

Campus Curricula Committee Meeting Agenda

May 13th, 2025

8:15am - 9:30am, Parker Hall 203

(For Faculty Senate Meeting of June 26th, 2025)

Review of submitted Course Change forms:

File: 10298	ART 1715 : Popular Applied Arts
File: 4172	BIO SCI 2252 : Vegetation of the Ozarks
File: 122	BIO SCI 2333 : Nutrition
File: 1712	BIO SCI 2372 : Issues in Public Health
File: 4851	BIO SCI 3363 : Ecophysiology
File: 5609	BIO SCI 3383 : Plant Physiology
File: 5614	BIO SCI 4313 : Introduction to Environmental Microbiology
File: 4642	BIO SCI 4316 : Introduction to Geomicrobiology
File: 4544	BIO SCI 4423 : Introduction to Astrobiology
File: 4816	BIO SCI 4663 : Animal Behavior
File: 5633	BIO SCI 5423 : Advanced Biodiversity
File: 4894	BIO SCI 5453 : Forest Insect Diversity & Ecology
File: 4893	BIO SCI 5523 : Ichthyology
File: 4720	BUS 1414 : The Inclusive Workplace
File: 5701	CER ENG 3230 : Thermodynamics of Materials
File: 5704	CER ENG 3410 : Characterization Of Inorganic Solids
File: 5708	CER ENG 4096 : Materials Senior Design I
File: 5709	CER ENG 4097 : Materials Senior Design II
File: 10255	CHEM 1305 : Fundamentals of General Chemistry
File: 10254	COMP SCI 6409 : Advanced Virtual Reality
File: 4937	ECON 3333 : Computational Economics
File: 4943	ECON 5380 : Data Intelligence using Case Studies
File: 2	EDUC 1040 : Perspectives In Education
File: 2086	EDUC 1104 : Teacher Field Experience I
File: 10250	EDUC 1111 : Substitute Teacher Training
File: 770	EDUC 1164 : Teacher Field Experience II
File: 2087	EDUC 1174 : School Organization and Administration For Teachers
File: 4746	EDUC 2401 : School, Family, and Community Partnerships
File: 1771	EDUC 3215 : Teaching Reading in Elementary and Early Childhood Settings
File: 1870	EDUC 3218 : Language Arts for Elementary and Early Childhood Teachers
File: 4517	EDUC 3220 : Teaching Science in the Elementary and Early Childhood Classroom
File: 2541	EDUC 3221 : Methods of Teaching Math
File: 4562	EDUC 3290 : Coordination of Cooperative Education
File: 2481	EDUC 3335 : Curriculum And Instruction Of The Middle School
File: 1839	EDUC 3340 : Assessment of Student Learning

File: 4518	EDUC 3530 : Teaching Integrated Social Studies and Humanities
File: 4927	EDUC 4600 : Learning Problems in Math
File: 4552	GEO ENG 5810 : Fundamentals of Space Resources
File: 10268	GEO ENG 6150 : Capstone Project in Geospatial Engineering
File: 10294	GEO ENG 6321 : Advanced Mapping with Drones
File: 10271	GEOPHYS 5432 : Potential Field Theory
File: 10269	GEOPHYS 6232 : Introduction to Satellite Geodesy
File: 10265	GEOPHYS 6401 : Introduction to Positioning, Navigation, and Timing
File: 10266	GEOPHYS 6403 : Advanced Positioning, Navigation, and Timing
File: 2441	IS&T 3131 : Computing Internals and Operating Systems
File: 925	IS&T 4641 : Digital Commerce and IoT Analytics
File: 940	MATH 3304 : Elementary Differential Equations
File: 10131	MIN ENG 5922 : Tunneling & Underground Construction Techniques
File: 9182	PET ENG 2510 : Properties of Hydrocarbon Fluids
File: 4189	PET ENG 3320 : Petrophysics
File: 25	PSYCH 5710 : Advanced Human Factors
File: 10279	SEMI ENG 1100 : Engineering in the Silicon Age
File: 10280	SEMI ENG 2100 : Fundamentals of Semiconductor Materials
File: 10281	SEMI ENG 3019 : Cleanroom Facilities and Practices Laboratory
File: 10282	SEMI ENG 3100 : Semiconductor Materials Processing
File: 10283	SEMI ENG 3101 : Semiconductor Materials Processing Laboratory
File: 10284	SEMI ENG 4100 : Semiconductor Device Simulation
File: 10285	SEMI ENG 4101 : Semiconductor Device Fabrication and Testing Laboratory
File: 10286	SEMI ENG 4200 : Semiconductor Process Simulation
File: 10287	SEMI ENG 4300 : Polymers for Semiconductor Devices and Processes
File: 10288	SEMI ENG 4400 : Microelectronics Packaging and Integration
File: 903	SP&M S 3250 : Interpersonal Communication

Review of submitted Program Change forms:

File: 358	ADV MAT-CT : Advanced Engineering Materials Certificate
File: 280	ADVCNTL-CT : Advanced Control Systems CT
File: 141	AE ENG-BS : Aerospace Engineering BS
File: 239	ANA&DTA-MI : Business Analytics and Data Science Minor
File: 142	AP MATH-BS : Applied Mathematics BS
File: 7	AP MATH-MS : Applied Mathematics MS
File: 143	ARC ENG-BS : Architectural Engineering BS
File: 146	BIO SC-BA : Biological Sciences BA
File: 147	BIO SC-BS : Biological Sciences BS
File: 407	BIOMED-BS : Biomedical Engineering BS
File: 148	BUS&MS-BS : Business and Mgmt Systems BS
File: 150	CH ENG-BS : Chemical Engineering BS
File: 151	CHEM-BA : Chemistry BA
File: 16	CHEM-BS : Chemistry BS

File: 386	CM ENG-CT : Carbon Management Engineering CT
File: 28	CMP SC-BS : Computer Science BS
File: 153	CP ENG-BS : Computer Engineering BS
File: 149	CR ENG-BS : Ceramic Engineering BS
File: 184	CR ENG-MS : Ceramic Engineering MS
File: 185	CR ENG-PHD : Ceramic Engineering PhD
File: 152	CV ENG-BS : Civil Engineering BS
File: 297	DSCMGMT-CT : Digital Supply Chain Mgmt CT
File: 396	E ECON-CTU : Energy Economics – CTU
File: 39	ECON-BS : Economics BS
File: 344	EDUC-BS : Education BS
File: 155	EL ENG-BS : Electrical Engineering BS
File: 44	ENG MG-BS : Engineering Management BS
File: 374	ENGL TC-BS : English & Technical Communication BS
File: 50	ENTPRNS-MI : Entrepreneurship Minor
File: 382	ENV SCI-BS : Environmental Science BS
File: 51	EV ENG-BS : Environmental Engineering BS
File: 307	EXP TC-CT : Explosives Technology CT
File: 256	FIN TCH-MI : Minor in Financial Technology, Analytics and Transformation
File: 156	GE ENG-BS : Geological Engineering BS
File: 64	GL&GPH-BS : Geology and Geophysics BS
File: 157	HIST-BA : History BA
File: 242	HISTORY-BS : Bachelor of Science in History
File: 314	IA&SOES-CT : Info Assurance & Sec Essn CT
File: 388	INTRCU-CTU : Intercultural Studies CTU
File: 356	IRON-CT : Iron and Steel Metallurgy Certificate
File: 75	IST-BS : Information Science and Tch BS
File: 167	MAT S E-MS : Materials Science and Engr MS
File: 204	MAT SE-PHD : Materials Science and Engr PhD
File: 357	MATEXTR-CT : Materials for Extreme Environments Certificate
File: 86	MC ENG-BS : Mechanical Engineering BS
File: 377	MED LAB : Biological Sciences BS with Emphasis area in Medical Laboratory Scientist
File: 95	MI ENG-BS : Mining Engineering BS
File: 90	MT ENG-BS : Metallurgical Engineering BS
File: 91	MT ENG-MS : Metallurgical Engineering MS
File: 209	MT ENG-PHD : Metallurgical Engineering PhD
File: 103	MULTI-BA : Multidisciplinary Studies BA
File: 104	NU ENG-BS : Nuclear Engineering BS
File: 170	NU ENG-MS : Nuclear Engineering MS
File: 211	NU ENG-PHD : Nuclear Engineering PhD
File: 342	NUNOPRO-CT : Nuclear Nonproliferation CT
File: 108	PE ENG-BS : Petroleum Engineering BS
File: 233	PHIL-BS : Philosophy BS

File: 115 PHYSIC-BS : Physics BS
File: 423 PROPOSED : Geospatial Engineering MS
File: 425 PROPOSED : Materials Science and Engineering Minor
File: 424 PROPOSED : Semiconductor Engineering BS
File: 192 PSYCH-BA : Psychological Science BA
File: 193 PSYCH-BS : Psychological Science BS
File: 399 Q ECON-MI : Quantitative Economics Minor
File: 378 TEACH-CTU : Teaching and Learning Undergraduate Certificate

Review of submitted Experimental Course forms:

File: 512 BUS 5001.014: Corporate Entrepreneurship and Ecosystem Strategy
File: 513 BUS 5001.015: Entrepreneurial Finance and Funding Strategies
File: 516 CHEM ENG 5001.038: Green Engineering: Sustainable Chemical Process Design
File: 518 COMP SCI 5001.078: Foundations of Network Security
File: 511 ENG MGT 3001.002: Introduction to Data Analytics/Fundamentals of Business Analytics
File: 514 HISTORY 2001.008: History of Great Britain
File: 515 MATH 5001.009: Theoretical Foundations of Data Science I

New Business:

Selection of DSCC Chairs

Course Change Request

New Course Proposal

Date Submitted: 04/10/25 10:50 am

Viewing: **ART 1715 : Popular Applied Arts**

Last edit: 04/11/25 11:37 am

Changes proposed by: Christina Harrison (cht3m)

In Workflow

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

Approval Path

- 1. 04/10/25 12:18 pm
Irina Ivliyeva (ivliyeva): Approved for RPHILOSO Chair
- 2. 04/11/25 11:37 am
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/11/25 12:51 pm
Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
- 4. 04/28/25 2:16 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Requested Effective Date	Spring 2026
Department	Arts, Languages & Philosophy (RPHILOSO)
Discipline	Art (ART)
Course Number	1715
Title	Popular Applied Arts
Abbreviated Course Title	Popular Applied Arts
Co-Listed Course	

Catalog Description
This fine arts course focuses on utilitarian art, its folk traditions, and its contemporary uses. Time will be spent learning and perfecting techniques, experimenting with materials, developing artistic vision, and practicing Studio Habits of Mind.

