleoa
4. Jul 14, 2015 by pantaleoa
5. Oct 28, 2020 by Marita Tibbetts

Minor in Entrepreneurship

The minor in entrepreneurship requires the following 15 hours of coursework:

BUS 1110	Introduction to Management and Entrepreneurship	3
BUS 5980	Business Models for Entrepreneurship and Innovation	3
MKT 5310	Digital Marketing and Promotions	3
Two courses from the following list:		6
~~BUS 1414~~	~~The Inclusive Workplace~~	~~3~~
~~BUS 4150~~	~~Course BUS 4150 Not Found~~	
BUS 1414	**The Inclusive Workplace**	
BUS 5150	**Customer Focus and Satisfaction**	
BUS 5580	Strategic Management	
IS&T 4641	Digital Commerce and IoT Analytics	
IS&T 4654	Introduction to Web Design and Digital Media Studies	
~~IS&T 4335~~	~~Course IS&T 4335 Not Found~~	
IS&T 5251	Management and Leadership of Technological Innovation	
IS&T 5335	**Fundamentals of Mobile Technology for Business**	
IS&T 5886	Prototyping Human-Computer Interactions	
ENG MGT 5511	Technical Entrepreneurship	
ENG MGT 5411	Engineering Design Optimization	

Justification for request
Reconcile issues in catalog
Supporting Documents
Course Reviewer Comments

Key: 50

Program Change Request

Date Submitted: 03/30/21 7:11 am

Viewing: FIN TCH-MI : Minor in Financial Technology, Analytics and Transformation ~~Technology (FinTech)~~

File: 256.9

Last approved: 04/19/19 9:29 am

Last edit: 03/30/21 7:11 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Business and Management Systems
Information Science and Technology

Start Term
Fall **2021** ~~2018~~
Program Code
FIN TCH-MI
Department
Business and Information Technology
Title
Minor in Financial **Technology, Analytics and Transformation** ~~Technology (FinTech)~~

Program Requirements and Description

In Workflow

1. **RBUSADMN 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. 11/16/20 10:29 am siauk: Approved for RBUSADMN Chair
2. 11/16/20 2:19 pm Marita Tibbetts (tibbettsmg): Rollback to Initiator
3. 04/02/21 12:53 pm siauk: Approved for RBUSADMN Chair
4. 04/02/21 1:06 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
5. 04/02/21 1:09 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Mar 21, 2018 by Barry Flachsbart (barryf)

2. Apr 19, 2018 by Brittany Parnell (ershenb)
3. Apr 19, 2019 by cladmin-bdietzler

Minor in Financial Technology

The Minor requires 15 credit hours, as follows:

Required Courses:		6
FINANCE 2150	Corporate Finance I	
~~FINANCE 5310~~	~~Financial Technology and Analytics~~	
~~IS&T 3420~~	~~Introduction to Data Science and Management~~	
FINANCE 5310	**Financial Technology and Analytics**	

One or two of the following courses must be taken:		3
~~FINANCE 5160~~	~~Corporate Finance II~~	
~~FINANCE 5260~~	~~Investments I~~	
IS&T 3420	**Introduction to Data Science and Management**	
BUS 5230	Financial Statement Analysis	

~~And one course from the following list:~~		~~3~~
One or two of the following courses must be taken:		**6**
IS&T 4641	Digital Commerce and IoT Analytics	
~~IS&T 4780~~	~~Course IS&T 4780 Not Found~~	
IS&T 5780	**Human and Organizational Factors in Cybersecurity**	
IS&T 5520	Data Science and Machine Learning with Python	
ERP 5210	Performance Dashboard, Scorecard and Data Visualization	
ERP 5410	Use of Business Intelligence	
FINANCE 5160	**Corporate Finance II**	
FINANCE 5260	**Investments I**	

Justification for request

To realign the minor with advances in finance. Updated to reflect course renumbering.

Supporting Documents

Course Reviewer Comments

tibbettsmg (11/16/20 2:19 pm): updated term to FS21. mt

tibbettsmg (11/16/20 2:19 pm): Rollback: IST 5641 and IST 5620 don't exist and aren't in the current workflow. MT

Key: 256

Program Change Request

Date Submitted: 03/30/21 1:31 pm

Viewing: GAME-MI : Game Studies (Minor)

File: 259.6

Last approved: 04/19/18 2:43 pm

Last edit: 03/30/21 3:37 pm

Changes proposed by: kswenson

Catalog Pages Using this Program
English
Technical Communication

Start Term
Fall **2021** ~~2018~~
Program Code
GAME-MI
Department
English and Technical Communication
Title
Game Studies (Minor)

Program Requirements and Description

In Workflow

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

Approval Path

1. 03/30/21 3:17 pm Kristine Swenson (kswenson): Approved for RENGLISH Chair
2. 03/30/21 3:37 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/30/21 3:39 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

History

1. Apr 19, 2018 by Kristine Swenson (kswenson)

Overall Goals and Objectives:

1. Study games as meaningful systems

2. Research games as narrative devices

3. Reflect on the cultural and social impact of games

4. Develop ways to use games as learning tools

Requirements:

TCH COM 3590	Game Studies	3
or ENGLISH 3590	Game Studies	
TCH COM 5530	Usability Studies	3
ENGLISH 1170	Creative Writing	3
or ENGLISH 2171	Fiction Writing	
One of the following:		
ENGLISH 2232	**Course ENGLISH 2232 Not Found**	**3**
ENGLISH 2243	Science Fiction	3
ENGLISH 2244	Fantasy Literature	3
~~ENGLISH 2001.001~~	~~Course ENGLISH 2001.001 Not Found~~	

Justification for request

2232 should become a permanent course this iteration (cc form submitted)

Supporting Documents

~~Game Studies Syllabus.docx~~

~~Game Studies Minor Proposal.doc~~

Course Reviewer Comments

tibbettsmg (03/30/21 3:37 pm): updated eff term to FS21 and formatting to include 2232 instead of 2001. mt

Key: 259

Program Change Request

Date Submitted: 04/05/21 10:34 am

Viewing: GE ENG-BS : Geological Engineering BS

File: 156.48

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

Last edit: 04/05/21 10:34 am

Changes proposed by: sbrower

Catalog Pages Using this Program
Geological Engineering

Start Term
Fall **2021** ~~2020~~
Program Code
GE ENG-BS
Department
Geosciences and Geological and Petroleum Engineering
Title
Geological Engineering BS

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/01/21 12:32 pm David Borrok (borrokd): Rollback to Initiator
2. 04/02/21 12:57 pm David Borrok (borrokd): Approved for RGEOSENG Chair
3. 04/02/21 1:08 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
4. 04/05/21 10:21 am Marita Tibbetts (tibbettsmg): Rollback to Initiator
5. 04/05/21 10:38 am David Borrok (borrokd): Approved for RGEOSENG Chair
6. 04/05/21 10:52 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary

7. 04/09/21 12:59 pm Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. Mar 18, 2014 by Lahne Black (lahne)
2. Nov 18, 2014 by pantaleoa
3. Nov 18, 2014 by pantaleoa
4. Jul 20, 2015 by pantaleoa
5. Feb 27, 2018 by Katherine Grote (grotekr)
6. Jun 18, 2018 by Katherine Grote (grotekr)
7. Jun 14, 2019 by Katherine Grote (grotekr)
8. Mar 3, 2020 by Brittany Parnell (ershenb)
9. Jul 1, 2020 by Leslie Gertsch (gertschl)

Bachelor of Science
Geological Engineering

Entering freshmen desiring to study geological engineering will be admitted to the Foundational Engineering and Computing Program. They may state a geological engineering preference, which is a consideration for geological engineering program scholarships. The focus of the Foundational Engineering and Computing Program is on enhanced advising and career counseling, to provide the student with the information necessary to make an informed decision regarding the choice of a major.

For the bachelor of science degree in geological engineering a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. The student must maintain at least two grade points per credit hour (grade of C) for all courses taken in geological engineering. Their program of study must contain a minimum of 18 credit hours of course work in the humanities and the social sciences areas, selected as described in the Engineering Degree Requirements section of this catalog. Geological engineering students must take the Fundamentals of Engineering Examination prior to graduation. A passing grade is not required; however, passing this examination is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process.

The geological engineering program at Missouri S&T is characterized by comprehensive understanding of the scientific basics of engineering and innovative application. We focus on solving the problems and meeting the needs of civilization as those are affected by

geological materials, structures, or events. The necessary interactions required for this among the various sciences, engineering disciplines, and human professions are emphasized in research, analysis, synthesis, and design. Learning occurs in classroom, laboratory, online, field, and combined modes.

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
MATH 1214	4	MATH 1215	4
CHEM 1100	1	MECH ENG 1720	3
CHEM 1310	4	PHYSICS 1135	4
CHEM 1319	1	GEO ENG 1150 or GEOLOGY 1110	3
ENGLISH 1120	3	Humanities/Soc Sci Elective[a]	3
FR ENG 1100	1		
Humanities/Soc Sci Elective[a]	3		
	17		17
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
MATH 2222	4	MATH 3304	3
PHYSICS 2135	4	CIV ENG 2200	3
GEO ENG 3148	3	GEO ENG 2110	1
GEO ENG 3249	3	GEOLOGY 2611	3
Humanities/Soc Sci Elective[a]	3	GEO ENG 3175	3
		Humanities/Soc Sci Elective[a]	3
	17		16
Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
MECH ENG 2350	2	CIV ENG 3330	3
CIV ENG 2210	3	CIV ENG 3715 or MIN ENG 5823	3
GEO ENG 5331	3	GEO ENG 5174	3
GEOLOGY 3310	3	Chemistry/Geochemistry Elective[b]	3
GEOLOGY 3319	1	Technical Elective[c]	3
ECON 1100 or 1200	3		
	15		15
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
GEO ENG 4010	0.5	GEO ENG 4010	0.5
GEO ENG 5441	3	GEO ENG 4115	3
GEO ENG 5443	3	GEO ENG 5090	3
ENGLISH 3560	3	Geo Eng Elective[e]	3
Geophysics Elective[d]	3	Eng Econ Elective[f]	3
Technical Elective[c]	3	Humanities/Soc Sci Elective[a]	3

	15.5	15.5
Total Credits: 128		

a	Humanities/Social Sciences Elective: This course sequence must provide both breadth and depth of content and meet requirements specified in the Engineering Degree Requirements section of the current undergraduate catalog. A total of 18 credit hours is required.
b	Chemistry/Geochemistry Elective: Select from chemistry, geochemistry or biology courses as approved by advisor.
c	Technical Elective: Select from advanced courses in science or engineering as approved by advisor.
d	Geophysics Elective: Select from GEO ENG 5736, GEO ENG 5761, or GEO ENG 5782.
e	Geological Engineering Elective: Select from GEO ENG 5471, GEO ENG 5381, GEO ENG 5556, MIN ENG 5823, PET ENG 2510, PET ENG 3520, CIV ENG 3715, CIV ENG 4729, or CIV ENG 5715.
f	Engineering Economics Elective: Select from ENG MGT 5210, MIN ENG 3512, or PET ENG 4590 or both ENG MGT 1100 and ENG MGT 1210.

Geological Engineering Emphasis Areas

The student uses the following course lists as guidance to satisfy the various elective requirements (chemistry/geochemistry, technical, geophysics, and geological engineering) while focusing preparation for their chosen career specialty. Other courses can be substituted with advisor approval.

Dual Professional Registration as a Geologist

GEOLOGY 2096	Field Geology	3
GEOLOGY 3410	Introduction To Geochemistry	3
GEOLOGY 3620	Stratigraphy And Sedimentation	3
GEOLOGY 4097	Advanced Field Geology	3
~~GEOLOGY 4310~~	~~Remote Sensing Technology~~	~~3~~
~~or GEO ENG 5144~~	~~Remote Sensing Technology~~	
~~GEOLOGY 4431~~	~~Methods Of Karst Hydrogeology~~	~~3~~
GEOLOGY 4841	Geological Field Studies	3
GEO ENG 5144	**Remote Sensing Technology**	**3**

Engineering Geology and Geotechnics

GEO ENG 5146	Applications Of Geographic Information Systems	3
GEO ENG 5471	Rock Engineering	3
CIV ENG 3715	Fundamentals of Geotechnical Engineering	3
CIV ENG 4729	Foundation Engineering	3
MIN ENG 5823	Rock Mechanics	3

Environmental and Engineering Geophysics

GEO ENG 5144	Remote Sensing Technology	3
GEO ENG 5736	Geophysical Field Methods	3
GEO ENG 5761	Transportation Applications of Geophysics	3
GEO ENG 5782	Environmental and Engineering Geophysics	3
GEOPHYS 4241	Electrical Methods In Geophysics	3

GEOPHYS 4261	Geophysical Instrumentation	1
GEOPHYS 5231	Seismic Data Processing	3

Groundwater Hydrology and Environmental Protection

GEO ENG 4276	Environmental Aspects Of Mining	3
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 5320	Groundwater Modeling	3
GEO ENG 5381	Intermediate Subsurface Hydrology And Contaminant Transport Mechs	3
CIV ENG 5640	Environmental Law And Regulations	3
PET ENG 3330	Well Logging	3

Quarry and Mine Engineering

GEO ENG 4276	Environmental Aspects Of Mining	3
GEO ENG 5471	Rock Engineering	3
GEO ENG 5575	Aggregates And Quarrying	3
CIV ENG 3116	Construction Materials, Properties And Testing	3
MIN ENG 3913	Mineral Identification and Exploration	3
MIN ENG 5612	Principles of Explosives Engineering	3
MIN ENG 5822	Strata Control	3
MIN ENG 5823	Rock Mechanics	3
MIN ENG 5912	Mine Power and Drainage	3

Renewable and Conventional Energy Resources

GEO ENG 5146	Applications Of Geographic Information Systems	3
GEO ENG 5556	Renewable Energy Systems	3
GEOLOGY 4421	Radioactive Waste Management And Remediation	3
or NUC ENG 4367	Radioactive Waste Management And Remediation	
GEOLOGY 5511	Applied Petroleum Geology	3
MIN ENG 5322	Coal Mining Methods	3
MIN ENG 5422	Coal Preparation	3
MIN ENG 5823	Rock Mechanics	3
~~PET ENG 1110~~	~~Course PET ENG 1110 Not Found~~	~~1~~
PET ENG 2510	Properties Of Hydrocarbon Fluids	3
PET ENG 3330	Well Logging	3
PET ENG 3520	Petroleum Reservoir Engineering	3
PET ENG 4520	Well Test Analysis	3

Accelerated BS/MS Option (Graduate Pathway)

Students nearing completion of a BS in geological engineering can share up to nine 5000- or 6000-level credit hours toward their BS degree and a MS degree in geological engineering simultaneously, if they satisfy the following criteria:

- Have completed 64 credit hours of course work, including:
    - All chemistry and mathematics requirements, and
    - 21 credit hours of geological engineering courses with a minimum GPA of 3.20 in the geological engineering courses.
- Complete an application listing the courses to be shared, with approval from the undergraduate advisor and a recommendation from the geological engineering faculty member who agrees to serve as their MS advisor. The shared courses may not be undergraduate research, special problems, or transfer courses. Applications are due within one semester of completing the last shared course.
- Follow all geological engineering non-thesis MS program requirements (see the Graduate Catalog).