Prerequisite(s):

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Laboratory	3

Total:	3
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Required for Majors	No
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Elective for Majors	Yes
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Communication Intensive	No
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Communication Emphasized	No
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Grading Basis	Graded
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Repeatable	No
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Justification	We would like to request a permanent number for ART 1001.002: Popular Applied Arts. This course has successfully been offered twice. The second iteration is during SP 2025, 15 enrolled.
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Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer Comments	Jade McCain (jm558v) (04/11/25 11:37 am): Course was offered as an EC in Spring 2024 with 13 students enrolled and Spring 2025 with 15 students enrolled. Also corrected prerequisite and grading basis.
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Key: 10298

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:35 pm

Viewing: **BIO SCI 2252 : Vegetation of the Ozarks**

Last approved: 10/31/16 3:10 am

Last edit: 04/11/25 11:40 am

Changes proposed by: Katie Shannon (shannonk)

Programs
referencing this
course

[BIO SC-BS: Biological Sciences BS](#)
[ENV SCI-BS: Environmental Science BS](#)

Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIOLSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	2252
Title	Vegetation of the Ozarks
Abbreviated Course Title	Vegetation of the Ozarks
Co-Listed Course	

Catalog Description

The Vegetation of the Ozarks class is an intense, outdoor educational experience focusing on the plants and plant communities of the Missouri Ozarks. The five day long course teaches participants to identify much of the flora of the region and provides practice and instruction in the use of dichotomous keys for plant identification.

Prerequisite(s):

Bio Sci 1213 or Bio Sci 1113 or Bio Sci 1173. ~~1113~~.

Corequisite(s):

Credit Hours

Credit Hours

In Workflow

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

Approval Path

1. 04/10/25 4:35 pm
David Duvernell (duvernell):
Approved for
RBIOLSCI Chair
2. 04/11/25 11:40 am
Jade McCain (jm558v): Approved
for CCC Secretary
3. 04/25/25 9:08 am
Katie Shannon (shannonk):
Approved for
Sciences DSCC Chair
4. 04/28/25 2:16 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

History

1. Oct 31, 2016 by
Katie Shannon
(shannonk)

Credit Type	Credit Hours
Lecture	1
Laboratory	1

Total: 2

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification adding Bio Sci 1173 as pre-req for ENV SCI majors

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 11:40 am):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 4172

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:37 pm

Viewing: **BIO SCI 2333 : Nutrition**

Formerly known as: **BIO SCI 328**

Last approved: 04/25/14 3:05 pm

Last edit: 04/11/25 11:42 am

Changes proposed by: Katie Shannon (shannonk)

Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIOLSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	2333
Title	Nutrition
Abbreviated Course Title	Nutrition
Co-Listed Course	

Catalog Description

This introductory course provides an overview of the principles of nutritional science. Topics include the description and functions of nutrients, how nutrients are digested and absorbed, effects of nutrient imbalances, food sources, nutrient interactions, dietary guidelines, and the role of nutrition in weight management, health and disease.

Prerequisite(s):

Bio Sci 1113 or Bio Sci 1213 or Bio Sci 1173. ~~1213.~~

Corequisite(s):

Credit Hours
Credit Hours

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

- Approval Path
- 1. 04/10/25 4:39 pm
David Duvernell (duvernellD):
Approved for RBIOLSCI Chair
 - 2. 04/11/25 11:42 am
Jade McCain (jm558v): Approved for CCC Secretary
 - 3. 04/25/25 9:08 am
Katie Shannon (shannonk):
Approved for Sciences DSCC Chair
 - 4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

- History
- 1. Apr 25, 2014 by
aronstam

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication Yes
Emphasized

Grading Basis Graded

Repeatable No

Justification adding Bio Sci 1173 as pre-req for ENV SCI majors

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 11:42 am):** Selected "yes" for communication emphasized
Comments and "no" for communication intensive.

Key: 122

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:38 pm

Viewing: **BIO SCI 2372 : Issues in Public Health**

Last approved: 05/01/17 3:14 am

Last edit: 04/11/25 11:45 am

Changes proposed by: Katie Shannon (shannonk)

In Workflow

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

Approval Path

- 1. 04/10/25 4:39 pm
David Duvernell (duvernell):
Approved for
RBIOLSCI Chair
- 2. 04/11/25 11:46 am
Jade McCain (jm558v): Approved
for CCC Secretary
- 3. 04/25/25 9:08 am
Katie Shannon (shannonk):
Approved for
Sciences DSCC Chair
- 4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

History

- 1. May 1, 2014 by
Katie Shannon (shannonk)

Programs referencing this course	HIST-BA: History BA HISTORY-BS: Bachelor of Science in History SCITEC-CTU: Science, Technology, and Society CTU ENV SCI-BS: Environmental Science BS ES&P-CTU: Environmental Science and Policy CTU
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Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIOLSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	2372
Title	Issues in Public Health
Abbreviated Course Title	Issues in Public Health
Co-Listed Course	

Catalog Description	Issues in Public Health investigates chronic and infectious diseases and the impact of globalization on such diseases, environmental toxins, and controversies in public health. Students will develop an awareness of current public health issues and trends in order to make informed arguments and personal choices.
Prerequisite(s):	Bio Sci 1113 or Bio Sci <u>1213 or Bio Sci 1173</u> . 1213 .
Corequisite(s):	

Credit Hours	
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2. May 1, 2017 by Yue-
Wern Huang
(huangy)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification adding Bio Sci 1173 as pre-req for ENV SCI majors

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 11:45 am):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 1712

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:40 pm

Viewing: **BIO SCI 3363 : Ecophysiology**

Last approved: 04/07/22 6:01 am

Last edit: 04/11/25 11:56 am

Changes proposed by: Katie Shannon (shannonk)

In Workflow

- 1. RBIO LSCI 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. 04/10/25 4:40 pm
David Duvernell (duvernell): Approved for RBIO LSCI Chair
- 2. 04/11/25 11:57 am
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/25/25 9:08 am
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
- 4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

ENV SCI-BS: Environmental Science BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIO LSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	3363
Title	Ecophysiology
Abbreviated Course Title	Ecophysiology
Co-Listed Course	

Catalog Description

Study of physiological adaptations that improve species' fitness. We will focus on animals and discuss how selection has shaped the basic physiology of species in different niches. Although some molecular and cellular mechanisms will be addressed, the major themes of the course will be comparative, ecological, evolutionary, integrative, and organismal.

Prerequisite(s):

Bio Sci ~~1113 or Bio Sci 1213~~, and Bio Sci 1223.

Corequisite(s):

Credit Hours

Credit Hours

History

1. Apr 7, 2022 by Katie Shannon
(shannonk)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification simplifying pre-req

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 11:56 am):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 4851

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:43 pm

Viewing: **BIO SCI 3383 : Plant Physiology**

Last edit: 04/25/25 9:10 am

Changes proposed by: Katie Shannon (shannonk)

In Workflow

- 1. RBIO LSCI 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. 04/11/25 8:13 am
David Duvernell (duvernell):
Approved for RBIO LSCI Chair
- 2. 04/11/25 12:00 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/25/25 9:10 am
Katie Shannon (shannonk):
Approved for Sciences DSCC Chair
- 4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIO LSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	3383
Title	Plant Physiology
Abbreviated Course Title	Plant Physiology
Co-Listed Course	

Catalog Description
This course will cover structures and functions of plants from the cellular to the whole plant levels. Topics covered include absorption and transport of water and mineral nutrients, photosynthesis, metabolism of starch and lipids, secondary metabolism, plant stress physiology, and plant hormones.

Prerequisite(s):
Bio Sci 2383, ~~1213, 1113, Bio Sci 2383, 2389~~.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification simplifying pre-reqs, BIO SCI 2383 already requires Bio Sci 1113 or Bio Sci 1213 or Bio Sci 1223, and Plant lab BIO SCI 2289 has not been offered in several years

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 12:00 pm):** Selected "no" for communication emphasized
Comments and communication intensive.

Key: 5609

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/02/25 4:31 pm

Viewing: **BIO SCI 4313 : Introduction to Environmental Microbiology**

Last edit: 04/02/25 4:31 pm

Changes proposed by: Katie Shannon (shannonk)

Programs referencing this course

[WATERSC-MS: Water Science and Engineering MS](#)
[ENV SCI-BS: Environmental Science BS](#)
[ES&P-CTU: Environmental Science and Policy CTU](#)
[EV ENG-BS: Environmental Engineering BS](#)

Requested Effective Date

Fall 2025

Department

Biological Sciences (RBIOLSCI)

Discipline

Biological Sciences (BIO SCI)

Course Number

4313

Title

Introduction to Environmental Microbiology

Abbreviated Course Title

Intro Env Micro

Co-Listed Course

Catalog Description

Environmental Microbiology is an interdisciplinary study of how microorganisms can impact humans and applied to solve problems such as water treatment and environmental cleanup of contaminants. This course differs from Bio Sci 6313 as no NSF-style report or presentation is required.

Prerequisite(s):

Bio Sci 3313 or Env Eng 2601 ~~3313~~.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

In Workflow

1. RBIOLSCI Chair

2. CCC Secretary

3. Sciences DSCC Chair

4. Pending CCC Agenda post

5. CCC Meeting Agenda

6. Campus Curricula Committee Chair

7. FS Meeting Agenda

8. Faculty Senate Chair

9. Registrar

10. CAT entry

11. Peoplesoft

Approval Path

1. 04/02/25 4:42 pm
David Duvernell (duvernell):
Approved for
RBIOLSCI Chair

2. 04/07/25 9:58 am
Jade McCain (jm558v): Approved
for CCC Secretary

3. 04/25/25 9:10 am
Katie Shannon (shannonk):
Approved for
Sciences DSCC Chair

4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

Total:	3
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Required for Majors	No
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Elective for Majors	<u>Yes</u>
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Communication Intensive	<u>No</u>
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Communication Emphasized	<u>No</u>
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Grading Basis	Graded
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Repeatable	No
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Justification	Adding prereq on request of instructor so Environmental Engineering students can take without a permission number
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Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer
Comments

Key: 5614

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:45 pm

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

Formerly known as: **BIO SCI 4343**

Last approved: 05/06/22 6:01 am

Last edit: 04/11/25 12:02 pm

Changes proposed by: Katie Shannon (shannonk)

Programs
referencing this
course

BIO SCI 4316:
[ENV SCI-BS: Environmental Science BS](#)
[EV ENG-BS: Environmental Engineering BS](#)

Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIOLSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	4316
Title	Introduction to Geomicrobiology
Abbreviated Course Title	Intro Geomicro
Co-Listed Course	

Catalog Description

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

Prerequisite(s):

Bio Sci [3313 or Env Eng 2601](#) ~~3313~~.

Corequisite(s):

Credit Hours

Credit Hours

In Workflow

1. RBIOLSCI Chair

2. CCC Secretary

3. Sciences DSCC Chair

4. Pending CCC Agenda post

5. CCC Meeting Agenda

6. Campus Curricula Committee Chair

7. FS Meeting Agenda

8. Faculty Senate Chair

9. Registrar

10. CAT entry

11. Peoplesoft

Approval Path

1. 04/11/25 8:14 am
David Duvernell (duvernell):
Approved for
RBIOLSCI Chair

2. 04/11/25 12:02 pm
Jade McCain (jm558v): Approved
for CCC Secretary

3. 04/25/25 9:10 am
Katie Shannon (shannonk):
Approved for
Sciences DSCC Chair

4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

History

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

2. May 6, 2022 by
Katie Shannon
(shannonk)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification adding Prereq Env Eng 2601 for ENV SCI majors

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 12:02 pm):** Selected "no" for communication emphasized
Comments and communication intensive.

Key: 4642

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:47 pm

Viewing: **BIO SCI 4423 : Introduction to Astrobiology**

Last approved: 11/05/18 5:56 am

Last edit: 04/11/25 12:05 pm

Changes proposed by: Katie Shannon (shannonk)

Programs
referencing this
course

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

Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIOLSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	4423
Title	Introduction to Astrobiology
Abbreviated Course Title	Intro Astrobio
Co-Listed Course	

Catalog Description

An overview of the origins of life on early earth and the possibility of life on extraterrestrial bodies will be examined in this course through lectures and journal articles. The techniques that astrobiologists use to investigate the possibility of life beyond earth will be explored.

Assessment will be based on exam performance and participation in class.

Prerequisite(s):

Bio Sci 2213 or Bio Sci [3313 or Env Eng 2601](#). ~~3313~~.

Corequisite(s):

Credit Hours

Credit Hours

In Workflow

1. RBIOLSCI Chair

2. CCC Secretary

3. Sciences DSCC Chair

4. Pending CCC Agenda post

5. CCC Meeting Agenda

6. Campus Curricula Committee Chair

7. FS Meeting Agenda

8. Faculty Senate Chair

9. Registrar

10. CAT entry

11. Peoplesoft

Approval Path

1. 04/11/25 8:14 am
David Duvernell (duvernell):
Approved for
RBIOLSCI Chair

2. 04/11/25 12:05 pm
Jade McCain (jm558v): Approved
for CCC Secretary

3. 04/25/25 9:10 am
Katie Shannon (shannonk):
Approved for
Sciences DSCC Chair

4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

History

1. Nov 5, 2018 by
Katie Shannon
(shannonk)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification adding Prerequisite Env Eng 2601 for ENV SCI majors

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 12:05 pm):** Selected "no" for communication emphasized
Comments and communication intensive.

Key: 4544

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:49 pm

Viewing: **BIO SCI 4663 : Animal Behavior**

Last approved: 10/04/21 6:01 am

Last edit: 04/11/25 12:06 pm

Changes proposed by: Katie Shannon (shannonk)

In Workflow

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

Approval Path

- 1. 04/11/25 8:14 am
David Duvernell (duvernell):
Approved for
RBIOLSCI Chair
- 2. 04/11/25 12:06 pm
Jade McCain (jm558v): Approved
for CCC Secretary
- 3. 04/25/25 9:10 am
Katie Shannon (shannonk):
Approved for
Sciences DSCC Chair
- 4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

Programs referencing this course

[ENV SCI-BS: Environmental Science BS](#)
[NEURO-CTU: Neuroscience CTU](#)

Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIOLSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	4663
Title	Animal Behavior
Abbreviated Course Title	Animal Behavior
Co-Listed Course	

Catalog Description

An introduction to key concepts in Animal Behavior. Topics include communication, foraging, spatial behavior, parental care, social behaviors, the effects of environment on behavior, phenotypic plasticity, behavioral ecology, and anthropomorphism. The course will consist of lectures and laboratory exercises.

Prerequisite(s):
Bio Sci 1113 or Bio Sci 1213 or Bio Sci 1173. ~~1213.~~

Corequisite(s):

Credit Hours

Credit Hours

History

1. Oct 4, 2021 by Katie Shannon (shannonk)

Credit Type	Credit Hours
Lecture	2
Laboratory	1

Total: 3

Required for Majors No

Elective for Majors Yes

Communication Intensive No

Communication Emphasized No

Grading Basis Graded

Repeatable No

Justification adding Bio Sci 1173 prereq for ENV SCI majors

Semesters Previously Offered

Term(s) Offered as experimental

Is this a MOTR Course?

Reviewer **Jade McCain (jm558v) (04/11/25 12:06 pm):** Selected "no" for communication emphasized and communication intensive.

Key: 4816

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:53 pm

Viewing: **BIO SCI 5423 : Advanced Biodiversity**

Last edit: 04/11/25 12:07 pm

Changes proposed by: Katie Shannon (shannonk)

In Workflow

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

Approval Path

- 1. 04/11/25 8:14 am
David Duvernell (duvernelld):
Approved for
RBIOLSCI Chair
- 2. 04/11/25 12:07 pm
Jade McCain (jm558v): Approved
for CCC Secretary
- 3. 04/25/25 9:10 am
Katie Shannon (shannonk):
Approved for
Sciences DSCC Chair
- 4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

ENV SCI-BS: Environmental Science BS

Programs
referencing this
course

Requested Effective Date Fall 2025

Department Biological Sciences (RBIOLSCI)

Discipline Biological Sciences (BIO SCI)

Course Number 5423

Title Advanced Biodiversity

Abbreviated Course Title Advanced Biodiversity

Co-Listed Course

Catalog Description

This course focuses on the enhancement and reduction of biodiversity and modern techniques of measuring and monitoring it. Topics include biogeography, community structure, competition, predation, food webs, geology-biology relationships, environmental change, and human impact. Additional costs and a week-long field trip are required.

Prerequisite(s):
Bio Sci 1223, ~~2233 or Bio-Sci 2263~~.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication
Intensive No

Communication
Emphasized No

Grading Basis Graded

Repeatable No

Justification Changing pre-req at request of instructor

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 12:07 pm):** Selected "no" for communication emphasized
Comments and communication intensive.

Key: 5633

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/10/25 4:55 pm

Viewing: **BIO SCI 5453 : Forest Insect Diversity & Ecology**

Last approved: 04/15/23 6:01 am

Last edit: 04/11/25 12:09 pm

Changes proposed by: Katie Shannon (shannonk)

Programs
referencing this
course

[BIO SC-BS: Biological Sciences BS](#)

Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIOLSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	5453
Title	Forest Insect Diversity & Ecology
Abbreviated Course Title	Insect Diversity
Co-Listed Course	

Catalog Description

In this course, you will learn key insect characteristics, common forest insects, insect life history and ecology, and entomological collection techniques. This course will be taught at the Ozark Research Field Station and will consist of several field trips to collecting sites and laboratory identification of insects.

Prerequisite(s):

Bio Sci [1223](#). ~~2263~~.

Corequisite(s):

Credit Hours

Credit Hours

In Workflow

1. RBIOLSCI Chair

2. CCC Secretary

3. Sciences DSCC Chair

4. Pending CCC Agenda post

5. CCC Meeting Agenda

6. Campus Curricula Committee Chair

7. FS Meeting Agenda

8. Faculty Senate Chair

9. Registrar

10. CAT entry

11. Peoplesoft

Approval Path

1. 04/11/25 8:15 am
David Duvernell (duvernell):
Approved for
RBIOLSCI Chair

2. 04/11/25 12:09 pm
Jade McCain (jm558v): Approved
for CCC Secretary

3. 04/25/25 9:10 am
Katie Shannon (shannonk):
Approved for
Sciences DSCC Chair

4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

History

1. Apr 15, 2023 by Dev Niyogi (niyogid)

Credit Type		Credit Hours
Laboratory		2
Total:	2	

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification changing pre-req at request of instructor

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 12:09 pm):** Selected "no" for communication emphasized
Comments and communication intensive.

Course Change Request

Date Submitted: 04/10/25 4:57 pm

Viewing: **BIO SCI 5523 : Ichthyology**

Last approved: 02/06/23 6:01 am

Last edit: 04/11/25 12:11 pm

Changes proposed by: Katie Shannon (shannonk)

In Workflow

- 1. RBIO LSCI 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. 04/11/25 8:15 am
David Duvernell (duvernell): Approved for RBIO LSCI Chair
- 2. 04/11/25 12:11 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/25/25 9:10 am
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
- 4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- 1. Feb 6, 2023 by Dev Niyogi (niyogid)

BIO SC-BS: Biological Sciences BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Biological Sciences (RBIO LSCI)
Discipline	Biological Sciences (BIO SCI)
Course Number	5523
Title	Ichthyology
Abbreviated Course Title	Ichthyology
Co-Listed Course	

Catalog Description

An introduction to evolutionary relationships, ecology, morphology, physiology and behavior of fishes. Includes a lab that focuses on anatomy, taxonomy, and identification with an emphasis on regional fauna. The lab includes some required field trips.

Prerequisite(s):

Bio Sci 1223 ~~1113 or Bio Sci 1213~~; and Bio Sci ~~1219, and Bio Sci 1223, and Bio Sci~~ 1229.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3
Laboratory	1

Total: 4

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification changing pre-reqs as requested by instructor

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/11/25 12:11 pm):** Selected "no" for communication emphasized
Comments and communication intensive.

Key: 4893

[Preview Bridge](#)

Course Change Request

Course Reactivation Proposal

Date Submitted: 04/09/25 9:34 am

Viewing: **BUS 1414 : The Inclusive Workplace**

Last approved: 01/29/24 6:01 am

Last edit: 04/09/25 9:34 am

Changes proposed by: Cecil Eng Huang Chua (cecq8z)

Requested Effective Date	Fall 2025
Department	<u>Business and Information Tech (RBUS&IT)</u> Business Administration (RBUSADMN)
Discipline	Business (BUS)
Course Number	1414
Title	The Inclusive Workplace
Abbreviated Course Title	The Inclusive Workplace
Co-Listed Course	

Catalog Description	This course will cover topics such as corporate social responsibility, ethics, diversity and inclusion (i.e. national culture, race, religion, age, gender, sexual orientation, and ability). Students will learn to recognize their own biases, understand the benefits of inclusion, and be exposed to a few strategies utilized to achieve an inclusive workplace.
Prerequisite(s):	
Corequisite(s):	

Credit Hours	
Credit Hours	

In Workflow

1. RBUSADMN Chair
2. RBUS&IT Chair
3. CCC Secretary
4. Social Sciences DSCC Chair
5. Pending CCC Agenda post
6. CCC Meeting Agenda
7. Campus Curricula Committee Chair
8. FS Meeting Agenda
9. Faculty Senate Chair
10. Registrar
11. CAT entry
12. Peoplesoft

Approval Path

1. 04/09/25 9:41 am
Cassie Elrod (cassa):
Approved for
RBUSADMN Chair
2. 04/11/25 9:39 am
Cassie Elrod (cassa):
Approved for
RBUS&IT Chair
3. 04/11/25 2:24 pm
Jade McCain (jm558v): Approved
for CCC Secretary
4. 04/11/25 4:39 pm
Cecil Eng Huang Chua (cchua):
Approved for Social
Sciences DSCC Chair
5. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