All other MS degree requirements remain the same. The program may be combined with existing honors research, emphasis areas, and certificate options. An additional six credit hours of coursework for graduate credit (beyond the shared BS/MS credits) can be taken while in the undergraduate program by applying for dual undergraduate/graduate enrollment. Taking additional courses for graduate credit as a dual enrolled student will require formal application to the graduate program. **Upon application, acceptance** ~~Acceptance~~ to the geological engineering MS degree program from this option is automatic as long as the student remains in good standing (GPA above 3.0 and B's or better in all graduate courses within the program). To remain in this option, the student must meet geological engineering graduate academic performance requirements and maintain continuous enrollment at Missouri S&T. If the student exits the program before completion of the MS degree, or fails to maintain continuous enrollment at Missouri S&T, the shared-credit courses may not apply toward graduate requirements in the event of future readmission.

It is the student's responsibility to check how dual-enrollment status and graduate coursework would affect scholarships and other financial aid. Graduate students are not eligible for Federal Pell Grants, though they are eligible for Federal Financial Aid, as well as fellowships and teaching/research assistantships. International students are responsible for checking with the International Affairs Office during completion of an accelerated BS/MS to ensure immigration status is properly maintained throughout the program.

This option reduces the cost and the time required to earn a MS. See the Graduate Pathway section of this catalog, and the Geological Engineering Masters section of the Graduate Catalog, for additional details.

Justification for request

Revised catalog Accelerated BS/MS option to indicate participants must formally apply to the MS program. Revised curriculum to improved accessibility to courses by adding courses regularly taught. Removed lower level course no loner offered, and revised course listing to indicate co-taught course.

Supporting Documents

Course Reviewer Comments

borrokd (04/01/21 12:32 pm): Rollback: more changes

tibbettsmg (04/05/21 10:21 am): Rollback: rollback for additional changes per dept request. mt

Key: 156

Program Change Request

Date Submitted: 04/05/21 1:36 pm

Viewing: GL&GPH-BS : Geology and Geophysics BS

File: 64.52

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

Last edit: 04/05/21 1:36 pm

Changes proposed by: sbrower

Catalog Pages Using this Program
Geology and Geophysics

Start Term
Fall **2021** ~~2020~~
Program Code
GL&GPH-BS
Department
Geosciences and Geological and Petroleum Engineering
Title
Geology and Geophysics BS

Program Requirements and Description

In Workflow

1. **RGEOSENG 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. 04/01/21 12:33 pm David Borrok (borrokd): Rollback to Initiator
2. 04/02/21 12:58 pm David Borrok (borrokd): Approved for RGEOSENG Chair
3. 04/02/21 1:28 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
4. 04/05/21 1:01 pm Marita Tibbetts (tibbettsmg): Rollback to Initiator
5. 04/05/21 1:42 pm David Borrok (borrokd): Approved for RGEOSENG Chair
6. 04/05/21 1:47 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary

7. 04/07/21 1:09 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair

History

1. May 6, 2014 by Francisca Oboh-Ikuenobe (ikuenobe)
2. Apr 24, 2015 by wronk
3. Mar 27, 2017 by Kelly Liu (liukh)
4. Jun 18, 2018 by Kelly Liu (liukh)
5. Jun 14, 2019 by Sharon Lauck (laucks)
6. Jul 1, 2020 by Sharon Lauck (laucks)

Bachelor of Science
Geology and Geophysics

A minimum of 127 credit hours is required for a Bachelor of Science degree in Geology and Geophysics. Students must average at least two grade points per credit hour and must obtain a letter grade of "C" or better in all Geology and Geophysics courses.

The Geology and Geophysics curriculum must include ENGLISH 1120 and ENGLISH 1160 , ECON 1100 or ECON 1200 , either HISTORY 1200 , HISTORY 1300 , HISTORY 1310 or POL SCI 1200 , and nine elective hours in humanities/social sciences. Specific requirements for the bachelor degree program are outlined in the sample program below

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
GEOLOGY 1110 or GEO ENG 1150	3	GEOLOGY 1120[1]	3
ENGLISH 1120	3	GEOLOGY 1129[1]	1
CHEM 1310	4	Elective (Science & Eng)[2]	3
CHEM 1319	1	Humanities/Social Science Elective	3
CHEM 1100	1	MATH 1214	4
Humanities/Social Science Elective	3		

	15		14		
Sophomore Year					
First Semester	**Credits**	**Second Semester**	**Credits**	**Summer Semester**	**Credits**
GEOLOGY 2610	4	GEOLOGY 2620[1]	4	GEOLOGY 2096	3
GEOPHYS 3210	3	GEOLOGY 3410	3		
~~COMP SCI 1970 & COMP SCI 1980 (or COMP SCI 1971 & COMP SCI 1981)~~	~~3~~	ENGLISH 1160 or 3560	3		
MATH 1215	4	ECON 1100 or 1200	3		
COMP SCI 1500 or GEO ENG 3249	**3**	HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3		
	14		16		3
Junior Year					
First Semester	**Credits**	**Second Semester**	**Credits**	**Summer Semester**	**Credits**
GEOLOGY 3310	3	GEOLOGY 3620	3	GEOLOGY 4097	3
GEOLOGY 3319	1	GEOLOGY 3629	1		
PHYSICS 1135[3]	4	PHYSICS 2135[3]	4		
STAT 3113, or 3115, or 3117, or GEO ENG 4115	3	Elective (Geo & Geop)[4]	6		
Elective (Geo & Geop)[4]	3	Humanities/Social Sciences Elective	3		
	14		17		3
Senior Year					
First Semester	**Credits**	**Second Semester**	**Credits**		
GEOLOGY 4010	0.5	GEOPHYS 5096	3		
Elective (Science & Eng)[2]	6	Elective (Science & Eng)[2]	9		
Elective (Geo & Geop)[4]	9	Free Elective[5]	3		
		GEOLOGY 4010	.5		
	15.5		15.5		
Total Credits: 127					

1	Communications Emphasized (CE) courses
2	All Geology/Geophysics students must complete at least 15 hours of elective course work in science (which may include additional Geology/Geophysics courses), mathematics, and/or engineering, courses required for the basic program. 12 hours of this course work must be numbered 2000 or above.
3	Students may substitute PHYSICS 1111 and PHYSICS 1119 for PHYSICS 1135; PHYSICS 2111 and PHYSICS 2119 for PHYSICS 2135.
4	All Geology and Geophysics students must complete at least 18 hours of elective course work numbered 2000 or above in the Department of Geology and Geophysics, in addition to the required core curriculum.
5	Free elective hours may be taken in any combination of credit hours (1, 2, 3, etc.) and can include any course offerings at the University.

Core Curriculum

Taken by all students in Geology & Geophysics.		
GEOLOGY 1110	Physical And Environmental Geology	3
GEOLOGY 1120	Evolution Of The Earth	3
GEOLOGY 1129	Evolution of the Earth Laboratory [5]	1
GEOLOGY 2610	Mineralogy And Crystallography	4
GEOLOGY 2620	Igneous And Metamorphic Petrology	4
GEOLOGY 3310	Structural Geology	3
GEOLOGY 3319	Structural Geology Lab	1
GEOLOGY 3410	Introduction To Geochemistry	3
GEOLOGY 3620	Stratigraphy And Sedimentation	3
GEOLOGY 3629	Stratigraphy Lab	1
GEOLOGY 4010	Seminar	0.5
GEOLOGY 2096	Field Geology	3
GEOLOGY 4097	Advanced Field Geology	3
GEOPHYS 3210	Introduction to Geophysics	3
GEOPHYS 5096	Global Tectonics	3
Total Credits		38.5

Geology and Geophysics Focus Areas

Geochemistry

Students should complete at least 5 courses (15 hours minimum) from the list. Students may also choose additional courses to be selected from an approval list and with guidance from student's advisor.		
GEOLOGY 3511	Introduction to Mineral Deposits	3
GEOLOGY 4451	Aqueous Geochemistry	3
GEOLOGY 4461	Isotope Geochemistry	3
GEOLOGY 4631	Advanced Igneous and Metamorphic Petrology	4
GEOLOGY 4841	Geological Field Studies	3
GEOLOGY 5611	Granites And Rhyolites	4
GEOLOGY 5671	Clay Mineralogy	3
CER ENG 2110	Atomic Structure Of Crystalline Ceramics	3
CER ENG 3220	Phase Equilibria	3

General Geology

Students should complete at least 5 courses (15 hours minimum) from the list. Students may also choose additional courses to be selected from an approval list and with guidance from student's advisor.		
GEOLOGY 3511	Introduction to Mineral Deposits	3
GEOLOGY 4630	Systematic Paleontology	3

GEOLOGY 3811	Fundamentals Of Geographic Information Systems	3
or GEO ENG 3148	Fundamentals Of Geographic Information Systems	
GEOLOGY 4631	Advanced Igneous and Metamorphic Petrology	4
GEOLOGY 4711	Paleoclimatology and Paleoecology	3
GEOLOGY 4841	Geological Field Studies	3
GEOLOGY 5513	Petroleum Geology	3
GEOLOGY 5611	Granites And Rhyolites	4
GEOLOGY 5741	Micropaleontology	3
GEOLOGY 6311	Advanced Structural Geology	3
GEO ENG 3175	Geomorphology And Terrain Analysis	3

Geophysics

Students must choose 1 math and 3 geophysics courses from the list. Students should also choose at least one additional course to be selected from an approved list and with guidance from student's advisor.		
MATH 2222	Calculus III	4
MATH 3304	Elementary Differential Equations	3
MATH 3108	Linear Algebra I	3
MATH 5325	Partial Differential Equations	3
GEOPHYS 4231	Seismic Interpretation	3
GEOPHYS 5202	Exploration and Development Seismology	3
GEOPHYS 5231	Seismic Data Processing	3
GEOPHYS 5261	Computational Geophysics	3
GEOPHYS 5736	Geophysical Field Methods	3
or GEO ENG 5736	Geophysical Field Methods	
GEOLOGY 4310	Remote Sensing Technology	3

Groundwater and Environmental Geochemistry

Students should complete at least 5 courses (15 hours minimum) from the list. Students may also choose additional courses to be selected from an approval list and with guidance from student's advisor.		
~~GEOLOGY 4411~~	~~Hydrogeology~~	~~3~~
GEOLOGY 4431	Methods Of Karst Hydrogeology	3
GEOLOGY 4451	Aqueous Geochemistry	3
GEOLOGY 4711	Paleoclimatology and Paleoecology	3
GEOPHYS 5782	Environmental and Engineering Geophysics	3
or GEO ENG 5782	Environmental and Engineering Geophysics	
BIO SCI 1173	Introduction to Environmental Sciences	3
ENV ENG 2601	Fundamentals Of Environmental Engineering and Science	3
ENV ENG 5640	Environmental Law And Regulations	3
GEO ENG 5237	Geological Aspects Of Hazardous Waste Management	3

GEO ENG 5331	Subsurface Hydrology	3
GEO ENG 5381	**Intermediate Subsurface Hydrology And Contaminant Transport Mechs**	**3**

Petroleum Geology

Students should complete at least 5 courses (15 hours minimum) from the list. Students may also choose additional courses to be selected from an approval list and with guidance from student's advisor.		
GEOLOGY 4630	Systematic Paleontology	3
GEOLOGY 5311	Depositional Systems	3
GEOLOGY 5513	Petroleum Geology	3
GEOLOGY 5661	Advanced Stratigraphy and Basin Evolution	3
GEOLOGY 5741	Micropaleontology	3
GEOPHYS 5202	Exploration and Development Seismology	3
PET ENG 3330	Well Logging	3
GEOLOGY 4310	Remote Sensing Technology	3

Accelerated BS/MS Program Option for Geology and Geophysics Majors

Geology and Geophysics undergraduates in G&G at Missouri S&T may opt to apply for an accelerated BS/MS G&G program where a student can achieve both the BS and MS degrees in G&G faster than if pursuing the degrees separately. The degrees awarded will be a BS & MS (non-thesis or thesis) in Geology and Geophysics.

The benefits for undergraduate students admitted to the program are:

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

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

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

maintain continuous enrollment at Missouri S&T, the shared-credit courses may not apply toward graduate requirements in the event of future readmission.

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

Justification for request

Revised catalog Accelerated BS/MS option to indicate participants must formally apply to the MS program. Revised curriculum to include co-listed coursework. Improved accessibility to courses by adding courses regularly taught and replaced existing courses due to pre-requisite change and because GGPE has a course equivalent.

Supporting Documents

Course Reviewer Comments

borrokd (04/01/21 12:33 pm): Rollback: More changes

tibbettsmg (04/05/21 1:01 pm): Rollback: rollback for additional changes per dept request. MT

Key: 64

Program Change Request

Date Submitted: 04/01/21 11:03 am

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File: 166.25

Last approved: 03/04/21 10:02 am

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Changes proposed by: sbrower

Catalog Pages Using this Program
Geology and Geophysics

Start Term
Fall 2021
Program Code
GL&GPH-MS
Department
Geosciences and Geological and Petroleum Engineering
Title
Geology and Geophysics MS

Program Requirements and Description

In Workflow

1. **RGEOSENG 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. 04/01/21 12:38 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 04/01/21 1:11 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/07/21 1:09 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)
7. Mar 4, 2021 by Sharon Lauck (laucks)

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 required** ~~IELTS is generally required~~ for **admission. GRE scores are not required.** ~~admission.~~

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

Justification for request

Updated catalog to reflect the elimination of the GRE requirement.