History

1. Sep 28, 2020 by
Cecil Eng Huang
Chua (cchua)
2. Jan 29, 2024 by
Cecil Eng Huang
Chua (cchua)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Strategic hire from Civil Engineering is bringing partner to be added to BIT. Course is in this person's research and teaching portfolio.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer
Comments

Key: 4720

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/21/25 12:55 pm

Viewing: **CER ENG 3230 : Thermodynamics of Materials**

Also listed as: **MET ENG 3230 / SEMI ENG 3230**

Last edit: 04/22/25 8:56 am

Changes proposed by: David Lipke (lipked)

Programs
referencing this
course

CER ENG 3230:
[CR ENG-BS: Ceramic Engineering BS](#)
[BIOMED-BS: Biomedical Engineering BS](#)
MET ENG 3230:
[MT ENG-BS: Metallurgical Engineering BS](#)
SEMI ENG 3230:
[PROPOSED: Semiconductor Engineering BS](#)

Requested Effective Date Fall 2025

Department Materials Science & Engineering (RMATSENG)

Discipline Ceramic Engineering (CER ENG)

Course Number 3230

Title Thermodynamics of Materials

Abbreviated Course Title Thermodynamics of Materials

Co-Listed Course [MET ENG 3230](#) Department

[Materials Science & Engineering \(RMATSENG\)](#)

[SEMI ENG 3230](#) Department
[Materials Science & Engineering \(RMATSENG\)](#)

Catalog Description

Basic thermodynamic concepts are applied to materials. Calculations involving enthalpy, entropy, and Gibbs' free energy are studied. Inter-relationships among properties are emphasized. Fundamental concepts of phase ~~equilibria~~ [equilibria](#) are presented.

Prerequisite(s): ~~A "C" or better~~ [grade of "C" or better](#) in either Met Eng 1210 or Chem 1320.

In Workflow

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

Approval Path

1. 03/21/25 4:08 pm
Michael Moats (moatsm):
Approved for RMATSENG Chair
2. 04/10/25 3:22 pm
Crystal Wilson (wilsoncry):
Approved for CCC Secretary
3. 04/24/25 8:09 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
4. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes ~~No~~

Elective for Majors No

Communication
Intensive No

Communication
Emphasized No

Grading Basis Graded

Repeatable No

Justification Adding co-listings with MET ENG and SEMI ENG.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/02/25 11:43 am):** Marked "no" for communication intensive and communication emphasized per department request.

Crystal Wilson (wilsoncry) (04/10/25 1:31 pm): Marked yes for required for majors because they are listed in the plan of study grid.

Jade McCain (jm558v) (04/22/25 8:56 am): Corrected prerequisite formatting.

Key: 5701

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/21/25 2:27 pm

Viewing: **CER ENG 3410 : Characterization Of Inorganic Solids**

Also listed as: **SEMI ENG 3410**

Last edit: 04/22/25 8:58 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 4:08 pm
Michael Moats (moatsm):
Approved for RMATSENG Chair
- 2. 04/10/25 3:23 pm
Crystal Wilson (wilsoncry):
Approved for CCC Secretary
- 3. 04/24/25 8:11 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
- 4. 04/28/25 2:18 pm
Jade McCain (jm558v):
Approved for Pending CCC Agenda post

Programs referencing this course	CER ENG 3410: CR ENG-BS: Ceramic Engineering BS MT ENG-BS: Metallurgical Engineering BS SEMI ENG 3410: PROPOSED: Semiconductor Engineering BS
----------------------------------	---

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Ceramic Engineering (CER ENG)
Course Number	3410
Title	Characterization Of Inorganic Solids
Abbreviated Course Title	Char Of Inorg Solids
Co-Listed Course	<u>SEMI ENG 3410</u>
	Department <u>Materials Science & Engineering (RMATSENG)</u>

Catalog Description

X-ray diffraction analysis is emphasized including lattice parameter determination, qualitative and quantitative analysis methods, and sources of error. In addition, the basic principles of other common characterization techniques including electron microscopy, thermal analysis, and energy dispersive spectroscopy are discussed.

Prerequisite(s):

A grade of "C" or better ~~grade~~ in ~~either~~ Cer Eng 2110, ~~2110 or~~ Met Eng 2110, Semi Eng 2100 or 2110 or a similar introductory course on structure of ~~of~~ solids.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes ~~No~~

Elective for Majors No

Communication No

Intensive

Communication No

Emphasized

Grading Basis Graded

Repeatable No

Justification Adding Semi Eng 2100 as pre-req and co-listing under Semi Eng

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/02/25 11:53 am):** Marked "no" for communication intensive and communication emphasized per department request.

Crystal Wilson (wilsoncry) (04/10/25 1:43 pm): Marked yes for required for majors because they are on the plan of study grid.

Jade McCain (jm558v) (04/22/25 8:58 am): Corrected prerequisite formatting.

Key: 5704

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/21/25 2:28 pm

Viewing: **CER ENG 4096 : Materials Senior Design I**

Also listed as: **MET ENG 4096 / SEMI ENG 4096**

Last edit: 04/22/25 8:59 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 4:08 pm
Michael Moats (moatsm):
Approved for RMATSENG Chair
- 2. 04/10/25 3:23 pm
Crystal Wilson (wilsoncry):
Approved for CCC Secretary
- 3. 04/24/25 8:12 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
- 4. 04/28/25 2:18 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Programs referencing this course

CER ENG 4096:
[CR ENG-BS: Ceramic Engineering BS](#)
[PROPOSED: Materials Science and Engineering Minor](#)

MET ENG 4096:
[PROPOSED: Materials Science and Engineering Minor](#)
[MT ENG-BS: Metallurgical Engineering BS](#)

SEMI ENG 4096:
[PROPOSED: Semiconductor Engineering BS](#)

Requested Effective Date	Fall 2025		
Department	Materials Science & Engineering (RMATSENG)		
Discipline	Ceramic Engineering (CER ENG)		
Course Number	4096		
Title	Materials Senior Design I		
Abbreviated Course Title	Matls Senior Design I		
Co-Listed Course	MET ENG 4096	Department	Materials Science & Engineering (RMATSENG)
	<u>SEMI ENG 4096</u>	Department	<u>Materials Science & Engineering (RMATSENG)</u>

Catalog Description

Overview of the methods, approaches, and techniques required to execute materials related capstone senior design projects. Formation of teams, assignment of projects, review of department curriculum concepts and topics, and comprehensive project management skills needed to complete projects will be used as means to learn the design process.

Prerequisite(s): A grade of "C" or better in Met Eng 3125 and Met Eng 2125, or Cer Eng 3315 or Semi Eng. ~~with a "C" or better.~~

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes ~~No~~

Elective for Majors No

Communication
Intensive No

Communication
Emphasized Yes

Grading Basis Graded

Repeatable No

Justification Adding Semi Eng 3101 as pre-req and co-listing with Semi Eng.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Crystal Wilson (wilsoncry) (04/10/25 1:47 pm):** Marked yes for required for majors because they are on the plan of study grid.

Jade McCain (jm558v) (04/22/25 8:59 am): Corrected prerequisite formatting.

Course Change Request

Date Submitted: 03/21/25 2:29 pm

Viewing: **CER ENG 4097 : Materials Senior Design II**

Also listed as: **MET ENG 4097 / SEMI ENG 4097**

Last edit: 04/22/25 9:00 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 4:08 pm
Michael Moats (moatsm):
Approved for RMATSENG Chair
- 2. 04/10/25 3:23 pm
Crystal Wilson (wilsoncry):
Approved for CCC Secretary
- 3. 04/24/25 8:13 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
- 4. 04/28/25 2:18 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Programs referencing this course

CER ENG 4097:
[CR ENG-BS: Ceramic Engineering BS](#)
[PROPOSED: Materials Science and Engineering Minor](#)

MET ENG 4097:
[PROPOSED: Materials Science and Engineering Minor](#)
[MT ENG-BS: Metallurgical Engineering BS](#)

SEMI ENG 4097:
[PROPOSED: Semiconductor Engineering BS](#)

Requested Effective Date	Fall 2025	
Department	Materials Science & Engineering (RMATSENG)	
Discipline	Ceramic Engineering (CER ENG)	
Course Number	4097	
Title	Materials Senior Design II	
Abbreviated Course Title	Matls Senior Design II	
Co-Listed Course	MET ENG 4097	Department Materials Science & Engineering (RMATSENG)
	<u>SEMI ENG 4097</u>	Department <u>Materials Science & Engineering (RMATSENG)</u>

Catalog Description

A continuation of the Materials Senior Design I. Students working in groups will complete a capstone design project including process and product simulation and/or fabrication, safety aspects, environmental impact and capital and operating economics.

Prerequisite(s): A grade of "C" or better in either Cer Eng 4096 or Met Eng 4096 or Semi Eng 4096.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Laboratory	3

Total: 3

Required for Majors Yes ~~No~~

Elective for Majors No

Communication No
Intensive

Communication Yes
Emphasized

Grading Basis Graded

Repeatable No

Justification Adding Semi Eng 4096 pre-req and co-listing with Semi Eng.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Crystal Wilson (wilsoncry) (04/10/25 1:49 pm):** Marked yes for required for majors because
Comments they are on the plan of study grid.
Jade McCain (jm558v) (04/22/25 9:00 am): Corrected prerequisite formatting.

Key: 5709

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/11/25 7:04 pm

Viewing: **CHEM 1305 : Fundamentals of General Chemistry**

Last edit: 04/07/25 9:31 am

Changes proposed by: Thomas Schuman (tschuman)

Programs referencing this course	AE ENG-BS: Aerospace Engineering BS ARC ENG-BS: Architectural Engineering BS MC ENG-BS: Mechanical Engineering BS
----------------------------------	---

Requested Effective Date	Fall 2025
Department	Chemistry (RCHEMIST)
Discipline	Chemistry (CHEM)
Course Number	1305
Title	Fundamentals of General Chemistry
Abbreviated Course Title	Fundamentals of Chemistry
Co-Listed Course	

Catalog Description

Fundamentals of Chemistry is designed to provide engineering and other non-chemistry majors with a strong foundation in general chemistry concepts relevant to their fields. The course covers key topics such as stoichiometry, thermodynamics, kinetics, equilibrium, electrochemistry, and molecular structure, emphasizing their practical applications in engineering and technology. Delivered in a flipped classroom format, it integrates pre-recorded lectures with interactive, in-class problem-solving activities, and small-group recitation sessions to enhance student engagement and comprehension. Active-learning strategies, including case studies and collaborative exercises, are employed to promote critical thinking and develop problem-solving skills.

Prerequisite(s):

Entrance requirements.