Supporting Documents

~~MS&T PC November 2020.pdf~~

Course Reviewer Comments

Key: 166

Program Change Request

Date Submitted: 04/01/21 11:05 am

Viewing: GL&GPH-PHD : Geology and Geophysics PhD

File: 271.8

Last approved: 06/14/19 2:11 pm

Last edit: 04/01/21 11:05 am

Changes proposed by: sbrower

Catalog Pages Using this Program
Geology and Geophysics

Start Term
Fall **2021** ~~2019~~
Program Code
GL&GPH-PHD
Department
Geosciences and Geological and Petroleum Engineering
Title
Geology and Geophysics PhD

Program Requirements and Description

In Workflow

1. **RGEOSENG 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. 04/01/21 12:40 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 04/01/21 1:12 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/07/21 1:09 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair

History

1. Jun 14, 2019 by Sharon Lauck (laucks)

All Geology and Geophysics Ph.D. students **are required to take** the **Professional Geosciences Skills course (GEOLOGY 6100)** ~~**GEOLOGY 6100)**~~ **and either Advanced Physical Geology (GEOLOGY 5111) or Global Tectonics (GEOPHYS 5096).** A qualifying examination is required of all Ph.D. students during the third semester of residency.

For students whose native language is not English, a minimum score of 79 TOEFL, or ~~**on thestandard Test of English as**~~ **a minimum score of 53 PTE, or a minimum score of 6.5 IELTS is** ~~**Foreign Language is generally**~~**required** for admission. **GRE scores are not required.**

~~The minimum Graduate Record Examinations (GRE) scores required for acceptance consideration in the Geology and Geophysics graduate program are Q = 148, Q+V = 300, and A(W) =3.0.~~

Justification for request

Updated catalog to reflect the elimination of the GRE requirement. Also updated the English proficiency requirement.

Supporting Documents

Course Reviewer Comments

Key: 271

Program Change Request

A deleted record cannot be edited

Program Deactivation Proposal

Date Submitted: 04/05/21 1:21 pm

Viewing: HUM ENG-MI : Humanitarian Engineering and Science Minor

File: 235.7

Last approved: 08/27/14 12:25 pm

Last edit: 04/05/21 1:21 pm

Changes proposed by: sbrower

Catalog Pages Using this Program
Geological Engineering

Start Term
Fall 2021 ~~8/1/2014~~
Program Code
HUM ENG-MI
Department
Geosciences and Geological and Petroleum Engineering
Title
Humanitarian Engineering and Science Minor

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/05/21 1:21 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 04/05/21 1:27 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/05/21 1:31 pm Marita Tibbetts (tibbettsmg): Rollback to CCC Secretary for Pending CCC Agenda post
4. 04/05/21 1:32 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
5. 04/09/21 12:59 pm Stephen Raper (sraper): Approved

for Engineering
DSCC Chair

History

1. Jul 23, 2014 by A Elmore (elmoreac)
2. Aug 27, 2014 by kleb6b
3. Aug 27, 2014 by pantaleoa
4. Aug 27, 2014 by pantaleoa
5. Aug 27, 2014 by pantaleoa
6. Aug 27, 2014 by pantaleoa

Minor in Humanitarian Engineering and Science

Humanitarian engineering may be described as a multi-disciplinary approach to improve the well-being of underserved or developing communities and/or populations. The purpose of the minor is to provide the opportunity to all Missouri S&T students to:

- Potentially participate in activities designed to improve the well-being of underserved or developing communities/populations
- Address quality of life issues, local leadership partnerships, resource allocation, the natural world, and climate and risk
- Obtain a degree that explicitly requires experiential service learning

The Humanitarian Engineering and Science Minor requires the completion of a minimum of 15 hours of courses as described below:

A minimum of three semesters (for a minimum total of 1.5 SCH):	
GEO ENG 1810	Humanitarian Engineering and Science Colloquium
A minimum of three semesters (for a minimum total of 1.5 SCH):	
GEO ENG 1880	Civic Engagement
Three hours of ethics-related coursework to be selected from:	
PHILOS 3223	Bioethics
PHILOS 3225	Engineering Ethics
PHILOS 3235	Business Ethics
Nine hours of electives to be selected from:	
ARCH ENG 5642	Sustainability, Population, Energy, Water, and Materials (co-listed with CIV ENG 5642 and ENV ENG 5642)
BIO SCI 2372	Issues in Public Health
BUS 3115	Introduction to Teambuilding and Leadership
ECON 4440	Environmental And Natural Resource Economics
ECON 4641	Foundations of Sustainability
ECON 4642	Introduction to Global Eco- and Social-preneurship and Innovation
ECON 4730	Economic Development

ENG MGT 4330	Human Factors
ENGLISH 3228	The American Experience
GEO ENG 5331	Subsurface Hydrology
GEO ENG 5211	Introduction to International Engineering and Design Lab
GEO ENG 5247	Introduction to International Engineering and Design
GEO ENG 5092	International Engineering and Design
HISTORY 3510	Twentieth Century Technology And Society
MKT 3210	Consumer Behavior
MKT 4150	Course MKT 4150 Not Found
POL SCI 2500	International Relations
POL SCI 3510	Course POL SCI 3510 Not Found
PSYCH 4600	Social Psychology
PSYCH 4710	Human Factors
PSYCH 4730	Environmental Psychology
PSYCH 4992	Cross-Cultural Psychology
SP&M S 3235	Intercultural Communication
SP&M S 3250	Interpersonal Communication
Foreign language - a maximum of 4 SCH may be applied to the Humanitarian Engineering and Science Minor electives requirement.	

Justification for request

Deactivating minor since it's no longer offered.

Supporting Documents

Course Reviewer Comments

tibbettsmg (04/05/21 1:31 pm): Rollback: rollback

Key: 235

Program Change Request

Date Submitted: 03/30/21 7:08 am

Viewing: IST-BS : Information Science and Tch BS

File: 75.32

Last approved: 06/18/18 12:29 pm

Last edit: 03/30/21 7:08 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Information Science and Technology

Start Term
Fall **2021** ~~2018~~
Program Code
IST-BS
Department
Business and Information Technology
Title
Information Science and Tch BS

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 11:27 am siauk: Approved for RINFSCTE Chair
2. 08/31/20 11:58 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 12:12 pm Marita Tibbetts (tibbettsmg): Approved for Pending CCC Agenda post
5. 10/07/20 10:10 am Marita Tibbetts (tibbettsmg): Rollback to Initiator
6. 03/30/21 11:21 pm siauk: Approved for RINFSCTE Chair

7. 03/31/21 12:06 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
8. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Apr 28, 2014 by Barry Flachsbart (barryf)
2. Jan 30, 2015 by Barry Flachsbart (barryf)
3. Jul 21, 2015 by pantaleoa
4. Jul 21, 2015 by pantaleoa
5. Jul 28, 2015 by kleb6b
6. Mar 7, 2016 by Barry Flachsbart (barryf)
7. Apr 21, 2017 by Crystal Wilson (wilsoncry)
8. Jun 18, 2018 by Barry Flachsbart (barryf)

Bachelor of Science
Information Science and Technology

In Information Science and Technology, the Bachelor of Science degree consists of 120 credit hours. All undergraduate students in Business and Management Systems are required to complete a General Education Requirements Core, including courses in Humanities, Social Sciences, Mathematics, Science, and Communication Skills.

A common departmental core of courses in Management and Information Technology helps provide students with skills to succeed in a fast-changing and globalized environment. Information Science and Technology (IST) Core courses and IST Electives provide students with comprehensive knowledge of information technology utilization in businesses. These courses include business analytics & data science, database management, systems analysis, introduction to data science and management, computing internals, networks and communications, and electronic and mobile commerce. The electives for this degree consist of advanced coursework in the areas introduced by the required courses.

A minimum grade of "C" is required in the IST Core, IST Electives, Management, and Information Technology courses. Students have 9 credit hours for free electives.

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
BUS 1810[1]	1	PSYCH 1101	3
ENGLISH 1120	3	MATH 1212	4
~~MATH 1140[5]~~	~~3~~	IS&T 1561	3
~~Science Elective[2]~~	~~3~~	BUS 1110	3
IS&T 1750	3	BUS 1210	3
~~Laboratory w/Science Elective~~	~~1~~		
7 credit hours of Mathematical Science or Science[5]	**7**		
	14		16
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
ECON 1200	3	IS&T 3131	3
SP&M S 1185	3	Science Elective[2]	3
IS&T 1562	3	IS&T Elective [4]	3
ENGLISH 1600 or TCH COM 1600[6]	3	STAT 3111	3
ERP 2110	3	ECON 1100	3
	15		15
Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
IS&T 4654	3	IS&T 3343	3
FINANCE 2150	3	MKT 3110	3
IS&T 3423	3	IS&T 3420	3
IS&T 3333	3	IS&T 4641	3
IS&T Elective [4]	3	ENGLISH 2560 or TCH COM 2560	3
	15		15
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
Free Elective	3	BUS 5980	3
Fine Art, Social Science, or Humanities Elective[3]	3	POL SCI 1200	3
IS&T Electives [4]	6	IS&T Elective[4]	3
History Elective	3	Free Electives	6
	15		15
Total Credits: 120			

A grade of “C” or better is required in the following courses for graduation; BUS 1110 , BUS 1210 , BUS 1810 , BUS 5980 , ECON 1100 , ECON 1200 , ERP 2110 , FINANCE 2150 , MKT 3110, IS&T 1561, IS&T 1562 , IS&T 1750 , IS&T 3131 , IS&T 3333 , IS&T 3343 ,

IS&T 3420 , IS&T 3423, IS&T 4641, IS&T 4654, and all IS&T Electives.

1	Writing intensive course
2	Any course in the following areas: biology, chemistry, geology, geological engineering, physics.
3	Any course in the following areas not used for other degree requirements: art, economics, English, foreign language, history, literature, music, philosophy, political science, psychology, sociology, theater.
4	A grade of “C” or better is required in IS&T elective courses for graduation. Electives may be • any IS&T or ERP designated course at the 3000-level or above • BUS 5730, • BUS 5910 • COMP SCI 4700 • or COMP SCI 5601.
5	Mathematical Science is defined as any MATH, STAT, COMPSCI or IST course not otherwise covered in the degree program. For definition of Science, refer to footnote 2.
6	**ENGLISH 1160 may be substituted for ENGLISH 1600**

Justification for request

Reconcile issues in catalog. Make adjustments for new math curriculum.

Supporting Documents

Course Reviewer Comments

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

Key: 75

Program Change Request

Date Submitted: 03/30/21 1:07 pm

Viewing: L COMM-MI : Leadership Communication Minor

File: 77.2

Last approved: 05/07/14 11:11 am

Last edit: 04/01/21 10:30 am

Changes proposed by: kswenson

Catalog Pages Using this Program
Speech and Media Studies

Start Term
Fall 2021 ~~08/01/2014~~
Program Code
L COMM-MI
Department
English and Technical Communication ~~Arts, Languages, & Philosophy~~
Title
Leadership Communication Minor

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/01/21 10:09 am Audra Merfeld-Langston (audram): Approved for RPHILOSO Chair
2. 04/01/21 10:30 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/01/21 10:40 am Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

History

1. May 7, 2014 by Lahne Black (lahne)

Leadership Communication

Core Requirement:		3
SP&M S 2181	Communication Theory	
Additional Requirements:		12
SP&M S 3235	Intercultural Communication	
SP&M S 3250	Interpersonal Communication	
SP&M S 3255	Discussion And Conference Methods	
~~SP&M S 5265~~	~~Course SP&M S 5265 Not Found~~	
SP&M S 3265	**Leadership Communication**	
SP&M S 3270	Leadership Practices	
Advisor or approved substitute for one of the above.		

Justification for request

Fixing course number

Supporting Documents

Course Reviewer Comments

tibbettsmg (04/01/21 10:30 am): updated eff term to FS21, changed dept to English, and formatting of course list. mt

Key: 77

Program Change Request

Date Submitted: 03/30/21 7:11 am

Viewing: MGMT-MI : Management Minor

File: 138.13

Last approved: 10/28/20 1:11 pm

Last edit: 03/30/21 7:11 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Business and Management Systems
Information Science and Technology

Start Term
Fall ~~Spring~~ 2021
Program Code
MGMT-MI
Department
Business and Information Technology
Title
Management Minor

Program Requirements and Description

In Workflow

1. **RBUSADMN 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. 04/02/21 12:53 pm siauk: Approved for RBUSADMN Chair
2. 04/02/21 1:26 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/02/21 1:26 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Aug 5, 2014 by pantaleoa
2. Jun 17, 2015 by pantaleoa
3. Jun 17, 2015 by pantaleoa
4. Jul 14, 2015 by pantaleoa
5. Jun 27, 2016 by Barry Flachsbart

(barryf)
6. Oct 28, 2020 by Marita Tibbetts (tibbettsmg)

Minor in Management

The minor in management requires the following 15 hours of coursework:

BUS 1110	Introduction to Management and Entrepreneurship	3
BUS 1414	The Inclusive Workplace	3
~~Four courses from the following list:~~		~~12~~
Three courses from the following list:		**9**
BUS 2910	Business Law	
BUS 3115	Introduction to Teambuilding and Leadership	
~~BUS 4111~~	~~Course BUS 4111 Not Found~~	
~~BUS 4150~~	~~Course BUS 4150 Not Found~~	
BUS 5111	**Business Negotiations**	
BUS 5150	**Customer Focus and Satisfaction**	
BUS 5360	Business Operations	
BUS 5470	Human Resource Management	
BUS 5580	Strategic Management	
BUS 5910	Privacy and Information Security	
IS&T 4261	Information Systems Project Management	
ENG MGT 3320	Introduction to Project Management	

Justification for request
Reconcile issues in catalog
Supporting Documents
Course Reviewer Comments

Key: 138

Program Change Request

Date Submitted: 03/30/21 7:11 am

Viewing: MOBLB&T-MI : Mobile Bus & Digital Transformation ~~Tech Minor~~

File: 101.7

Last approved: 07/14/15 3:41 pm

Last edit: 03/30/21 7:11 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Business and Management Systems
Information Science and Technology

Start Term
Fall 2021 ~~08/17/2015~~
Program Code
MOBLB&T-MI
Department
Business and Information Technology
Title
Mobile Bus & **Digital Transformation** ~~Tech Minor~~

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 11:30 am siauk: Approved for RINFSCTE Chair
2. 08/31/20 11:23 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 08/31/20 11:25 am Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair
4. 09/15/20 12:17 pm Marita Tibbetts (tibbettsmg): Approved for Pending CCC Agenda post
5. 10/07/20 10:10 am Marita Tibbetts (tibbettsmg): Rollback to Initiator
6. 10/19/20 3:57 pm siauk: Approved for RINFSCTE Chair

7. 10/20/20 9:08 am Marita Tibbetts (tibbettsmg): Rollback to Initiator
8. 03/30/21 11:21 pm siauk: Approved for RINFSCTE Chair
9. 03/31/21 12:09 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
10. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Aug 5, 2014 by pantaleoa
2. Jun 17, 2015 by pantaleoa
3. Jul 14, 2015 by pantaleoa

Minor in Mobile Business and Digital Transformation ~~Technology~~

The minor in mobile business and technology requires the following15 hours of coursework:

Two or three of the following courses must be taken:		**9**
IS&T 4641	Digital Commerce and IoT Analytics	
~~IS&T 4335~~	~~Course IS&T 4335 Not Found~~	~~3~~
IS&T 4654	**Introduction to Web Design and Digital Media Studies (Two or three of the following courses must be taken:)**	
IS&T 5335	**Fundamentals of Mobile Technology for Business**	
ERP 5240	Enterprise Application Development and Software Security	
Two or three of the following courses must be taken:		6
BUS 1414	**The Inclusive Workplace**	
IS&T 3333	Data Networks and Information Security	
IS&T 5652	Advanced Web Development	
IS&T 5886	Prototyping Human-Computer Interactions	
ERP 4610	Customer Relationship Management in ERP Environment	
ERP 5310	Supply Chain Management Systems in an ERP Environment	

	ERP 5210	Performance Dashboard, Scorecard and Data Visualization
	MKT 5310	**Digital Marketing and Promotions**
	IS&T 5680	**Digital Media Development and Interactive Design**

Justification for request

Reconcile issues in catalog

Supporting Documents

Course Reviewer Comments

tibbettsmg (08/31/20 11:23 am): updated term to Sp21-mt

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

tibbettsmg (10/20/20 9:07 am): changed term to FS21. MT

tibbettsmg (10/20/20 9:08 am): Rollback: Just need the approval documents attached. 5641 is in the Chair workflow. MT

Key: 101

Program Change Request

Date Submitted: 03/17/21 3:10 pm

Viewing: NU ENG-BS : Nuclear Engineering BS

File: 104.18

Last approved: 07/06/20 8:53 am

Last edit: 04/06/21 2:22 pm

Changes proposed by: schlegelj

Catalog Pages Using this Program

Nuclear Engineering

Start Term

Fall **2021** ~~2020~~

Program Code

NU ENG-BS

Department

Mining & Nuclear Engineering

Title

Nuclear Engineering BS

Program Requirements and Description

In Workflow

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

Approval Path

1. 11/09/20 1:26 pm Kristy Giacomelli-Feys (kristyg): Rollback to Initiator
2. 11/10/20 1:58 pm AYODEJI Alajo (alajoa): Approved for NUC ENG Chair
3. 11/10/20 2:16 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
4. 11/20/20 12:30 pm Stephen Raper (sraper): Rollback to Initiator
5. 03/12/21 11:55 am AYODEJI Alajo (alajoa): Approved for NUC ENG Chair
6. 03/12/21 12:23 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
7. 03/17/21 2:41 pm Stephen Raper

(sraper): Rollback to Initiator
8. 04/06/21 2:03 pm AYODEJI Alajo (alajoa): Approved for NUC ENG Chair
9. 04/06/21 2:23 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
10. 04/06/21 2:29 pm Marita Tibbetts (tibbettsmg): Rollback to CCC Secretary for Engineering DSCC Chair
11. 04/07/21 1:18 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
12. 04/16/21 10:46 am Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. Aug 6, 2014 by Lahne Black (lahne)
2. Jul 21, 2015 by pantaleoa
3. Mar 27, 2017 by Hyoung-Koo Lee (leehk)
4. Jul 6, 2020 by Brittany Parnell (ershenb)

Bachelor of Science
Nuclear Engineering

Entering freshmen desiring to study nuclear engineering will be admitted to the Foundational Engineering and Computing Program. They will, however, be permitted, to state a nuclear engineering preference, which will be used as a consideration for available departmental scholarships.

For the bachelor of science degree in nuclear engineering a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. A student must maintain an average of at least two grade points overall and for all courses taken in nuclear engineering.

Each student's program of study must contain a minimum of **21** ~~18~~ credit hours of course work from the humanities and the social sciences areas and should be chosen according to the following rules:

1. All students are required to take one American history course and one economics course. The history course is to be selected from HISTORY 1200, HISTORY 1300, HISTORY 1310,or POL SCI 1200. The economics course may be either ECON 1100 or ECON 1200.
2. Students must take ENGLISH 1120. **Students must also take one communications elective, selected from ENGLISH 1160, ENGLISH 3560, or SP&M S 1185.**
3. ~~Students are also required to take one humanities course to be selected from "The Approved List of Humanities and Social Science Courses for Engineering Degrees" maintained by the office of undergraduatestudies.~~**The** ~~Of the~~ remaining **nine** ~~hours, six credit~~ hours must be taken in humanities or social sciences at the 1000 level or **above.** ~~above and must be selected from "The Approved List of Humanities and Social Science Courses for Engineering Degrees" maintained by the office of undergraduate studies. One of these courses must have as a prerequisite one of the humanities or social sciences courses alreadytaken.~~Foreign language courses numbered 1180 can be considered to be one of these courses. (Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 4000 level.)
4. Skill courses are not allowed to meet humanities and social sciences requirements except in foreign languages. Students who select the foreign language option are urged to take more than one course.
5. Special topics, special problems courses and honors seminars are allowed only by petition to and approval by the student's department chair.

The nuclear engineering program at Missouri S&T is characterized by its focus on the scientific basics of engineering and its innovative application. The necessary interrelations among the various topics, the engineering disciplines, and the other professions as they naturally come together in the solution of real world problems are emphasized as research, analysis, synthesis, and design are presented and discussed through classroom and laboratory instruction.

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
~~Freshman Chemistry Requirement[4]~~	~~5~~	HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3
ENGLISH 1120	3	MATH 1215	4
FR ENG 1100	1	MECH ENG 1720	3
MATH 1214	4	PHYSICS 1135	4
NUC ENG 1105[1]	1	Elective-Hum or Soc Sci[2]	3
CHEM 1100	**1**		
CHEM 1310	**4**		
CHEM 1319	**1**		
	15		17
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CIV ENG 2200	3	~~STAT 3111, or 3113, or 3115, or 3117~~	~~3~~
~~Elective[6]~~	~~3~~	CIV ENG 2210	3
COMP SCI 1972, or 1970, or 1971	**2**	ECON 1100 or 1200	3
COMP SCI 1982, or 1980, or 1981	**1**	MATH 3304	3
MATH 2222	4	~~PHYSICS 2305~~	~~3~~
NUC ENG 2105	2	**MECH ENG 2519**	**3**

PHYSICS 2135	4	NUC ENG 2406	1
		NUC ENG 3103, or PHYSICS 2305, or PHYSICS 2311	**3**
	16		16

Junior Year

First Semester	Credits	Second Semester	Credits
~~Elective-Hum or Soc Sci[3]~~	~~3~~	ENGLISH 1160, or 3560, or SPM S 1185	3
ELEC ENG 2800	**3**	NUC ENG 4312 or 5312	3
MET ENG 2110	3	NUC ENG 3223	3
NUC ENG 3205	3	NUC ENG 4203 or 5203	3
NUC ENG 3221	3	~~NUC ENG 4229~~	~~3~~
COMP SCI 3200 (OR 3000 Level MATH, 5000 Level STAT)	3	~~Technical Electives-3000 or 4000 level[5]~~	~~3~~
		STAT 3115, or 3111, or 3113, or 3117	**3**
		Nuclear Engineering Elective[3]	**3**
	15		18

Senior Year

First Semester	Credits	Second Semester	Credits
NUC ENG 4207 or 5207	3	~~Elective-Hum or Soc Sci[3]~~	~~3~~
NUC ENG 4241 or 5241	3	~~Technical Elective-4000 level[5]~~	~~3~~
NUC ENG 4428 or 5428	3	~~Free Elective[4]~~	~~6~~
NUC ENG 4496	2	NUC ENG 4438 or 5438	2
Nuclear Engineering Elective	3	NUC ENG 4497	3
Elective-Hum or Soc Sc	3	**Technical Elective - 3000 or 4000 level[4]**	**3**
		Technical Elective - 4000 Level	**3**
		Elective - Hum or Soc Sc	**3**
	17		14
Total Credits: 128			

Note: Minimum credit hours for graduation is 128.

1	Nuclear Engineering students are expected to take Nuclear Technology Applications (NUC ENG 1105) during their Freshman year. However, transfer students are exempt. Students who attend the Nuclear Engineering Summer Camp as high school students may have this requirement waived.
2	Humanities and Social Science to be taken in accordance with the policy described above.
3	Any Nuclear Engineering course 4000 level or higher.
4	Any Math, Science, or Engineering courses at the appropriate level.
~~5~~	~~Any Math, Science, or Engineering courses.~~
~~6~~	~~The programming elective consists of a lecture and lab combination, and may be selected from COMP SCI 1970 and COMP SCI 1980, or COMP SCI 1971 and COMP SCI 1981, or COMP SCI 1972 and COMP SCI 1982, or COMP SCI 1570 and COMP SCI 1580. Note that COMP SCI 1570 and COMP SCI 1580 requires one more credit hour than the other options.~~

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

Justification for request

1. Update language regarding humanities and social sciences based on most recent policy.
2. Formalize policy revisions regarding waiver of NUC ENG 1105 for students who attend the Nuclear Engineering Summer Camp.
3. Updates to the curriculum to improve student preparedness and add flexibility to the degree program.

Supporting Documents

Course Reviewer Comments

kristyg (11/09/20 1:26 pm): Rollback: Rollback per request.

sraper (11/20/20 12:30 pm): Rollback: at Dr. Schlegel's request.

tibbettsmg (03/12/21 12:22 pm): NE 4428/5428 are currently in workflow proposing increase to 3cr hrs. MT

sraper (03/17/21 2:41 pm): Rollback: CEC Requires a minimum of 128 credit hours. this is only showing 127.

tibbettsmg (04/06/21 2:22 pm): updated formatting. 4496/4428/5428 credit hour changes are in workflow. MT

tibbettsmg (04/06/21 2:29 pm): Rollback: rollback to CCC Secretary for further review. mt

Key: 104

Program Change Request

Date Submitted: 04/02/21 9:18 am

Viewing: PE ENG-BS : Petroleum Engineering BS

File: 108.45

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

Last edit: 04/02/21 9:18 am

Changes proposed by: sbrower

Catalog Pages Using this Program
Petroleum Engineering

Start Term
Fall **2021** ~~2020~~
Program Code
PE ENG-BS
Department
Geosciences and Geological and Petroleum Engineering
Title
Petroleum Engineering BS

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/01/21 12:33 pm David Borrok (borrokd): Rollback to Initiator
2. 04/02/21 12:59 pm David Borrok (borrokd): Approved for RGEOSENG Chair
3. 04/02/21 2:15 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
4. 04/09/21 12:59 pm Stephen Raper (sraper): Approved for Engineering DSCC Chair

History

1. Sep 21, 2015 by reflori
2. Jun 18, 2018 by Shari Dunn-Norman (caolila)

3. Jun 14, 2019 by Sharon Lauck (laucks)
4. Mar 3, 2020 by Brittany Parnell (ershenb)
5. Jul 1, 2020 by Sharon Lauck (laucks)

Bachelor of Science
Petroleum Engineering

Entering freshmen desiring to study Petroleum Engineering will be admitted to the Foundational Engineering and Computing Program. They will, however, be permitted, if they wish, to state a Petroleum Engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Foundational Engineering and Computing Program is on enhanced advising and career counseling, with the goal of providing to the student the information necessary to make an informed decision regarding the choice of a major. A grade point average of 2.80 or higher is required to enter the Petroleum Engineering program from the Foundational Engineering and Computing Program.

For the Bachelor of Science degree in Petroleum Engineering a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. A student must maintain at least two grade points per credit hour for all courses taken in Petroleum Engineering.

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

1. Six credit hours of English: All students are required to take ENGLISH 1120 and either ENGLISH 3560 (preferred) or ENGLISH 1160 or ENGLISH 1600.
2. Nine credit hours of basic humanities and social sciences: All students are required to take one history course, one economics course and one humanities course. The history course is to be selected from HISTORY 1200, HISTORY 1300, HISTORY 1310, or POL SCI 1200. The economics course may be either ECON 1100 or ECON 1200 . The humanities course selected must meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog.
3. Three credit hours as a depth requirement. Three credit hours must be taken in humanities or social sciences at the 2000-level or above and meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog. This course must have as a prerequisite one of the humanities or social sciences courses already taken. Foreign language courses numbered 1180 will be considered to satisfy this requirement. Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 4000-level. All courses taken to satisfy the depth requirement must be taken after graduating from high school.
4. Three credit hours of elective humanities and social sciences must meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog..
5. Special topics and special problems and honors seminars are allowed only by petition to and approval by the student's department chair.

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

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

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
FR ENG 1100	1	MATH 1215	4
CHEM 1310	4	PHYSICS 1135	4
CHEM 1319	1	MECH ENG 1720	3
MATH 1214	4	GEO ENG 1150 or GEOLOGY 1110	3
HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3	PET ENG 2510	3
ENGLISH 1120	3		
	16		17
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
MATH 2222	4	MATH 3304	3
PHYSICS 2135	4	PET ENG 3520	3
GEOLOGY 3310 (Geol 3319 lab optional)	3	MECH ENG 2350	2
PET ENG 3320	3	CIV ENG 2210	3
CIV ENG 2200	3	GEOLOGY 3620	3
		ECON 1100 or 1200	3
	17		17
Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
GEOLOGY 5513	3	PET ENG 3330	3
GEOPHYS 4231	3	PET ENG 4410	3
CIV ENG 3330	3	PET ENG 4590	3
PET ENG Elective[4]	3	PET ENG 4710	3
PET ENG 4210	3	Humanities/Social Sci Elective[2]	3
	15		15
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
PET ENG 4010[3]	1	PET ENG 4097	3
MECH ENG 2527	3	GEO ENG 4115	3
PET ENG 4520	3	Hum/Soc Sci Elective[2]	3
PET ENG 4720	3	PET ENG Elective[4]	3
PET ENG Elective[4]	3	ENGLISH 1600[5]	3
Humanities/Social Sci Elective[2]	3		
	16		15
Total Credits: 128			

1	All freshmen Petroleum Engineering students must enroll in CHEM 1100 (Intro to Lab Safety and Haz Mat).
2	Humanities/Social Science electives are to be selected from a list of approved courses to be taken in accordance with the University

	policy. Petroleum Engineering students are especially encouraged to study foreign languages
3	All Petroleum Engineering students must take the Fundamentals of Engineering Examination prior to graduation. A passing grade on this examination is not required to earn a B.S. degree, however, it is the first step to becoming a registered professional engineer. This requirement is part of Missouri S&T assessment process as described in Assessment Requirements found elsewhere in this catalog. Students must sign a release form giving the University access to their Fundamentals of Engineering Examination score.
4	Select Petroleum Engineering electives in accordance with interest area. Students interested in reservoir engineering select from topics in advanced reservoir engineering, simulation, natural gas engineering, and formation characterization. Students interested in drilling/completions and production select petroleum electives such as advanced drilling, well completions, stimulation. Other general interest petroleum electives may be selected as available.
5	Students may also select ENGLISH 1160 or ENGLISH 3560.