Corequisite(s):

<u>Credit Hours</u>

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. 03/28/25 6:06 pm
Chariklia Sotiriou-Leventis (cslevent): Approved for RCHEMIST Chair
2. 04/11/25 3:15 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/25/25 9:10 am
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 04/28/25 2:18 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Credit Hours

Credit Type	Credit Hours
Lecture	3
Recitation/Seminar/Discussion	1

Total: 4

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification

Proposed is a service course to teach basic general chemistry, with emphasis on active learning solving of chemistry problems, to non-majors including other STEM degrees. The disciplines the course is intended to serve includes all degree majors that are NOT continuing to Chem 1320. Students continuing to Chem 1320 and beyond will continue to be served by Chem 1310. The current course number Chem 1305 is not currently offered and the course change/creation should be unaffected for fall semester 2025.

Degree plans other than chemistry can utilize the new course in their degrees initially via substitution+waiver forms or can edit their degree plans via DC form should they choose to require this course. We have sought a partner department to provide a suitable DC to demonstrate active requirement in a degree plan to justify permanent number creation. More departments have indicated that, if offered, they will also require it for their degree plans so demand for the course is expected to increase beyond fall semester 2025. It was requested that chemistry develop this course for non-chemistry majors as an IGSET proposal, now approved.

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/07/25 9:31 am):** Selected "yes" for Elective for Major and added
Comments grading basis.

Course Change Request

New Course Proposal

Date Submitted: 03/11/25 1:01 pm

Viewing: **COMP SCI 6409 : Advanced Virtual Reality**

Last edit: 03/11/25 2:33 pm

Changes proposed by: Venkata Sriram Siddhardh Nadendla (nadendla)

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. 03/11/25 1:04 pm
Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
- 2. 03/11/25 2:35 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 03/21/25 2:37 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair
- 4. 04/28/25 2:18 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Requested Effective Date	Spring 2026
Department	Computer Science (RCOMPSCI)
Discipline	Computer Science (COMP SCI)
Course Number	6409
Title	Advanced Virtual Reality
Abbreviated Course Title	Advanced VR
Co-Listed Course	

Catalog Description
Special Effects, Animation; Rigid body dynamics (deformation, shattering, destruction); Fluid dynamics (smoke, fire, rain); Rendering (lights, camera), Digital Assets, Dynamics of landslides, earthquakes, volcanos, tornados, and oceans. In addition to Engineering, virtual reality applications to Business, Education, Health, Psychology will be included.

Prerequisite(s):
A grade of "C" or better in Comp Sci 5407.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors	No
Elective for Majors	Yes
Communication Intensive	No
Communication Emphasized	Yes
Grading Basis	Graded
Repeatable	No

Justification This course has been taught thrice as an experimental course so far. Therefore, Comp Sci department is submitting this form to request a permanent course number. The details of the previous offerings are given below:

Spring 2023: Comp Sci 6001 - 101 (Advanced Virtual Reality) - 38 students
Spring 2024: Comp Sci 6001 - 101 (Advanced Virtual Reality) - 30 students
Spring 2025: Comp Sci 6001 - 102 (Advanced Virtual Reality) - 7 students

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (03/11/25 2:20 pm):** Selected "Graded" for Grading Basis. Course has
Comments been taught experimentally in Spring 2023 with 42 students, Spring 2024 with 30 students, and
Spring 2025 with 7 students.
Jade McCain (jm558v) (03/11/25 2:33 pm): Selected "Yes" for Communication Emphasized per
department request via email on 3/11.

Key: 10254

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/16/25 12:31 pm

Viewing: **ECON 3333 : Computational Economics**

Last approved: 05/10/23 6:01 am

Last edit: 03/19/25 1:40 pm

Changes proposed by: Melody Lo (mlc2d)

Programs referencing this course	ECON-BA: Economics BA ECON-BS: Economics BS FETECH-CTU: Financial Economics and Technology - CTU DDA-CTU: Decision Data Analytics - CTU Q ECON-MI: Quantitative Economics Minor
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Requested Effective Date	Fall 2025
Department	Economics (RECONOMI)
Discipline	Economics (ECON)
Course Number	3333
Title	Computational Economics
Abbreviated Course Title	Computational Economics
Co-Listed Course	

Catalog Description	This course introduces concepts of computational economics using machine learning and artificial intelligence and the practice of analysis using applications related to microeconomics, macroeconomics, and econometrics. The course teaches data and text mining, deep learning, and causal machine learning using Python programming to extract economic insights.
Prerequisite(s):	Econ 1100 and Econ 1200, and one of the following: Stat 1115 , Stat 3111, Stat 3113, Stat 3115, Stat 3117, or Stat 5346, or instructor approval. 3546-
Corequisite(s):	

Credit Hours	
Credit Hours	

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. CAT entry
11. Peoplesoft

Approval Path
1. 03/16/25 12:46 pm Melody Lo (mlc2d): Approved for RECONOMI Chair
2. 03/19/25 1:41 pm Jade McCain (jm558v): Approved for CCC Secretary
3. 04/02/25 3:13 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair
4. 04/28/25 2:19 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. May 10, 2023 by
Michael Davis
(davismc)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication Yes
Emphasized

Grading Basis Graded

Repeatable No

Justification We need to correct a typo in the list of prerequisites for one of the courses. STAT 3546 has been corrected to STAT 5346.

Additionally, we have removed STAT 1115 as a prerequisite, as its statistical content is insufficient for students to enter ECON 3333.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (03/18/25 9:14 am):** Selected "Yes" for Communication Emphasized per
Comments department request via email on 3/18.

Jade McCain (jm558v) (03/19/25 1:40 pm): Corrected prerequisite format.

Key: 4937

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/16/25 12:45 pm

Viewing: **ECON 5380 : Data Intelligence using Case Studies**

Formerly known as: **ECON 5350**

Last approved: 07/23/24 6:38 am

Last edit: 03/19/25 1:42 pm

Changes proposed by: Melody Lo (mlc2d)

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. CAT entry
- 11. Peoplesoft

Approval Path

- 1. 03/16/25 12:47 pm
Melody Lo (mlc2d):
Approved for
RECONOMI Chair
- 2. 03/19/25 1:42 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
- 3. 04/02/25 3:14 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
- 4. 04/28/25 2:19 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

- 1. Jun 6, 2023 by
Michael Davis
(davismc)

Programs
referencing this
course

ECON 5350:
[ECON-BA: Economics BA](#)
ECON 5380:
[ECON-BS: Economics BS](#)
[DDA-CTU: Decision Data Analytics - CTU](#)
[Q ECON-MI: Quantitative Economics Minor](#)

Requested Effective Date	Fall 2025
Department	Economics (RECONOMI)
Discipline	Economics (ECON)
Course Number	5380
Title	Data Intelligence using Case Studies
Abbreviated Course Title	Data Case Studies
Co-Listed Course	

Catalog Description

This course designates a corporate executive to teach students the processes of data collecting, analyzing, visualization, and statistical tests with case studies from various industries. Students will have the opportunity to do group projects showcasing their ability to apply data intelligence in real-world scenarios using Python programming.

Prerequisite(s):

Econ 1100 and Econ [1200](#), ~~1200~~ and one of the following: Stat ~~1115~~, Stat 3111, Stat 3113, Stat 3115, [Stat 3117](#), or Stat [5346, with programming knowledge, or instructor approval.](#) ~~3117.~~

Corequisite(s):

Credit Hours

Credit Hours

2. Jul 23, 2024 by
Michael Davis
(davismc)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication Yes
Emphasized

Grading Basis Graded

Repeatable No

Justification We have removed STAT 1115 as a prerequisite because its statistical content is insufficient for students entering ECON 5380. Additionally, we have added STAT 5346 as a qualified statistics prerequisite and included a programming knowledge requirement, with instructor approval to allow for discretion.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (03/18/25 9:14 am):** Selected "Yes" for Communication Emphasized per department request via email on 3/18.

Jade McCain (jm558v) (03/19/25 1:42 pm): Corrected prerequisite format.

Key: 4943

[Preview Bridge](#)

Course Change Request

A deleted record cannot be edited

Course Inactivation Proposal

Date Submitted: 03/24/25 9:58 am

Viewing: **EDUC 1040 : Perspectives In Education**

Last approved: 02/04/19 5:03 am

Last edit: 03/24/25 9:58 am

Changes proposed by: Crystal Wilson (wilsoncry)

ECON-BA: Economics BA

Programs
referencing this
course

Justification for this
inactivation request

Inactivate EDUC 1040 because EDUC 1074 is replacing EDUC 1040 and EDUC 1174.

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	1040
Title	Perspectives In Education
Abbreviated Course Title	Perspectives In Educ
Co-Listed Course	

Catalog Description

This course is an introduction course which will assist students planning to enter the teacher-education program in assessing their personal and professional characteristics required for the teaching profession. It is an overview of the teacher education profession for elementary, middle and secondary.

Prerequisite(s):
Education emphasis declared.

Corequisite(s):

Credit Hours

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. 04/04/25 2:09 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
2. 04/07/25 2:48 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/07/25 3:44 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Feb 4, 2019 by Kelly

Credit Hours

Carter (carterke)

Credit Type	Credit Hours
Lecture	2

Total: 2

Required for Majors No

Elective for Majors No

Communication
Intensive

Communication
Emphasized

Grading Basis Graded

Repeatable No

Justification

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer
Comments

Key: 2

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:06 am

Viewing: **EDUC 1104 : Teacher Field Experience I**

Last approved: 12/07/20 6:01 am

Last edit: 04/14/25 2:24 pm

Changes proposed by: Jade McCain (jm558v)

Catalog Pages referencing this course	Teacher Education and Certification
Programs referencing this course	PHYSIC-BS: Physics BS AP MATH-BS: Applied Mathematics BS BIO SC-BA: Biological Sciences BA BUS&MS-BS: Business and Mgmt Systems BS CHEM-BA: Chemistry BA HIST-BA: History BA PSYCH-BA: Psychological Science BA PSYCH-BS: Psychological Science BS EDUC-BS: Education BS ECON-BA: Economics BA ENV SCI-BS: Environmental Science BS

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	1104
Title	Teacher Field Experience I
Abbreviated Course Title	Teach Field Experience I
Co-Listed Course	

Catalog Description	Students will spend 30 clock hours in classrooms, including experiences in diverse settings. Students will attend seminar sessions and complete assignments related to the field experiences. A background check is required for enrollment in this course.
Prerequisite(s):	Educ 1074 . 1040 .