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

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

Accelerated BS/MS Program Option for Petroleum Engineering Majors

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

The benefits for undergraduate students admitted to the program are:

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

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

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

completion of the MS degree requirements, or fails to maintain continuous enrollment at Missouri S&T, the shared-credit courses may not apply toward graduate requirements in the event of future readmission.

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

Justification for request

Revised catalog Accelerated BS/MS option to indicate participants must formally apply to the MS program.

Supporting Documents

Course Reviewer Comments

borrokd (04/01/21 12:33 pm): Rollback: More changes

Key: 108

Program Change Request

Date Submitted: 04/01/21 11:07 am

Viewing: PE ENG-MS : Petroleum Engineering MS

File: 171.8

Last approved: 03/04/21 10:02 am

Last edit: 04/01/21 11:07 am

Changes proposed by: sbrower

Catalog Pages Using this Program

Petroleum Engineering

Start Term

Fall 2021

Program Code

PE ENG-MS

Department

Geosciences and Geological and Petroleum Engineering

Title

Petroleum Engineering MS

Program Requirements and Description

In Workflow

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

Approval Path

1. 04/01/21 12:40 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 04/01/21 1:08 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/09/21 12:59 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)
3. Mar 4, 2021 by Sharon Lauck (laucks)

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.

For students whose native language is not English, a minimum score of 79 TOEFL, or a minimum score of 53 PTE, or a minimum score of 6.5 IELTS is required for admission. GRE scores are not required.

~~Suggested minimum GREscores: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

Updated catalog to reflect the elimination of the GRE requirement. Also updated the English proficiency requirement.

Supporting Documents

~~MS&T PC November 2020 approval doc.pdf~~

Course Reviewer Comments

Key: 171

Program Change Request

Date Submitted: 03/18/21 9:28 am

Viewing: PHYSIC-BS : Physics BS

File: 115.41

Last approved: 01/30/20 3:27 pm

Last edit: 03/18/21 9:30 am

Changes proposed by: vojtat

Catalog Pages Using this Program
Physics

Start Term
Fall **2021** ~~2020~~
Program Code
PHYSIC-BS
Department
Physics
Title
Physics BS

Program Requirements and Description

In Workflow

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

Approval Path

1. 03/17/21 5:53 pm Thomas Vojta (vojtat): Approved for RPHYSICS Chair
2. 03/18/21 8:40 am Marita Tibbetts (tibbettsmg): Rollback to Initiator
3. 03/18/21 9:29 am Thomas Vojta (vojtat): Approved for RPHYSICS Chair
4. 03/18/21 9:30 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
5. 04/07/21 1:10 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair

History

1. May 6, 2014 by waddill
2. Jul 21, 2015 by pantaleoa
3. Jun 27, 2016 by waddill
4. Jun 18, 2018 by Pamela Crabtree (crabtree)
5. Jun 26, 2018 by Crystal Wilson (wilsoncry)
6. Jun 14, 2019 by Thomas Vojta (vojtat)
7. Jan 30, 2020 by Thomas Vojta (vojtat)

Bachelor of Science
Physics

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

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

Freshman Year			
First Semester	**Credits**	**Second Semester**	**Credits**
CHEM 1310	4	CHEM 1320	3
CHEM 1319	1	HISTORY 1200, or 1300, or 1310, or POL SCI 1200	3
CHEM 1100	1	PHYSICS 1135	4
ENGLISH 1120	3	MATH 1215	4
PHYSICS 1101	1	Electives[1]	2
MATH 1214	4		
	14		16
Sophomore Year			
First Semester	**Credits**	**Second Semester**	**Credits**
ENGLISH 1160	3	MATH 3304	3
MATH 2222	4	PHYSICS 2311 or 2305	3
Elective[1]	3	PHYSICS 2129	3
COMP SCI 1500 or 1972 ***and*** 1982	3	PHYSICS 2401	3
PHYSICS 2135	4	Elective[1]	3

	17		15
Junior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
PHYSICS 3201	3	PHYSICS 3211	3
PHYSICS 3119	3	PHYSICS 3129	3
PHYSICS 3311	3	Math/Stat Elective[2]	3
Math/Stat Elective[2]	3	Electives[1]	7
Electives[1]	6		
	18		16
Senior Year			
First Semester	**Credits**	**Second Semester**	**Credits**
PHYSICS 4211	3	PHYSICS 4311	3
PHYSICS 4301	3	Elective-Humanities (3000 level)[1]	3
Physics Elective[3]	3	Physics Elective[3]	3
Electives[1]	7	Electives[1]	7
	16		16
Total Credits: 128			

Note: The minimum credit hours required for a bachelor of science in physics is 128 hours. No more than two of the required physics and mathematics courses with a grade of "D" may be used to meet graduation requirements. Upon petition to and approval by the physics faculty, three semester hours of advanced ROTC (military science or aerospace credit studies) credit can be counted as elective credit to meet requirements for graduation.

1	Electives, in addition to the math/stat electives[2] and Physics electives[3], shall include six hours of social studies and nine hours of humanities, at least three of which must be literature and at least three of which must be at the 3000 level or above not including Special Problems courses (PHILOS 4345 recommended). 19 hours of free electives may be used to develop an emphasis area. 18 hours of elective credit shall be in courses at the 3000 level or above.
2	Six hours of mathematics or statistics beyond MATH 3304 are required. MATH 3108, MATH 5222, MATH 5325, or MATH 5351 are recommended.
3	In addition to the specific physics courses listed (PHYSICS 3311, PHYSICS 3201, PHYSICS 4311, PHYSICS 4211, PHYSICS 3119, PHYSICS 3129, and PHYSICS 4301) two other physics 3000 level or higher courses are required.

Emphasis in Secondary Education

Students may develop an emphasis area in secondary education that will allow them to teach physics in grades 9-12 in Missouri. Please contact the Department of Teacher Education for a complete list of requirements.

In addition to maintaining a 3.0 content and professional requirement GPA, students must pass the appropriate content assessment to be eligible for student teaching. Missouri S&T allows students to choose their student teaching placement, if the district agrees and a qualified cooperating teacher is available. This program is approved by the Missouri Department of Elementary and Secondary Education for initial teacher certification. Students intending to teach in other states are responsible for investigating the reciprocity agreement of that state agency.

a. Professional requirements courses:

EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
PSYCH 2300	Educational Psychology	3
or EDUC 2102	Educational Psychology	
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
EDUC 2310	**Education Of The Exceptional Child**	**3**
EDUC 3216	Instructional Literacy in the Content Area	3
EDUC 3280	Instructional Strategies in the Content Area	3
EDUC 3340	**Assessment of Student Learning**	**3**
PSYCH 3310	Developmental Psychology	3
~~PSYCH 4310~~	~~Psychology Of The Exceptional Child~~	~~3~~
~~or EDUC 4310~~	~~Course EDUC 4310 Not Found~~	
EDUC 4298	Student Teaching Seminar	1
Fifteen of these credit hours may be used to substitute for six hours of mathematics electives, six hours of physics electives, and three hours of computer science courses.		

b. Clinical experience courses:

EDUC 1104	Teacher Field Experience I	1
EDUC 1164	Teacher Field Experience II	2
EDUC 3298	**Course EDUC 3298 Not Found**	**1**
EDUC 4299	Student Teaching	12

c. Take these additional courses:

SP&M S 1185	Principles Of Speech	3
POL SCI 1200	American Government	3
PSYCH 1101	General Psychology	3
BIO SCI 1113	General Biology	3
PHYSICS 1605	Environmental Physics I	3
HISTORY 3530	History of Science	3
A 3 hour Art/Music/Theater elective		3

d. Complete the requirements for teacher certification listed in this catalog.

Justification for request

Changes to curriculum of Emphasis Area in Secondary Education in response to changes in the teacher education program.

Supporting Documents

Course Reviewer Comments

tibbettsmg (03/18/21 8:40 am): Rollback: Educ 3001 should be Educ 3298. MT

tibbettsmg (03/18/21 9:30 am): updated eff term to FS21. mt

Key: 115

Program Change Request

New Program Proposal

Date Submitted: 04/02/21 2:35 pm

Viewing: PROPOSED : Education BS

File: 344

Last edit: 04/16/21 10:10 am

Changes proposed by: bakm75

Start Term
Fall 2021
Program Code
PROPOSED
Department
Teacher Education and Certification
Title
Education BS

Program Requirements and Description

In Workflow

1. **REDUCATION 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. 04/02/21 2:39 pm Beth Kania-Gosche (bkaniagosche): Approved for REDUCATION Chair
2. 04/05/21 1:26 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/05/21 1:43 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

Bachelor of Science in Education

Overview

The Department of Teacher Education and Certification offers a degree in education with options for emphases in elementary (grades 1-6), middle school business, middle school language arts, middle school mathematics, middle school science, or middle school social science.

All students take the core education curriculum; these courses include multiple field experience courses which requires them to observe and teach lessons in schools. The final semester of the program is student teaching when students are immersed full time in a school setting for 16 weeks.

The Missouri Department of Elementary and Secondary Education approves the curricula of these programs. Any substitutions must be approved by the Department of Teacher Education and Certification. Students must also pass the Missouri Content Assessment and meet the GPA requirements to be eligible for student teaching and certification.

Program Learning Outcomes

The program learning outcomes are the Missouri Teacher Standards. These are the same standards principals use to evaluate practicing teachers in Missouri. These outcomes are assessed throughout the program and in the student teaching experience; students must demonstrate evidence of satisfactory progress on each outcome.

Missouri S&T education program graduates will . . .

1. Create learning experiences that make the central concepts, structures, and tools of inquiry of the discipline(s)of subject matter meaningful and engaging for all students.

2. Provide learning opportunities that are adapted to diverse learners and support the intellectual, social, and personal development of all students.

3. Develop, implement, and evaluate curriculum based upon student, district and state standards

4. Use a variety of instructional strategies and resources to encourage students' critical thinking, problem solving, and performance skills

5. Create a learning environment that encourages active engagement in learning, positive social interaction, and self-motivation.

6. Model effective verbal, nonverbal, and media communication techniques with students, colleagues and families to foster active inquiry, collaboration, and supportive interaction in the classroom.

7. Monitor the performance of each student through formative and summative assessment strategies, and devises instruction to enable students to grow and develop, making adequate academic progress.

8. Continually assess the effects of choices and actions on others and seek out opportunities to grow professionally.

9. Have effective working relationships with students, parents, school colleagues, and community members

Core Curriculum

EDUC 1040	Perspectives In Education	2
EDUC 1104	Teacher Field Experience I	1
EDUC 1164	Teacher Field Experience II	2
EDUC 1174	School Organization and Administration For Teachers	2
EDUC 2102	Educational Psychology	3
or PSYCH 2300	Educational Psychology	
EDUC 2310	Education Of The Exceptional Child	3
or PSYCH 4310	Psychology Of The Exceptional Child	

EDUC 3216	Instructional Literacy in the Content Area	3
EDUC 3340	Assessment of Student Learning	3
PSYCH 3310	Developmental Psychology	3
EDUC 4298	Student Teaching Seminar	1
EDUC 4299	Student Teaching	12
Total Credits		35

Emphasis Area: Elementary

An elementary certificate allows students to teach grades 1-6 in the state of Missouri.

EDUC 3215	Teaching Reading in Elementary and Early Childhood Settings	3
EDUC 3217	Analysis and Correction of Reading Difficulties	3
EDUC 3218	Language Arts for Elementary and Early Childhood Teachers	3
EDUC 3220	Teaching Science in the Elementary and Early Childhood Classroom	3
EDUC 3221	Methods of Teaching Math	3
EDUC 3222	Geometric Concepts for Elementary Teachers	3
EDUC 3203	Introduction to STEM Education	3
EDUC 3430	Diverse Literature for Children	3
EDUC 3530	Teaching Integrated Social Studies and Humanities	3
Total Credits		27

Students must take the following general education courses. Substitutions must be approved by the department chair.

ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
SP&M S 1185	Principles Of Speech	3
ART 1180	Art Appreciation	3
or MUSIC 1150	Music Understanding And Appreciation	
or THEATRE 1190	Theatre via Video	
HISTORY 1300	American History To 1877	3
or HISTORY 1310	American History Since 1877	
PHILOS 1105	Self and World: Introduction To Philosophy	3
PSYCH 1101	General Psychology	3
ECON 1100	Principles Of Microeconomics	3
or ECON 1200	Principles Of Macroeconomics	
HISTORY 2110	World Regional Geography	3
POL SCI 1200	American Government	3
HISTORY 1100	Early Western Civilization	3
HISTORY 1200	Modern Western Civilization	3
MATH 1103	Fundamentals Of Algebra	3
or MATH 1120	College Algebra	

PHYSICS 1505	Introductory Astronomy	3
or PHYSICS 1145	College Physics I	
BIO SCI 1223	Biodiversity	3
BIO SCI 1229	Biodiversity Lab	1
MATH 1140	College Algebra	3
or MATH 1160	Trigonometry	
GEOLOGY 1110	Physical And Environmental Geology	3
or CHEM 1310 & CHEM 1319	General Chemistry I and General Chemistry Laboratory	
Total Credits		52

Emphasis Area: Middle School Language Arts

An middle school certificate allows graduates to teach grades 5-9 in the designated subject area.

EDUC 3215	Teaching Reading in Elementary and Early Childhood Settings	3
EDUC 3280	Instructional Strategies in the Content Area	3
EDUC 3335	Curriculum And Instruction Of The Middle School	3
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
ENGLISH 2171	Fiction Writing	3
or ENGLISH 2172	Creative Nonfiction Writing	
ENGLISH 3302	History And Structure Of The English Language	3
ENGLISH 3303	The Grammatical Structure of English	3
or ENGLISH 3301	A Linguistic Study Of Modern English	
ENGLISH 1170	Creative Writing	3
EDUC 3298	Course EDUC 3298 Not Found	
Total Credits		24

Students must also take four literature electives, of which three must be 2000 or 3000 level. Students in this program are eligible for both a literature minor and a creative writing minor.

Students must take the following general education courses.

ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
SP&M S 1185	Principles Of Speech	3
ART 1180	Art Appreciation	3
or MUSIC 1150	Music Understanding And Appreciation	
or THEATRE 1190	Theatre via Video	
ENGLISH 1221	American Literature: 1600 To 1865	3
or ENGLISH 1222	American Literature: 1865 To Present	
PHILOS 1105	Self and World: Introduction To Philosophy	3
or PHILOS 1115	Logic and Reasoning: An Introduction	

HISTORY 1100	Early Western Civilization	3
or HISTORY 1200	Modern Western Civilization	
or HISTORY 1300	American History To 1877	
or HISTORY 1310	American History Since 1877	
POL SCI 1200	American Government	3
ECON 1200	Principles Of Macroeconomics	3
or ECON 1100	Principles Of Microeconomics	
MATH 1103	Fundamentals Of Algebra	3
BIO SCI 1113	General Biology	3
BIO SCI 1219	General Biology Lab	1
GEOLOGY 1110	Physical And Environmental Geology	3
or GEOLOGY 1120	Evolution Of The Earth	
or PHYSICS 1505	Introductory Astronomy	
or PHYSICS 1605	Environmental Physics I	
or CHEM 1310	General Chemistry I	
IS&T 1551	Implementing Information Systems: User Perspective	3
or COMP SCI 1500	Computational Problem Solving	
Total Credits		40

Students must also take an additional humanity elective and three free elective hours.

Emphasis Area: Middle School Mathematics

An middle school certificate allows graduates to teach grades 5-9 in the designated subject area.

ENGLISH 3170	Teaching And Supervising Reading and Writing	3
EDUC 3280	Instructional Strategies in the Content Area	3
EDUC 3335	Curriculum And Instruction Of The Middle School	3
EDUC 3298	Course EDUC 3298 Not Found	
EDUC 3203	Introduction to STEM Education	3
EDUC 3222	Geometric Concepts for Elementary Teachers	3
MATH 1103	Fundamentals Of Algebra	3
MATH 1120	College Algebra	5
or MATH 1140	College Algebra	
MATH 1160	Trigonometry	2
MATH 1208	Calculus With Analytic Geometry I	5
or MATH 1214	Calculus I	
or MATH 1210	Calculus I-A	
MATH 1215	Calculus II	4
or MATH 1221	Calculus With Analytic Geometry II	
or MATH 1211	Calculus I-B	

or MATH 1212	Survey of Calculus	
COMP SCI 1500	Computational Problem Solving	3
or IS&T 1551	Implementing Information Systems: User Perspective	
STAT 1115	Statistics For The Social Sciences I	3
or STAT 3113	Applied Engineering Statistics	
or STAT 3115	Engineering Statistics	
Total Credits		40

Students must take the following general education courses.

ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
SP&M S 1185	Principles Of Speech	3
ART 1180	Art Appreciation	3
or MUSIC 1150	Music Understanding And Appreciation	
or THEATRE 1190	Theatre via Video	
ENGLISH 1221	American Literature: 1600 To 1865	3
or ENGLISH 1222	American Literature: 1865 To Present	
PHILOS 1105	Self and World: Introduction To Philosophy	3
or PHILOS 1115	Logic and Reasoning: An Introduction	
HISTORY 1100	Early Western Civilization	3
or HISTORY 1200	Modern Western Civilization	
or HISTORY 1300	American History To 1877	
or HISTORY 1310	American History Since 1877	
POL SCI 1200	American Government	3
ECON 1200	Principles Of Macroeconomics	3
or ECON 1100	Principles Of Microeconomics	
BIO SCI 1219	General Biology Lab	1
BIO SCI 1113	General Biology	3
GEOLOGY 1110	Physical And Environmental Geology	3
or GEOLOGY 1120	Evolution Of The Earth	
PHYSICS 1505	Introductory Astronomy	3
or PHYSICS 1145	College Physics I	
or CHEM 1310	General Chemistry I	
Total Credits		37

Emphasis Area: Middle School Science

An middle school certificate allows graduates to teach grades 5-9 in the designated subject area.

ENGLISH 3170	Teaching And Supervising Reading and Writing	3
EDUC 3280	Instructional Strategies in the Content Area	3

EDUC 3335	Curriculum And Instruction Of The Middle School	3
EDUC 3203	Introduction to STEM Education	3
EDUC 3220	Teaching Science in the Elementary and Early Childhood Classroom	3
EDUC 3298	Course EDUC 3298 Not Found	
BIO SCI 1113	General Biology	3
or BIO SCI 1213	Principles of Biology	
BIO SCI 1219	General Biology Lab	1
BIO SCI 1173	Introduction to Environmental Sciences	3
PHYSICS 1505	Introductory Astronomy	3
or PHYSICS 1145	College Physics I	
GEOLOGY 1110	Physical And Environmental Geology	3
GEOLOGY 1120	Evolution Of The Earth	3
HISTORY 3530	History of Science	3
or PHILOS 4345	Philosophy Of Science	
CHEM 1310	General Chemistry I	4
CHEM 1319	General Chemistry Laboratory	1
BIO SCI 2223	General Genetics	3
Total Credits		42

Students must also take the following general education courses.

ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
SP&M S 1185	Principles Of Speech	3
ART 1180	Art Appreciation	3
or MUSIC 1150	Music Understanding And Appreciation	
or THEATRE 1190	Theatre via Video	
ENGLISH 1221	American Literature: 1600 To 1865	3
or ENGLISH 1222	American Literature: 1865 To Present	
PHILOS 1105	Self and World: Introduction To Philosophy	3
or PHILOS 1115	Logic and Reasoning: An Introduction	
HISTORY 1100	Early Western Civilization	3
or HISTORY 1200	Modern Western Civilization	
or HISTORY 1300	American History To 1877	
or HISTORY 1310	American History Since 1877	
POL SCI 1200	American Government	3
ECON 1200	Principles Of Macroeconomics	3
or ECON 1100	Principles Of Microeconomics	
MATH 1103	Fundamentals Of Algebra	3
or MATH 1120	College Algebra	

or MATH 1140	College Algebra	
STAT 1115	Statistics For The Social Sciences I	3
or STAT 3113	Applied Engineering Statistics	
or STAT 3115	Engineering Statistics	
Total Credits		33

Students will also take three hours of humanities elective and three hours of free electives.

Emphasis Area: Middle School Social Science

An middle school certificate allows graduates to teach grades 5-9 in the designated subject area.

ENGLISH 3170	Teaching And Supervising Reading and Writing	3
EDUC 3280	Instructional Strategies in the Content Area	3
EDUC 3335	Curriculum And Instruction Of The Middle School	3
EDUC 3530	Teaching Integrated Social Studies and Humanities	3
EDUC 3350	Social Studies In The Elementary School	3
EDUC 3298	Course EDUC 3298 Not Found	
HISTORY 1100	Early Western Civilization	3
or HISTORY 1200	Modern Western Civilization	
HISTORY 1300	American History To 1877	3
or HISTORY 1310	American History Since 1877	
PSYCH 4600	Social Psychology	3
Total Credits		24

Students will also take a DESE-approved American history elective, two DESE-approved world history electives, and one history elective. Students in this program may be eligible for both a history minor and a psychology minor.

ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
SP&M S 1185	Principles Of Speech	3
ART 1180	Art Appreciation	3
or MUSIC 1150	Music Understanding And Appreciation	
or THEATRE 1190	Theatre via Video	
ENGLISH 1221	American Literature: 1600 To 1865	3
or ENGLISH 1222	American Literature: 1865 To Present	
PHILOS 1105	Self and World: Introduction To Philosophy	3
or PHILOS 1115	Logic and Reasoning: An Introduction	
HISTORY 1100	Early Western Civilization	3
or HISTORY 1200	Modern Western Civilization	
or HISTORY 1300	American History To 1877	
or HISTORY 1310	American History Since 1877	
POL SCI 1200	American Government	3

ECON 1200	Principles Of Macroeconomics	3
or ECON 1100	Principles Of Microeconomics	
MATH 1103	Fundamentals Of Algebra	3
or MATH 1120	College Algebra	
or MATH 1140	College Algebra	
BIO SCI 1113	General Biology	3
BIO SCI 1219	General Biology Lab	1
GEOLOGY 1110	Physical And Environmental Geology	3
or GEOLOGY 1120	Evolution Of The Earth	
or PHYSICS 1505	Introductory Astronomy	
or PHYSICS 1605	Environmental Physics I	
or CHEM 1310	General Chemistry I	
IS&T 1551	Implementing Information Systems: User Perspective	3
or COMP SCI 1500	Computational Problem Solving	
Total Credits		40

Students will also take three hours of humanities elective and three hours of free electives.

Justification for request

Please see attached approval documents.

CIP 130101

Supporting Documents

Degree Approval MDHE.pdf

Revised Full BS in Education Proposal Clean.docx

ChancellorProvost Approval.pdf

Course Reviewer Comments

tibbettsmg (04/05/21 1:26 pm): Educ 3298 is currently in workflow for approval. MT

tibbettsmg (04/16/21 10:10 am): add "BS" to program title. MT

Key: 344

Program Change Request

New Program Proposal

Date Submitted: 04/02/21 2:21 pm

Viewing: PROPOSED : Water Science and Engineering

File: 345

Last edit: 04/05/21 11:46 am

Changes proposed by: sbrower

Start Term
Fall 2021
Program Code
PROPOSED
Department
Geosciences and Geological and Petroleum Engineering
Title
Water Science and Engineering

Program Requirements and Description

In Workflow

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

Approval Path

1. 09/24/19 2:01 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 09/25/19 3:44 pm Brittany Parnell (ershenb): Rollback to Initiator
3. 04/02/21 3:56 pm David Borrok (borrokd): Approved for RGEOSENG Chair
4. 04/05/21 11:46 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
5. 04/16/21 10:46 am Stephen Raper (sraper): Approved for Engineering DSCC Chair

Master of Science

Water Science and Engineering

The Water Science and Engineering (WSE) Master of Science (MS) degree requires a total of 31 graduate credit hours beyond the B.S. degree for both thesis and non-thesis MS options. We encourage applications from students with undergraduate degrees from one of the seven participating programs (Biology, Chemistry, Chemical Engineering, Civil Engineering, Environmental Engineering, Geology and Geophysics, and Geological Engineering) or closely related degree programs. Graduate certificates in *Subsurface Water Resources* and/or *Surface Water Resources* can serve as an entry point into the WSE program.

The thesis option is comprised of the following:

- Program Courses: Students will select six courses (18hrs) from the Program Course List. Students must take at least one course from three different course categories and also take at least one course from three separate departments. Course categories include *Engineering Hydrology, Water Infrastructure and Remediation, Water Resources and the Environment*, and *Water Policy*.
- Additional Courses: Students will select two courses (6 hrs) from a combination of existing and newly developed graduate courses that are relevant to their degree plans. These courses must be approved by their advisor in consultation with their thesis committee and will be chosen based on their specific career goals and interests.
- Graduate Seminar: Students will be required to take one hour of graduate seminar from any of the affiliated disciplines.
- Thesis Research: Students will complete six hours of research credit.

The non-thesis option is identical to the thesis option except that the research hours are replaced with six hours of additional coursework. The non-thesis WSE MS-degree is offered both on campus and online.

Engineering Hydrology		
CIV ENG 6331	Advanced Hydraulics And Hydraulic Engineering	3
CIV ENG 5338	Hydrologic Engineering	3
CIV ENG 5330	Unsteady Flow Hydraulics	3
CIV ENG 5331	Hydraulics Of Open Channels	3
CIV ENG 5333	Intermediate Hydraulic Engineering	3
CIV ENG 5337	River Mechanics And Sediment Transport	3
CIV ENG 6338	Advanced Hydrology	3
GEO ENG 5320	Groundwater Modeling	3
GEO ENG 5331	Subsurface Hydrology	3
GEO ENG 5332	Fundamentals of Groundwater Hydrology	3

Water Infrastructure and Remediation		
CIV ENG 5335	Water Infrastructure Engineering	3
CIV ENG 6340	Urban Hydrology	3
CIV ENG 6335	Hydraulic Structures	3
BIO SCI 6463	Bioremediation	3

CHEM ENG 4210	Biochemical Reactors	3
CHEM ENG 5110	Intermediate Chemical Reactor Design	3
CIV ENG 5332	Transport Processes in Environmental Flows	3
CIV ENG 5360	Water Resources And Wastewater Engineering	3
ENV ENG 5630	Remediation of Contaminated Groundwater And Soil	3
ENV ENG 5635	Phytoremediation and Natural Treatment Systems: Science and Design	3
ENV ENG 5619	Environmental Engineering Design	3
ENV ENG 6612	Biological Operations In Environmental Engineering Systems	3
ENV ENG 6611	Physicochemical Operations In Environmental Engineering Systems	3
GEO ENG 6237	Advanced Geological & Geotechnical Design For Hazardous Waste Mgt	3
GEO ENG 5239	Groundwater Remediation	3
GEO ENG 5381	Intermediate Subsurface Hydrology And Contaminant Transport Mechs	3

Water Resources and the Environment		
BIO SCI 4313	Introduction to Environmental Microbiology	3
BIO SCI 6313	Environmental Microbiology	3
BIO SCI 4383	Toxicology	3
BIO SCI 4363	Freshwater Ecology	3
BIO SCI 6363	Advanced Freshwater Ecology	3
BIO SCI 6383	Advanced Toxicology	3
CHEM ENG 5340	Principles of Environmental Monitoring	3
CHEM 4710	Principles Of Environmental Monitoring	3
CHEM 5710	Environmental Monitoring	3
ENV ENG 5605	Environmental Systems Modeling	3
ENV ENG 5642	Sustainability, Population, Energy, Water, and Materials	3
GEOLOGY 4431	Methods Of Karst Hydrogeology	3
GEOLOGY 4411	Hydrogeology	3
GEOLOGY 4451	Aqueous Geochemistry	3
GEO ENG 5153	Regional Geological Engineering Problems In North America	3

Water Policy		
CIV ENG 5640	Environmental Law And Regulations	3
CIV ENG 5650	Public Health Engineering	3
POL SCI 4500	Geopolitics and International Security	3
POL SCI 4320	Policy for Science, Technology, and Innovation	3
ECON 4440	Environmental And Natural Resource Economics	3

A written thesis and formal thesis defense are required for thesis-based MS-degree students. Entrance requirements are equivalent to the baseline university graduate student admission standards. The GRE exam is not required for internal degree applicants.

Justification for request

CIP Code 400605(Water Resources Engineering). This is a new degree that has been approved on campus, by the UM system, and by the state.