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. 04/04/25 2:10 pm Beth Kania-Gosche (bakm75): Approved for REDUCATION Chair
2. 04/14/25 2:24 pm Jade McCain (jm558v): Approved for CCC Secretary
3. 04/14/25 2:51 pm Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair
4. 04/28/25 2:19 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post

History
1. Jan 18, 2019 by ershenb

Corequisite(s):

- 2. Nov 25, 2019 by
Beth Kania-Gosche
(bakm75)
- 3. Dec 7, 2020 by Beth
Kania-Gosche
(bakm75)

Credit Hours

Credit Hours

Credit Type	Credit Hours
Laboratory	1

Total: 1

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded or Satisfactory, Non-elective

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/14/25 2:24 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 2086

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/05/25 11:00 am

Viewing: **EDUC 1111 : Substitute Teacher Training**

Last edit: 04/10/25 1:12 pm

Changes proposed by: Beth Kania-Gosche (bakm75)

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. 03/05/25 11:04 am
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
- 2. 04/10/25 3:43 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/10/25 3:55 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
- 4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	1111
Title	Substitute Teacher Training
Abbreviated Course Title	Sub Training
Co-Listed Course	

Catalog Description
This course prepares students to be in charge of a K-12 classroom as a substitute teacher. Classroom management, ethical conduct, support for students with special needs, and instructional strategies will be discussed. Students will teach a demonstration lesson to their peers.

Prerequisite(s):

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	1

Total:	1
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Required for Majors	No
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Elective for Majors	Yes
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Communication Intensive	No
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Communication Emphasized	Yes
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Grading Basis	Graded
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Repeatable	No
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Justification	The Education Department has been approved by DESE to offer this substitute teacher training. It is necessary to have the course title on transcripts, not an experimental course, for it to count for certification. DESE does not allow experimental courses to be used.
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Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer Comments	Jade McCain (jm558v) (04/10/25 1:12 pm): Selected "no" for communication intensive and added graded basis per department request.
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Key: 10250

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:07 am

Viewing: **EDUC 1164 : Teacher Field Experience II**

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

Last edit: 04/14/25 2:30 pm

Changes proposed by: Jade McCain (jm558v)

Catalog Pages referencing this course	Teacher Education and Certification
Programs referencing this course	PHYSIC-BS: Physics BS AP MATH-BS: Applied Mathematics BS BIO SC-BA: Biological Sciences BA BUS&MS-BS: Business and Mgmt Systems BS CHEM-BA: Chemistry BA HIST-BA: History BA PSYCH-BA: Psychological Science BA PSYCH-BS: Psychological Science BS EDUC-BS: Education BS ECON-BA: Economics BA ENV SCI-BS: Environmental Science BS

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	1164
Title	Teacher Field Experience II
Abbreviated Course Title	Teach Field Exp II
Co-Listed Course	

Catalog Description

Students will spend 60 clock hours in classrooms, including experiences in diverse settings. Students will teach lessons, work with learners, and otherwise assist in the classroom to which they are assigned. A background check is required for enrollment in this course.

Prerequisite(s):

Educ [1074](#), ~~1040~~, Educ 1104, and Educ 3216.

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. 04/04/25 2:10 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
2. 04/14/25 2:30 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/14/25 2:52 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Jan 18, 2019 by ershenb

Corequisite(s):

2. Oct 28, 2019 by
Beth Kania-Gosche
(bakm75)

Credit Hours

Credit Hours

Credit Type	Credit Hours
Laboratory	2

Total: 2

Required for Majors No

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded or Satisfactory, Non-elective

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/14/25 2:30 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 770

[Preview Bridge](#)

Course Change Request

A deleted record cannot be edited

Course Inactivation Proposal

Date Submitted: 03/24/25 10:00 am

Viewing: **EDUC 1174 : School Organization and Administration For Teachers**

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

Last edit: 03/24/25 10:00 am

Changes proposed by: Crystal Wilson (wilsoncry)

Programs ECON-BA: Economics BA
referencing this course

Justification for this inactivation request

Inactivate EDUC 1174 because EDUC 1074 is replacing EDUC 1040 and EDUC 1174.

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	1174
Title	School Organization and Administration For Teachers
Abbreviated Course Title	Sch Org Adm Elem Sec Tch
Co-Listed Course	

Catalog Description

Students will gain knowledge and understanding of the organizational structure and the general operation and administration of public schools. The student should more clearly understand the role of the classroom teacher in classroom management, school law, equity in education, curriculum/instruction, and professional development.

Prerequisite(s):

Educ 1040 and Educ 1104.

Corequisite(s):

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. 04/04/25 2:10 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
2. 04/07/25 2:50 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/07/25 3:44 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Jan 18, 2019 by

Credit Hours

Credit Hours

ershenb
2. Oct 28, 2019 by
Beth Kania-Gosche
(bakm75)

Credit Type	Credit Hours
Lecture	2

Total: 2

Required for Majors No

Elective for Majors No

Communication
Intensive

Communication
Emphasized

Grading Basis Graded

Repeatable No

Justification

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer
Comments

Key: 2087

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:10 am

Viewing: **EDUC 2401 : School, Family, and Community Partnerships**

Last approved: 11/28/22 6:01 am

Last edit: 04/14/25 2:37 pm

Changes proposed by: Jade McCain (jm558v)

Programs	EDUC-BS: Education BS
referencing this course	EDYC-CTU: Undergraduate Certificate in Education of Young Children CTU

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	2401
Title	School, Family, and Community Partnerships
Abbreviated Course Title	School, Family, Comm
Co-Listed Course	

Catalog Description	Students will examine available community resources and their impact on children and families. Students will practice strategies to support family engagement. Effective communication and collaboration with diverse families will be emphasized.
Prerequisite(s):	Educ 1074 1040 or Educ 1055.
Corequisite(s):	

Credit Hours
Credit Hours

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. 04/02/25 1:13 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair

2. 04/14/25 2:37 pm
Jade McCain (jm558v): Approved for CCC Secretary

3. 04/14/25 2:52 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair

4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Feb 13, 2021 by
Beth Kania-Gosche

(bakm75)
2. Nov 28, 2022 by
Beth Kania-Gosche
(bakm75)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/14/25 2:37 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 4746

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:12 am

Viewing: **EDUC 3215 : Teaching Reading in Elementary and Early Childhood Settings**

Formerly known as: **EDUC 2215**

Last approved: 02/08/21 6:00 am

Last edit: 04/14/25 2:39 pm

Changes proposed by: Jade McCain (jm558v)

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. 04/04/25 2:10 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
- 2. 04/14/25 2:47 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/14/25 2:52 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
- 4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- 1. Oct 31, 2016 by
Petra Dewitt

EDUC 3215:
EDUC-BS: Education BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	3215
Title	Teaching Reading in Elementary and Early Childhood Settings
Abbreviated Course Title	Tch Read Elem & Mid Sch
Co-Listed Course	

Catalog Description
This course introduces emergent literacy concepts and language acquisition. Students will apply research on phonological and phonemic awareness, fluency, comprehension, vocabulary, and text selection to their future classrooms. After observing the teaching of reading in an authentic setting, students will design and implement instruction.

Prerequisite(s):
Educ 1074. ~~1040~~.

Corequisite(s):

Credit Hours

Credit Hours

(dewittp)

2. Jan 18, 2019 by
ershenb

3. Feb 8, 2021 by Beth
Kania-Gosche
(bakm75)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/14/25 2:39 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 1771

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:13 am

Viewing: **EDUC 3218 : Language Arts for Elementary and Early Childhood Teachers**

Formerly known as: **EDUC 2218**

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

Last edit: 04/14/25 2:51 pm

Changes proposed by: Jade McCain (jm558v)

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. 04/04/25 2:10 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
- 2. 04/14/25 2:52 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/14/25 2:59 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
- 4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- 1. Oct 31, 2016 by
Petra Dewitt

EDUC 3218:
EDUC-BS: Education BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	3218
Title	Language Arts for Elementary and Early Childhood Teachers
Abbreviated Course Title	Lang Arts for Tchrs
Co-Listed Course	

Catalog Description
Students will apply research in emergent writing at the early childhood level and the writing process at the elementary level. Providing effective feedback to learners on their oral and written communication will be addressed. Students will integrate art, music, drama, and play-based learning into language arts instruction.

Prerequisite(s):
Educ 1074. ~~1040~~.

Corequisite(s):

Credit Hours

Credit Hours

(dewittp)

2. Jan 18, 2019 by
ershenb

3. Feb 8, 2021 by Beth
Kania-Gosche
(bakm75)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/14/25 2:51 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 1870

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:13 am

Viewing: **EDUC 3220 : Teaching Science in the Elementary and Early Childhood Classroom**

Last approved: 02/13/21 6:01 am

Last edit: 04/14/25 2:53 pm

Changes proposed by: Jade McCain (jm558v)

Programs

referencing this course

[EDUC-BS: Education BS](#)

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	3220
Title	Teaching Science in the Elementary and Early Childhood Classroom
Abbreviated Course Title	Teaching Science
Co-Listed Course	

Catalog Description

Students will learn to introduce children to scientific inquiry. Students will model higher order thinking skills and effective questioning techniques to guide learners' critical thinking by incorporating the engineering design process. Students will identify uses of technology for teaching science and develop informal and formal science assessments.

Prerequisite(s):

Educ [1074](#). ~~1040~~.

Corequisite(s):

Credit Hours

Credit Hours

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. 04/04/25 2:10 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair

2. 04/14/25 2:53 pm
Jade McCain (jm558v): Approved for CCC Secretary

3. 04/14/25 2:59 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair

4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Jul 3, 2018 by
Michelle Schwartze

(schwartzem)
2. Feb 4, 2019 by Kelly
Carter (carterke)
3. Feb 13, 2021 by
Beth Kania-Gosche
(bakm75)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/14/25 2:53 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 4517

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:14 am

Viewing: **EDUC 3221 : Methods of Teaching Math**

Also listed as: **MATH 3921**

Formerly known as: **EDUC 2221**

Last approved: 07/31/24 6:05 am

Last edit: 04/14/25 2:55 pm

Changes proposed by: Jade McCain (jm558v)

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. 04/04/25 2:11 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
- 2. 04/14/25 2:55 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/14/25 2:59 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
- 4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- 1. May 6, 2016 by
Mandy Sue Welch

EDUC 3221:
[EDUC-BS: Education BS](#)

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	3221
Title	Methods of Teaching Math
Abbreviated Course Title	Mthd Tching Math
Co-Listed Course	MATH 3921
Department	Mathematics & Statistics (RMATHEMA)

Catalog Description

The course presents an overview of how children learn mathematics, various techniques in teaching mathematics, and examples of applying these techniques to specific mathematical concepts (such as geometry, measurement, basic operations, statistics and probability, etc.).

Prerequisite(s):

Math 1120 or Math 1140; Educ [1074](#). ~~1040~~.