Supporting Documents

!Chancellor-Provost Support Letter WSE.pdf

!Open Proposal_S&T MS Water Science and Engineering.pdf

!MDHE MST NP March 2021.pdf

Course Reviewer Comments

ershenb (09/25/19 3:44 pm): Rollback: rollback per email from Brittany Parnell

borrokd (04/02/21 3:56 pm): This is a new degree program that was recently approved. We want to get it on the books for fall 2021.

tibbettsmg (04/05/21 11:46 am): updated CIP code in Justification to match CIP code in MDHE approval. MT

Key: 345

Program Change Request

Date Submitted: 03/30/21 1:35 pm

Viewing: SOC MED-MI : Minor in Social Media in Industry

File: 258.3

Last approved: 04/19/18 2:43 pm

Last edit: 03/30/21 3:29 pm

Changes proposed by: kswenson

Catalog Pages Using this Program
English
Technical Communication

Start Term
Fall **2021** ~~2018~~
Program Code
SOC MED-MI
Department
English and Technical Communication
Title
Minor in Social Media in Industry

Program Requirements and Description

In Workflow

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

Approval Path

1. 03/30/21 3:17 pm Kristine Swenson (kswenson): Approved for RENGLISH Chair
2. 03/30/21 3:31 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/30/21 3:36 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

History

1. Apr 19, 2018 by Kristine Swenson (kswenson)

The purpose of this minor will be to supplement existing degree programs with the latest knowledge concerning social media. Objectives include training students to write for social media, brand and market products via social media, use social media to conduct user research, and create and manage social media sites such as user forums. "Technical communicators are uniquely suited to serve as community managers of companies' online help forums" (Jordan Frith, "Forum Moderation as Technical Communication: The Social Web and Employment Opportunities for Technical Communicators").

ENGLISH 3550	Writing for Social Media	3
or TCH COM 3550	Writing for Social Media	
TCH COM 3580	Business Communication	3
ENGLISH 2560	Technical Marketing Communication	3
or TCH COM 2560	Technical Marketing Communication	
One of the Following:		
TCH COM 5560	Web-Based Communication	3
or TCH COM 5520	Help Authoring	
or TCH COM 3440	Theory of Visual Technical Communication	

Justification for request

Fixing course number.

Supporting Documents

~~Social Media Minor 12-21[2].doc~~

~~business communication syllabus[1].docx~~

~~Writing for Social Media SYLLABUS.docx~~

~~New Courses[1].docx~~

Course Reviewer Comments

tibbettsmg (03/30/21 3:29 pm): updated effective term to FS21.

Key: 258

Program Change Request

Date Submitted: 03/30/21 12:49 pm

Viewing: TCH CM-MIG : Technical Communication Minor

File: 133.13

Last approved: 07/24/15 5:49 pm

Last edit: 03/30/21 3:46 pm

Changes proposed by: kswenson

Catalog Pages Using this Program
Technical Communication

Start Term
Fall 2021 ~~8/1/2014~~
Program Code
TCH CM-MIG
Department
English and Technical Communication
Title
Technical Communication Minor

Program Requirements and Description

In Workflow

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

Approval Path

1. 03/30/21 3:17 pm Kristine Swenson (kswenson): Approved for RENGLISH Chair
2. 03/30/21 3:47 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/30/21 4:37 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

History

1. Apr 23, 2014 by Kristine Swenson (kswenson)
2. Sep 5, 2014 by pantaleoa
3. Jul 24, 2015 by pantaleoa

Technical Communication Graduate Minor

The technical communication program offers a graduate-level minor that is open to any graduate student. The minor is designed to strengthen the written, oral, and visual communication skills of students majoring in the sciences, engineering, management, information systems, or other fields. The minor will be particularly useful for those students who will pursue the “paper option” thesis or dissertation. The minor will also be beneficial for those students who will make oral or poster presentations at technical conferences, write journal articles, prepare research proposals, design technical web pages, or prepare technical marketing information.

The program requires a minimum of 12 hours of credit (excluding all courses taken for undergraduate credit). A minimum of 6 hours of 4000-level or above courses with the TCH COM designation is required. At least 6 additional hours of technical communication intensive courses are required. The additional courses may come from courses with the TCH COM designation, the list of approved technical communication intensive courses, and/or technical communication intensive courses from any academic discipline with the approval of the minor advisor and the English and technical communication department.

Students can elect to pursue this minor at any point during their graduate studies by submitting the Application for a Designated Graduate Minor form (available at http://registrar.mst.edu/media/administrative/registrar/documents/gradminorapp.pdf) to the English and technical communication department. Upon application, each student will be assigned a minor advisor who will work with the student to develop a proposed list of courses to fulfill the program requirements.

Approved Technical Communication Intensive Courses

All TCH COM courses, 4000-level and above		
BIO SCI 6313	Environmental Microbiology	3
~~BUS 4111~~	~~Course BUS 4111 Not Found~~	~~3~~
BUS 5111	**Business Negotiations**	**3**
ENGLISH 2410	Theory Of Written Communication	3
ENGLISH 5571	Advanced Writing For Science & Engineering	3
GEO ENG 5092	International Engineering and Design	3
IS&T 6887	Research Methods in Business and IS&T	3
MATH 3109	Foundations Of Mathematics	3
MATH 5603	Methods of Applied Mathematics	3
MATH 5108	Linear Algebra II	3
MATH 5154	Mathematical Logic I	3
MS&E 6120	Thermodynamics and Phase Equilibria	3

The technical Communication Graduate Minor Advisory Committee will evaluate other courses, upon the request of students or faculty, for inclusion on the approved list or on a case-by-case basis for individual programs.

Justification for request
Supporting Documents
Course Reviewer Comments
tibbettsmg (03/30/21 3:46 pm): updated eff term to FS21 and formatting to accurately reflect Bus 5111 per email from Dr. Swenson. MT

Key: 133

Program Change Request

Date Submitted: 03/30/21 12:44 pm

Viewing: TCH COM-MS : Technical Communication MS

File: 135.18

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

Last edit: 03/31/21 12:10 pm

Changes proposed by: kswenson

Catalog Pages Using this Program
Technical Communication

Start Term
Fall **2021** ~~2020~~
Program Code
TCH COM-MS
Department
English and Technical Communication
Title
Technical Communication MS

Program Requirements and Description

In Workflow

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

Approval Path

1. 03/30/21 3:17 pm Kristine Swenson (kswenson): Approved for RENGLISH Chair
2. 03/31/21 12:10 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 12:44 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

History

1. Apr 23, 2014 by Kristine Swenson (kswenson)
2. Oct 15, 2014 by Kristine Swenson (kswenson)
3. Jul 24, 2015 by pantaleoa

4. Apr 28, 2020 by Kristine Swenson (kswenson)
5. Jul 1, 2020 by Kristine Swenson (kswenson)

M.S. Degree Requirements

This MS degree has a non-thesis option (at least 30 credit hours) and a thesis option (at least 33 credit hours).

Non-thesis: The student must complete TCH COM 6600 Foundations of Technical Communication (3 credit hours) and nine more courses (27 credit hours) from the list below. ~~Degree Requirements Ten courses totaling 30 credit hours are required for theM.S.:All MS students must take TCH COM6600:Foundations of TechnicalCommunication.The remaining courses should come from the following list and should be determined in consultation with the student's academicadvisors.~~**A minimum of 9 credit hours** ~~Students~~ must **be** ~~take 3 TCH COM~~ courses at the **6000-level.** ~~6000 level.~~

Thesis: The student must complete TCH COM 6600 Foundations of Technical Communication (3 credit hours), TCH COM 5099 (6 credit hours), and seven more courses (24 credit hours) from the list below. A minimum of 6 credit hours must be courses at the 6000-level. ~~ThesisOption:~~**The student must also write and defend** ~~Students interested in pursuing~~ a **thesis as part of** ~~PhD in technical communication have~~ the **work for TCH COM 5099.** ~~option of writing a supervised thesis as part of their coursework.~~

TCH COM 5001	**Special Topics**	**0-6**
TCH COM 5510	Technical Editing	3
TCH COM 5520	Help Authoring	3
TCH COM 5530	Usability Studies	3
TCH COM 5540	Advanced Layout and Design	3
TCH COM 5550	Advanced Proposal Writing	3
TCH COM 5560	Web-Based Communication	3
TCH COM 5610	History of Technical Communication	3
TCH COM 5620	Research Methods in Technical Communication	3
TCH COM 6001	Special Topics	0-6
TCH COM 6070	Teaching of Technical Communication	3
TCH COM 6410	Theoretical Approaches to Technical Communication	3
TCH COM 6420	Project Management in Technical Communication	3
TCH COM 6440	Advanced Theories of Visual Technical Communication	3
TCH COM 6450	Advanced International Technical Communication	3

~~If the student chooses to do a thesis, and the technical communication faculty give their approval to this plan, the student will take 6 hours of TCH COM 5099 Research.Three of these hours may count toward the 30 hr total, but an additional 3 hrs will be required, bringing the total number of degree hours to33.Completing TCH COM5620:Research Methods before proposing a thesis is highlyrecommended.~~

Justification for request

Clarifying the degree options and adding special topics to possible courses.
Supporting Documents
Course Reviewer Comments
tibbettsmg (03/31/21 12:10 pm): updated effective term to FS21. mt

Key: 135

Program Change Request

Date Submitted: 03/30/21 7:09 am

Viewing: DIGITMD-CT : Digital Media & Web Design CT

File: 296.2

Last approved: 06/12/19 12:06 pm

Last edit: 03/31/21 12:02 pm

Changes proposed by: cecq8z

Catalog Pages Using this Program
Information Science and Technology

Start Term
Fall **2021** ~~2019~~
Program Code
DIGITMD-CT
Department
Business and Information Technology
Title
Digital Media & Web Design 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 11:16 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 12:06 pm Marita Tibbetts (tibbettsmg): Approved for Pending CCC Agenda post
5. 10/07/20 10:11 am Marita Tibbetts (tibbettsmg): Rollback to Initiator
6. 03/30/21 11:20 pm siauk: Approved for RINFSCTE Chair

7. 03/31/21 12:02 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
8. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

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

Digital Media and Web Design

Digital media is growing as consumers change the way they access information. In pursuing this certificate, students will acquire the skills and knowledge to create, design and analyze digital media. The focus will be on the media itself, the social/digital network that connects these media, the interfaces that connect these media with users, and the application of these skills in business and other creative contexts. Thus this certificate program will address the pressing demand and opportunities for graduates with advanced knowledge and skills in areas such as networked communication and marketing, web-based media creation and design, and methods for designing and building effective human-media interfaces.

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

Required core course:	
IS&T 6654	Advanced Web Design and Digital Media Studies
Two courses from the following list:	
IS&T 5680	**Digital Media Development and Interactive Design**
IS&T 5885	Human-Computer Interaction and User Experience
~~IS&T 6680~~	~~Advanced Digital Media Development and Interactive Design~~
MKT 5310	Digital Marketing and Promotions
One course from the following:	
IS&T 5652	Advanced Web Development
IS&T 5886	Prototyping Human-Computer Interactions
IS&T 5168	**Law and Ethics in E-Commerce**

Justification for request

Added HCI course to the electives.

Supporting Documents

Course Reviewer Comments

tibbettsmg (10/07/20 10:11 am): Rollback: rollback from CCC meeting. also change term to FS21.
tibbettsmg (03/31/21 12:02 pm): updated effective term to FS21. mt

Key: 296

Program Change Request

Date Submitted: 03/30/21 7:10 am

Viewing: E&S COM-CT : Elec & Social Commerce CT

File: 298.10

Last approved: 02/03/21 10:51 am

Last edit: 03/30/21 7:10 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Information Science and Technology

Start Term
Fall 2021
Program Code
E&S COM-CT
Department
Business and Information Technology
Title
Elec & Social Commerce 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. 03/30/21 11:20 pm siauk: Approved for RINFSCTE Chair
2. 03/31/21 12:03 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Jun 12, 2019 by Brittany Parnell (ershenb)
2. Feb 3, 2021 by Cecil Eng Huang Chua (cchua)

Electronic and Social Commerce

Social commerce is just one sub-set of e-commerce, however it is growing rapidly. The department of business and information technology (BIT) has leveraged its' strengths in both business and technology for this program, which is designed to create successful students by developing skills in technological business practices that will provide opportunities for succeeding in today's fast paced world. To that end, the program focuses on the following competencies:

- Management concepts applied to IT
- Management concepts applied to support of electronic commerce
- Use of business processes in IT integration
- Competitive advantage through IT
- Electronic commerce through collaborative shopping

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

Required core courses:	
IS&T 6641	Advanced Digital Commerce and IoT Analytics
Core Courses (choose one or two):	
IS&T 5251	Management and Leadership of Technological Innovation
BUS 6723	Artificial Intelligence, Robotics, and Information Systems Management
Elective courses (choose one or two):	
IS&T 5168/PHILOS 4368	Law and Ethics in E-Commerce
IS&T 5335	Fundamentals of Mobile Technology for Business
IS&T 5445	Database Marketing
IS&T 5652	Advanced Web Development
IS&T 5680	**Digital Media Development and Interactive Design**
IS&T 5885	Human-Computer Interaction and User Experience
IS&T 5886	Prototyping Human-Computer Interactions
~~IS&T 6680~~	~~Advanced Digital Media Development and Interactive Design~~
MKT 5310	Digital Marketing and Promotions
MKT 6580	Advanced Marketing Strategy

Justification for request
Align with catalog
Supporting Documents
Course Reviewer Comments

Key: 298

Program Change Request

Date Submitted: 03/30/21 7:09 am

Viewing: HCI-CT : Human Computer Interaction CT

File: 300.2

Last approved: 06/12/19 3:37 pm

Last edit: 03/30/21 7:09 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Information Science and Technology

Start Term
Fall **2021** ~~2019~~
Program Code
HCI-CT
Department
Business and Information Technology
Title
Human Computer Interaction 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 11:19 am siauk: Approved for RINFSCTE Chair
2. 08/31/20 12:04 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 12:10 pm Marita Tibbetts (tibbettsmg): Approved for Pending CCC Agenda post
5. 10/07/20 10:12 am Marita Tibbetts (tibbettsmg): Rollback to Initiator
6. 03/30/21 11:20 pm siauk: Approved for RINFSCTE Chair

7. 03/31/21 12:03 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
8. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

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

Human-Computer Interaction and User Experience

There is a growing demand within industry for workers with expertise in human-computer interaction (HCI), who generally hold titles such as interface designer; usability researcher analyst; usability engineer; user experience specialist; or information architect. HCI specialists bridge the gap in organizations between groups who build the technologies and groups who use the technologies. The qualifications for these positions generally fall into the following categories:

- Knowledge of human-computer interaction principles
- Skills in collecting user requirements
- Skills in developing prototypes, both low fidelity (e.g., paper) and high fidelity (e.g., html mock-up)
- Skills in evaluation of the impact of technologies on humans

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

Required core courses:	
IS&T 5885	Human-Computer Interaction and User Experience
IS&T 5886	Prototyping Human-Computer Interactions
IS&T 5887	Human-Computer Interaction Evaluation
One course from the following:	
~~IS&T 6680~~	~~Advanced Digital Media Development and Interactive Design~~
IS&T 5680	**Digital Media Development and Interactive Design**
IS&T 6887	Research Methods in Business and IS&T
IS&T 5168	**Law and Ethics in E-Commerce**

Justification for request
Align with catalog

Supporting Documents

Course Reviewer Comments

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

Key: 300

Program Change Request

Date Submitted: 04/02/21 11:51 am

Viewing: MOBLB&T-CT : Mobile Business and Digital Transformation CT

File: 302.12

Last approved: 04/02/21 11:37 am

Last edit: 04/02/21 1:31 pm

Changes proposed by: cecq8z

Catalog Pages Using this Program
Information Science and Technology

Start Term
Fall 2021
Program Code
MOBLB&T-CT
Department
Business and Information Technology
Title
Mobile Business and Digital Transformation 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. 04/02/21 12:52 pm siauk: Approved for RINFSCTE Chair
2. 04/02/21 1:31 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/02/21 1:32 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Jun 12, 2019 by Brittany Parnell (ershenb)
2. Apr 2, 2021 by Cecil Eng Huang Chua (cchua)

Mobile Business and Digital Transformation

Interest in the use of mobile technology and digital transformation among organizations has seen a strong, upward trend over the past few years. Indeed, many organizations now have Chief Digital Officers, whose role differs from the Chief Information Officer. The CDO's role is principally centered around positioning the organization to leverage emerging technologies, in contrast to the CIO's role of supporting existing technologies.