Corequisite(s):

Credit Hours

Credit Hours

(welchms)

2. Dec 14, 2016 by
Petra Dewitt
(dewittp)

3. Feb 4, 2019 by Kelly
Carter (carterke)

4. Feb 8, 2021 by Beth
Kania-Gosche
(bakm75)

5. Jul 31, 2024 by Jade
McCain (jm558v)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/14/25 2:55 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 2541

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:16 am

Viewing: **EDUC 3290 : Coordination of Cooperative Education**

Last approved: 07/31/24 6:06 am

Last edit: 04/14/25 2:56 pm

Changes proposed by: Jade McCain (jm558v)

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. 04/04/25 2:11 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
- 2. 04/14/25 2:56 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/14/25 2:59 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
- 4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- 1. Jan 7, 2019 by ershenb

BUS&MS-BS: Business and Mgmt Systems BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	3290
Title	Coordination of Cooperative Education
Abbreviated Course Title	Coord Coop Education
Co-Listed Course	

Catalog Description
Explore the coordination and delivery of work-based learning experiences for student learners, including legal aspects, methods, materials, selecting work sites, placement, evaluation of expectations and student follow-up. Develop an implementation plan for cooperative education.

Prerequisite(s):
Educ 1074 ~~1040~~ and Educ 1104 ~~1104 and Educ 1174~~.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable Yes

Justification Added EDUC 1074 as a prerequisite due to EDUC 1040 and EDUC 1174 combining into one course per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/14/25 2:56 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Course Change Request

Date Submitted: 03/24/25 9:18 am

Viewing: **EDUC 3335 : Curriculum And Instruction Of The Middle School**

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

Last edit: 04/14/25 3:01 pm

Changes proposed by: Jade McCain (jm558v)

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. 04/04/25 2:11 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
- 2. 04/14/25 3:27 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/14/25 3:46 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
- 4. 04/28/25 2:19 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- 1. Jan 18, 2019 by ershenb

EDUC-BS: Education BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	3335
Title	Curriculum And Instruction Of The Middle School
Abbreviated Course Title	Curr Instr Middle School
Co-Listed Course	

Catalog Description

This course provides an overview of the structure and philosophy of middle schools, including interdisciplinary and collaborative teams. The unique needs of the early adolescent will be aligned with evidence-based practices. Students will complete a field experience in a middle school. A cleared background check is required for this course.

Prerequisite(s):

Educ 1074. ~~1040~~.

Corequisite(s):

Credit Hours

Credit Hours

2. Oct 28, 2019 by
Beth Kania-Gosche
(bakm75)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/14/25 3:01 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 2481

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:18 am

Viewing: **EDUC 3340 : Assessment of Student Learning**

Also listed as: **PSYCH 4340**

Last approved: 07/31/24 6:05 am

Last edit: 04/15/25 8:48 am

Changes proposed by: Jade McCain (jm558v)

Catalog Pages referencing this course

EDUC 3340:
[Teacher Education and Certification](#)

Programs referencing this course

EDUC 3340:
[PHYSIC-BS: Physics BS](#)
[AP MATH-BS: Applied Mathematics BS](#)
[BIO SC-BA: Biological Sciences BA](#)
[BUS&MS-BS: Business and Mgmt Systems BS](#)
[CHEM-BA: Chemistry BA](#)
[HIST-BA: History BA](#)
[EDUC-BS: Education BS](#)
[TEACH-CTU: Teaching and Learning Undergraduate Certificate](#)
[ENV SCI-BS: Environmental Science BS](#)

Requested Effective Date	Fall 2025		
Department	Education (REDUCATION)		
Discipline	Education (EDUC)		
Course Number	3340		
Title	Assessment of Student Learning		
Abbreviated Course Title	Assessment of Learning		
Co-Listed Course	PSYCH 4340	Department	Psychological Science (RPSYCHOL)

Catalog Description

Students will learn to evaluate assessments for validity and reliability. Students will develop formative and summative assessments aligned with learning outcomes. Writing quality rubrics

- 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. 04/04/25 2:11 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair

2. 04/15/25 8:48 am
Jade McCain (jm558v): Approved for CCC Secretary

3. 04/15/25 1:53 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair

4. 04/28/25 2:20 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

- History
1. Feb 4, 2019 by Kelly Carter (carterke)

and universal design will be introduced. Students will analyze data to make instructional decisions and learn to evaluate vendor assessments.

Prerequisite(s):
Educ 1074. ~~1040~~.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes
Elective for Majors No
Communication No
Intensive
Communication No
Emphasized
Grading Basis Graded
Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/15/25 8:48 am):** Selected "no" for communication emphasized and
Comments communication intensive.

2. Nov 25, 2019 by
Beth Kania-Gosche
(bakm75)
3. Mar 4, 2021 by
Marita Raper
(tibbettsmg)
4. May 5, 2021 by
Beth Kania-Gosche
(bakm75)
5. Jul 31, 2024 by Jade
McCain (jm558v)

Course Change Request

Date Submitted: 03/24/25 9:19 am

Viewing: **EDUC 3530 : Teaching Integrated Social Studies and Humanities**

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

Last edit: 04/15/25 8:50 am

Changes proposed by: Jade McCain (jm558v)

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. 04/04/25 2:11 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair
- 2. 04/15/25 8:50 am
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/15/25 1:53 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair
- 4. 04/28/25 2:20 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- 1. Mar 26, 2018 by
Michelle Schwartze

EDUC-BS: Education BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	3530
Title	Teaching Integrated Social Studies and Humanities
Abbreviated Course Title	Teaching Social Studies
Co-Listed Course	

Catalog Description

The course will focus on the methodology and materials needed to facilitate children's development in social studies, particularly citizenship and Missouri history/geography. This course will integrate the curriculum and teaching strategies in social studies with music, physical education, and art.

Prerequisite(s):

Educ 1074. ~~1040~~.

Corequisite(s):

Credit Hours

Credit Hours

(schwartzem)

2. Feb 4, 2019 by Kelly

Carter (carterke)

3. Feb 8, 2021 by Beth

Kania-Gosche

(bakm75)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/15/25 8:50 am):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 4518

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/24/25 9:19 am

Viewing: **EDUC 4600 : Learning Problems in Math**

Last approved: 02/24/23 6:01 am

Last edit: 04/15/25 8:51 am

Changes proposed by: Jade McCain (jm558v)

Requested Effective Date	Fall 2025
Department	Education (REDUCATION)
Discipline	Education (EDUC)
Course Number	4600
Title	Learning Problems in Math
Abbreviated Course Title	SPED Math
Co-Listed Course	

Catalog Description

This course will focus on the study of diagnostic and remedial instructional techniques for the teaching of mathematics. In this course, students will study the characteristics of students who struggle in mathematics. Students will develop a knowledge base of effective practices for assessment and teaching strategies in mathematics.

Prerequisite(s):

Educ 1074. ~~1174~~.

Corequisite(s):

Credit Hours
Credit Hours

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. 04/04/25 2:11 pm
Beth Kania-Gosche (bakm75):
Approved for REDUCATION Chair

2. 04/15/25 8:51 am
Jade McCain (jm558v): Approved for CCC Secretary

3. 04/15/25 1:53 pm
Cecil Eng Huang Chua (cchua):
Approved for Social Sciences DSCC Chair

4. 04/28/25 2:20 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Feb 24, 2023 by
Beth Kania-Gosche

(bakm75)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Changed prerequisite to EDUC 1074 per department request.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/15/25 8:51 am):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 4927

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/19/25 5:59 pm

Viewing: **GEO ENG 5810 : Fundamentals of Space**

Resources

Also listed as: **AERO ENG 5810**

Last approved: 07/27/20 6:01 am

Last edit: 04/15/25 11:51 am

Changes proposed by: Katherine Grote (grotekr)

In Workflow

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

Programs referencing this course

GEO ENG 5810:
SPACE R-CT: Space Resources Certificate

Requested Effective Date	Fall 2025
Department	Earth Sciences and Engineering (RGEOSENG)
Discipline	Geological Engineering (GEO ENG)
Course Number	5810
Title	Fundamentals of Space Resources
Abbreviated Course Title	Fund Space Resources
Co-Listed Course	<u>AERO ENG 5810</u>
Department	<u>Mechanical & Aerospace Engineering (RMECHENG)</u>

Catalog Description

Introduction to the science of the mineral resources of space ~~space~~, and to the engineering of extracting them for human use.

Prerequisite(s):

Corequisite(s):

Credit Hours

Credit Hours

Approval Path

- 03/19/25 7:47 pm
Stephen Gao (sgao):
Approved for
RGEOSENG Chair
- 04/09/25 2:42 pm
David Bayless
(djbkqf): Approved
for RMECHENG
Chair
- 04/15/25 11:51 am
Jade McCain
(jm558v): Approved
for CCC Secretary
- 04/24/25 8:34 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
- 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

- Jul 27, 2020 by
Leslie Gertsch
(gertschl)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Both geological engineering and aerospace engineering students take this course, and the material is relevant to both disciplines. Co-listing will make it easier for both majors to see this course during advising.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/15/25 11:51 am):** Selected "no" for communication emphasized and
Comments communication intensive.

Key: 4552

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/19/25 1:08 pm

Viewing: **GEO ENG 6150 : Capstone Project in Geospatial Engineering**

Last edit: 04/15/25 1:15 pm

Changes proposed by: Jeremy Maurer (jlmd9g)

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. CAT entry
- 11. Peoplesoft

Approval Path

- 1. 03/19/25 1:25 pm
Stephen Gao (sgao):
Approved for
RGEOSENG Chair
- 2. 04/15/25 1:15 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
- 3. 04/24/25 8:36 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
- 4. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

PROPOSED: Geospatial Engineering MS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Earth Sciences and Engineering (RGEOSENG)
Discipline	Geological Engineering (GEO ENG)
Course Number	6150
Title	Capstone Project in Geospatial Engineering
Abbreviated Course Title	Geospatial Capstone Project
Co-Listed Course	

Catalog Description
This capstone course will allow students to design a project, working with their academic advisor, that will build on all of their prior coursework and experience in geospatial engineering. Projects may be provided by industry partners.