People capable of creating and maintaining digital technology strategies are needed.

This certificate is designed to cover managing emerging technologies. The focus will be on allowing an organization to make decisions in this dynamic domain.

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

Three courses from the following list:	
IS&T 5335	Fundamentals of Mobile Technology for Business
IS&T 6641	Advanced Digital Commerce and IoT Analytics
IS&T 6654	Advanced Web Design and Digital Media Studies
~~BUS 6723~~	~~Artificial Intelligence, Robotics, and Information Systems Management~~
IS&T 5251	Management and Leadership of Technological Innovation
IS&T 6723	**Artificial Intelligence, Robotics, and Digital Transformation**
ERP 5240	Enterprise Application Development and Software Security
Elective courses (choose one):	
ERP 5210	Performance Dashboard, Scorecard and Data Visualization
ERP 5310	Supply Chain Management Systems in an ERP Environment
ERP 6610	Advanced Customer Relationship Management in ERP Environment
IS&T 5652	Advanced Web Development
IS&T 5886	Prototyping Human-Computer Interactions
IS&T 5168	Law and Ethics in E-Commerce
~~IS&T 6680~~	~~Advanced Digital Media Development and Interactive Design~~
IS&T 5680	**Digital Media Development and Interactive Design**
MKT 5310	Digital Marketing and Promotions

Justification for request

Supporting Documents

~~Revised Mobile Business&Digital Transformation Grad CT.pdf~~

Course Reviewer Comments

tibbettsmg (04/02/21 1:31 pm): updated course list format. mt

Key: 302

Program Change Request

Date Submitted: 03/30/21 8:03 pm

Viewing: TCH COM-CT : Technical Communication CT

File: 303.2

Last approved: 06/13/19 10:09 am

Last edit: 03/31/21 12:11 pm

Changes proposed by: kswenson

Catalog Pages Using this Program
Technical Communication

Start Term
Fall **2021** ~~2019~~
Program Code
TCH COM-CT
Department
English and Technical Communication
Title
Technical Communication CT

Program Requirements and Description

In Workflow

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

Approval Path

1. 03/30/21 8:23 pm Kristine Swenson (kswenson): Approved for RENGLISH Chair
2. 03/31/21 12:11 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 12:44 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair

History

1. Jun 13, 2019 by Brittany Parnell (ershenb)

Technical Communication Graduate Certificate

The graduate certificate in technical communication serves current Missouri S&T graduate students in any discipline; individuals who already have undergraduate or graduate degrees and are seeking to add value to their degrees; and current industry employees who need to hone their communication skills to remain competitive in the market and better serve their employers.

The certificate may be pursued either online or on campus.

The following 4 courses* (totaling 12 credit hours) will be required for the certificate:

TCH COM 5510	Technical Editing
TCH COM 5530	Usability Studies
TCH COM 5550	Advanced Proposal Writing
TCH COM 5560	Web-Based Communication

These four courses are also required for the M.S. in technical communication and could be counted toward that degree if the certificate student later decided to go on for the M.S.

*	Course substitutions may be permitted by the department in some circumstances.

Justification for request

Header added to distinguish certificate from minor

Supporting Documents

Course Reviewer Comments

tibbettsmg (03/31/21 12:11 pm): updated eff term to FS21. mt

Key: 303

Course Change Request

New Experimental Course Proposal

Date Submitted: 04/14/21 1:18 pm

Viewing: **GEO ENG 5001.006 : Remote Sensing Methods in Hydrology**

File: 4803

Last edit: 04/14/21 1:54 pm

Changes proposed by: smithryang

Requested Effective Change Date	Fall 2021
Department	Geosciences and Geological and Petroleum Engineering
Discipline	Geological Engineering (GEO ENG)
Course Number	5001
Topic ID	006
Experimental Title	Remote Sensing Methods in Hydrology
Experimental Abbreviated Course Title	Remote Sensing Hydro I
Instructors	Ryan Smith

Experimental Catalog Description

In Workflow

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

Approval Path

1. 04/14/21 1:24 pm David Borrok (borrokd): Approved for RGEOSENG Chair
2. 04/14/21 1:54 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/14/21 1:57 pm Stephen Raper (sraper): Approved for

Engineering DSCC Chair

Students will learn about methods for monitoring the flux and condition of surface water and groundwater with airborne and spaceborne sensors. Thermal, passive microwave, microwave radar and gravimetric sensors will be used. Problems such as groundwater depletion, slope stability and flooding will be investigated using advanced GIS tools.

Prerequisites

Experience with GIS is required. This requirement can be met by taking either Geo Eng 3148 or Geo Eng 5144, or equivalent course or work experience or consent of instructor.

Field Trip Statement

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

Justification for new course:

Remote sensing hydrology is a growing field with many practical applications for both graduate students and advanced undergraduate students. However, there are currently no courses in the catalog that cover this material in sufficient depth for a student to become proficient. The Geological Engineering, Geology, Environmental Engineering, Biology and Computer Science departments will all likely have students that have interest in using some or all of the tools discussed in this course.

Semester(s) previously taught

0

Co-Listed Courses:

Course Reviewer Comments

tibbettsmg (04/14/21 1:54 pm): updated abbreviated title. MT

Key: 4803

Preview Bridge

Course Change Request

New Experimental Course Proposal

Date Submitted: 04/01/21 2:11 pm

Viewing: **MIN ENG 5001.001 : Simulation of Mining Systems**

File: 4802

Last edit: 04/02/21 6:02 am

Changes proposed by: kabp3

Requested Effective Change Date	Fall 2021
Department	Mining & Nuclear Engineering
Discipline	Mining Engineering (MIN ENG)
Course Number	5001
Topic ID	001
Experimental Title	Simulation of Mining Systems
Experimental Abbreviated Course Title	Sim of Min Sys
Instructors	Kwame Awuah-Offei

Experimental Catalog Description

In Workflow

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

Approval Path

1. 04/01/21 5:50 pm Kwame Awuah-Offei (kwamea): Approved for MINEXP ENG Chair
2. 04/02/21 6:02 am Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 04/09/21 12:59 pm

Stephen Raper (sraper): Approved for Engineering DSCC Chair

Overview of stochastic simulation. Model formulation using general purpose process simulation software. Model verification and validation. Simulation experimentation.

Prerequisites

Stat 3113 or Stat 3115 or Stat 3117.

Field Trip Statement

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

Justification for new course:

In the last two years, there have been significant interest from undergraduates in taking Min Eng 6912. The program has resorted in allowing students to enroll in Min Eng 5000 so they can take something equivalent to the proposed course. This change will allow undergraduates to learn the basics of discrete event simulation of mining systems without having to take Min Eng 5000. This will ensure the students' transcript better reflect their actual academic career.

Semester(s) previously taught

Co-Listed Courses:

Course Reviewer Comments

Key: 4802

Preview Bridge

Program Change Request

Date Submitted: 03/30/21 7:10 am

Viewing: AI-MI : Minor in Artificial Intelligence and Machine Learning in Business

File: 253.16

Last approved: 02/03/21 10:50 am

Last edit: 03/30/21 7:10 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Non-Degree Graduate Course List
Business and Management Systems
Information Science and Technology

Start Term
Fall 2021
Program Code
AI-MI
Department
Business and Information Technology
Title
Minor in Artificial Intelligence and Machine Learning in Business

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. 03/30/21 11:20 pm siauk: Approved for RINFSCTE Chair
2. 03/31/21 2:21 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 2:52 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Dec 11, 2017 by Barry Flachsbart (barryf)
2. Mar 12, 2018 by Brittany Parnell (ershenb)
3. Apr 18, 2018 by Brittany Parnell (ershenb)

4. Apr 19, 2018 by Brittany Parnell (ershenb)
5. Apr 19, 2018 by Brittany Parnell (ershenb)
6. Feb 3, 2021 by Cecil Eng Huang Chua (cchua)

Minor in Artificial Intelligence and Machine Learning in Business

The Minor requires 15 credit hours, as follows:

BUS 5730	Machine Learning and Artificial Intelligence for Business	3
IS&T 5535	Machine Learning Algorithms and Applications	3
IS&T 3420	Introduction to Data Science and Management	3
And two courses from the following list:		6
STAT 3111	Statistical Tools For Decision Making	
IS&T 3333	Data Networks and Information Security	
IS&T 3343	Systems Analysis	
IS&T 5420	Business Analytics and Data Science	
IS&T 5450	Introduction to Information Visualization	
IS&T 5520	Data Science and Machine Learning with Python	
ERP 5410	Use of Business Intelligence	

Justification for request
Reconcile issues in catalog
Supporting Documents
Course Reviewer Comments

Key: 253

Program Change Request

Date Submitted: 03/30/21 7:09 am

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

File: 295.19

Last approved: 03/04/21 10:02 am

Last edit: 03/30/21 7:09 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Information Science and Technology

Start Term
Fall 2021
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. 03/30/21 11:20 pm siauk: Approved for RINFSCTE Chair
2. 03/31/21 2:23 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 2:52 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Jun 12, 2019 by Brittany Parnell (ershenb)
2. Mar 4, 2021 by Cecil Eng Huang Chua (cchua)

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
IS&T 5780	Human and Organizational Factors in Cybersecurity
Two courses from the following list:	
ERP 5240	Enterprise Application Development and Software Security
IS&T 5335	Fundamentals of Mobile Technology for Business
IS&T 6336	Internet Computing and the Internet of Things
IS&T 6641	Advanced Digital Commerce and IoT Analytics
IS&T 5520	Data Science and Machine Learning with Python

Justification for request

Supporting Documents

~~Grad CT Revised.pdf~~

Course Reviewer Comments

Key: 295

Program Change Request

Date Submitted: 03/30/21 7:13 am

Viewing: IS&T-MS : Info Science & Tech MS

File: 73.12

Last approved: 02/03/21 10:51 am

Last edit: 03/31/21 12:05 pm

Changes proposed by: cecq8z

Catalog Pages Using this Program
Information Science and Technology

Start Term
Fall 2021
Program Code
IS&T-MS
Department
Business and Information Technology
Title
Info Science & Tech MS

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. 03/30/21 11:21 pm siauk: Approved for RINFSCTE Chair
2. 03/31/21 12:05 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Apr 28, 2014 by Barry Flachsbart (barryf)
2. Jun 16, 2015 by pantaleoa
3. Jul 23, 2015 by pantaleoa
4. Feb 3, 2021 by Cecil Eng Huang Chua (cchua)

Degree Requirements

M.S. with thesis: The M.S. degree with thesis requires the completion of 24 hours of graduate course work (5000-level or above), 6 hours of research, and the successful completion and defense of a research thesis.

M.S. without thesis: The M.S. degree without thesis requires the completion of 30 hours of graduate course work (5000-level and above). Courses below the 5000-level will not count toward the M.S. degree, even if they are taken to fulfill prerequisites.

The following core courses are required of all M.S. students in information science and technology. These courses are designated to ensure that all IS&T masters students study the four information systems perspectives of networks and web design, human perception, application implementation, and organizational systems.

IS&T 5885	Human-Computer Interaction and User Experience
~~IST 6251 – Technological Innovation, Entrepreneurship, and Economic Development~~	
IS&T 6251	**Technological Innovation, Entrepreneurship, and Economic Development**
IS&T 6261	Advanced Information Systems Project Management
IS&T 6336	Internet Computing and the Internet of Things

Justification for request
Align with catalog
Supporting Documents
Course Reviewer Comments
tibbettsmg (03/31/21 12:05 pm): updated formatting. mt

Key: 73

Program Change Request

Date Submitted: 03/30/21 7:11 am

Viewing: MARKET-MI : Marketing Minor

File: 81.18

Last approved: 03/08/21 12:04 pm

Last edit: 03/30/21 7:11 am

Changes proposed by: cecq8z

Catalog Pages Using this Program
Business and Management Systems
Information Science and Technology

Start Term
Fall 2021
Program Code
MARKET-MI
Department
Business and Information Technology
Title
Marketing Minor

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. 03/30/21 11:21 pm siauk: Approved for RINFSCTE Chair
2. 03/31/21 12:07 pm Marita Tibbetts (tibbettsmg): Approved for CCC Secretary
3. 03/31/21 12:10 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair

History

1. Apr 28, 2014 by Barry Flachsbart (barryf)
2. Jul 14, 2015 by pantaleoa
3. Feb 3, 2021 by Cecil Eng Huang Chua (cchua)
4. Mar 8, 2021 by Marita Tibbetts

Minor in Marketing

The minor in marketing requires the following 15 hours of coursework:

ECON 1100	Principles Of Microeconomics	3
or ECON 1200	Principles Of Macroeconomics	
or BUS 1414	The Inclusive Workplace	
MKT 3110	Marketing	3
Three courses from the following list:		9
MKT 3210	Consumer Behavior	
MKT 4580	Marketing Strategy	
MKT 5310	Digital Marketing and Promotions	
MKT 5320	Marketing for Non-Profits	
ERP 4610	Customer Relationship Management in ERP Environment	
MKT 5410	Big Data Consumer Analytics	
Other marketing electives approved by the department (MKT 3000 and above)		

Justification for request
Reconcile issues in catalog
Supporting Documents
Course Reviewer Comments

Key: 81