Prerequisite(s):
Geophys 6401 and Geophys 6403.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total:	3
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Required for Majors	No
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Elective for Majors	Yes
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Communication Intensive	No
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Communication Emphasized	Yes
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Grading Basis	Graded
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Repeatable	No
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Justification	This will be the senior capstone course for the non-thesis MS degree program in geospatial engineering that is currently being proposed to campus / UMsystem.
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Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer Comments	<p>Jade McCain (jm558v) (03/19/25 1:44 pm): Removed subject from course code, added punctuation, and corrected prerequisite format.</p> <p>Jade McCain (jm558v) (04/11/25 4:29 pm): Corrected requested effective date per department request.</p> <p>Jade McCain (jm558v) (04/15/25 1:15 pm): Selected "no" for communication intensive per department approval via email on 4/15/2025.</p>
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Key: 10268

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 04/09/25 4:06 pm

Viewing: **GEO ENG 6321 : Advanced Mapping with Drones**

Also listed as: **GEOPHYS 6321**

Last edit: 04/10/25 3:57 pm

Changes proposed by: Jeremy Maurer (jlmd9g)

Programs
referencing this
course

GEO ENG 6321:
[PROPOSED: Geospatial Engineering MS](#)

Requested Effective Date	Spring 2026	
Department	Earth Sciences and Engineering (RGEOENG)	
Discipline	Geological Engineering (GEO ENG)	
Course Number	6321	
Title	Advanced Mapping with Drones	
Abbreviated Course Title	Advanced Mapping with Drones	
Co-Listed Course	GEOPHYS 6321	Department Earth Sciences and Engineering (RGEOENG)

Catalog Description

The course includes an overview of the basic knowledge required for passing the FAA Part 107 Remote Pilots Knowledge Test for small UAS operators, including UAS mapping technology and its rules and regulations, airspace classification, and reading aeronautical charts. More advanced data collection strategies are introduced, as well as the theoretical concepts in mapping, photogrammetry, and surveying. Advanced data processing techniques and the use multiple types of data to achieve survey objectives. Accuracy of the derived products. Credit will not be given for both this course and Geo Eng 4321

Prerequisite(s): Geo Eng 3148 or Geo Eng 5146 or Instructor approval.

Corequisite(s):

Credit Hours

In Workflow

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

Approval Path

1. 04/09/25 9:50 pm
Stephen Gao (sgao):
Approved for
RGEOENG Chair
2. 04/10/25 4:23 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 8:38 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

Credit Hours

Credit Type	Credit Hours
Lecture	2
Laboratory	1

Total: 3

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification This is renaming a course that has been offered for the last several years as a special topics course.

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/10/25 3:57 pm):** Corrected prerequisite format and added grading basis.
Comments

Key: 10294

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/19/25 1:20 pm

Viewing: **GEOPHYS 5432 : Potential Field Theory**

Also listed as: **GEO ENG 5432 / GEOLOGY 5432**

Last edit: 04/11/25 4:28 pm

Changes proposed by: Jeremy Maurer (jlmd9g)

Programs referencing this course

GEOPHYS 5432:
[PROPOSED: Geospatial Engineering MS](#)

Requested Effective Date	Fall 2025		
Department	Earth Sciences and Engineering (RGEOENG)		
Discipline	Geophysics (GEOPHYS)		
Course Number	5432		
Title	Potential Field Theory		
Abbreviated Course Title	Potential Field Theory		
Co-Listed Course	GEO ENG 5432	Department	
		Earth Sciences and Engineering (RGEOENG)	
	GEOLOGY 5432	Department	
		Earth Sciences and Engineering (RGEOENG)	

Catalog Description

The mathematics and physics of gravitational, magnetic, and electrical fields of the earth as derived from potential functions, with applications to practical problems. The theorems of Laplace, Poisson, Gauss, and Green and their applications to geophysics are presented.

Prerequisite(s): Math 5325 (also may be taken as a co-requisite).

Corequisite(s): Math 5325 (also may be taken as a prerequisite)/

In Workflow

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

Approval Path

1. 03/19/25 1:25 pm
Stephen Gao (sgao): Approved for RGEOENG Chair
2. 04/15/25 11:55 am
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/24/25 8:41 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 04/28/25 2:22 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication
Intensive No

Communication
Emphasized No

Grading Basis Graded

Repeatable No

Justification This course is being proposed in conjunction with a new degree, MS non-thesis in geospatial engineering, currently being proposed to campus / UM system.

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (03/19/25 1:46 pm):** Added punctuation and grading basis.
Comments **Jade McCain (jm558v) (04/11/25 4:28 pm):** Corrected requested effective date per department request.

Key: 10271

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/19/25 1:16 pm

Viewing: **GEOPHYS 6232 : Introduction to Satellite Geodesy**

Also listed as: **GEO ENG 6232**

Last edit: 04/11/25 4:30 pm

Changes proposed by: Jeremy Maurer (jlmd9g)

Programs referencing this course

GEOPHYS 6232:
PROPOSED: Geospatial Engineering MS

Requested Effective Date	Fall 2025		
Department	Earth Sciences and Engineering (RGEOSENG)		
Discipline	Geophysics (GEOPHYS)		
Course Number	6232		
Title	Introduction to Satellite Geodesy		
Abbreviated Course Title	Satellite Geodesy		
Co-Listed Course	GEO ENG 6232	Department	Earth Sciences and Engineering (RGEOSENG)

Catalog Description

An introduction to satellite geodetic methods, including Global Navigational Satellite Systems (GNSS), satellite gravity, Synthetic Aperture RADAR (SAR) and Interferometric SAR (InSAR), and LiDAR. Geodetic reference frames and various datasets are introduced. Data processing and analysis methods are covered. Students are required to complete a project that utilizes one or more methods covered in the course.

Prerequisite(s): Geo Eng 3148 or graduate standing.

Corequisite(s):

Credit Hours

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. CAT entry
11. Peoplesoft

Approval Path

1. 03/19/25 1:25 pm
Stephen Gao (sgao):
Approved for
RGEOSENG Chair
2. 04/15/25 11:54 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 8:44 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Communication No
Intensive

Communication Yes
Emphasized

Grading Basis Graded

Repeatable No

Justification This course has previously been offered under the existing course - GEO ENG 6146: Advanced Remote Sensing and Image Processing, which is co-listed with GEOLOGY 6341. That course is being re-done with content that is more directly applicable to image processing, so we are requesting a new course title and number for this course.

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (03/19/25 1:47 pm):** Removed subject from course code and added
Comments grading basis.
Jade McCain (jm558v) (04/11/25 4:30 pm): Corrected requested effective date per department
request.

Course Change Request

New Course Proposal

Date Submitted: 03/19/25 1:57 pm

Viewing: **GEOPHYS 6401 : Introduction to Positioning, Navigation, and Timing**

Also listed as: **ELEC ENG 6401**

Last edit: 04/11/25 3:41 pm

Changes proposed by: Jeremy Maurer (jlmd9g)

In Workflow

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

Approval Path

- 1. 03/19/25 1:25 pm
Stephen Gao (sgao):
Approved for
RGEOSENG Chair
- 2. 03/19/25 1:47 pm
Jade McCain
(jm558v): Rollback
to RGEOSENG Chair
for CCC Secretary
- 3. 03/19/25 1:48 pm
Stephen Gao (sgao):
Rollback to Initiator
- 4. 03/19/25 1:58 pm
Stephen Gao (sgao):
Approved for
RGEOSENG Chair
- 5. 04/11/25 3:45 pm
Jonathan Kimball
(kimballjw):
Approved for
RELECENG Chair
- 6. 04/15/25 11:53 am
Jade McCain

Programs referencing this course

GEOPHYS 6401:
PROPOSED: Geospatial Engineering MS

Requested Effective Date	Fall 2025	
Department	Earth Sciences and Engineering (RGEOSENG)	
Discipline	Geophysics (GEOPHYS)	
Course Number	6401	
Title	Introduction to Positioning, Navigation, and Timing	
Abbreviated Course Title	Intro to PNT	
Co-Listed Course	ELEC ENG 6401	Department Electrical & Computer Engr (RELECENG)

Catalog Description

This course provides a technical introduction to Global Navigation Satellite Systems (GNSS), covering theory, procedures, and accuracy issues. Fundamental principles of GNSS measurements are covered, including the various sources of error that can affect their accuracy. Practical skills will be emphasized, including the ability to compute positions using both code and phase techniques, and utilize GNSS post-processing software. Quality control and assurance. Surveying techniques.

Prerequisite(s):
Geo Eng 3148 or graduate standing.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	2
Laboratory	1

Total: 3

Required for Majors No

Elective for Majors Yes

Communication Intensive No

Communication Emphasized No

Grading Basis Graded

Repeatable No

Justification This new course proposal will be a part of the new MS-non thesis in Geospatial Engineering currently being proposed to being Fall 2026.

Semesters Previously Offered

Term(s) Offered as experimental

Previous Course Code

Is this a MOTR Course?

Reviewer Jade McCain (jm558v) (03/19/25 1:47 pm): Rollback: Rollback per department request.

Comments Stephen Gao (sgao) (03/19/25 1:48 pm): Rollback: Hi Jeremy, they sent it back. So please do the co-listing and re-submit.

(jm558v): Approved for CCC Secretary
7. 04/24/25 8:45 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair
8. 04/28/25 2:22 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Jade McCain (jm558v) (04/11/25 3:41 pm): Corrected requested effective date, prerequisite formatting, and added grading basis.

Key: 10265

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/19/25 1:04 pm

Viewing: **GEOPHYS 6403 : Advanced Positioning, Navigation, and Timing**

Also listed as: **ELEC ENG 6403**

Last edit: 04/11/25 3:40 pm

Changes proposed by: Jeremy Maurer (jlmd9g)

In Workflow

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

Requested Effective Date	Fall 2025	
Department	Earth Sciences and Engineering (RGEOSENG)	
Discipline	Geophysics (GEOPHYS)	
Course Number	6403	
Title	Advanced Positioning, Navigation, and Timing	
Abbreviated Course Title	Advanced PNT	
Co-Listed Course	ELEC ENG 6403	Department Electrical & Computer Engr (RELECENG)

Catalog Description

Advanced topics in Global Navigation Satellite Systems (GNSS). Processing phase and code observations. Data Q/C, accuracy and precision estimates. Kalman filtering and other non-GNSS PNT systems will be explored. Practical applications and technology advancements will be emphasized.

Prerequisite(s):

Geophys 6401.

Corequisite(s):

Credit Hours
Credit Hours

Approval Path

1. 03/19/25 1:25 pm
Stephen Gao (sgao):
Approved for
RGEOSNG Chair
2. 04/11/25 3:45 pm
Jonathan Kimball
(kimballjw):
Approved for
RELECENG Chair
3. 04/15/25 11:57 am
Jade McCain
(jm558v): Approved
for CCC Secretary
4. 04/24/25 8:39 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
5. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

Credit Type	Credit Hours
Lecture	2
Laboratory	1

Total: 3

Required for Majors No

Elective for Majors Yes

Communication
Intensive No

Communication
Emphasized No

Grading Basis Graded

Repeatable No

Justification This will be a required core course for the new MS in geospatial engineering that is currently being proposed to the campus/UM system.

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (03/19/25 1:51 pm):** Corrected prerequisite format, removed subject
Comments from course code, and added grading basis.
 Jade McCain (jm558v) (04/11/25 3:40 pm): Corrected requested effective date.

Key: 10266

[Preview Bridge](#)

Course Change Request

A deleted record cannot be edited

Course Inactivation Proposal

Date Submitted: 04/16/25 11:49 am

Viewing: **IS&T 3131 : Computing Internals and Operating Systems**

Last approved: 07/31/24 6:05 am

Last edit: 04/16/25 11:49 am

Changes proposed by: Cassie Elrod (cassa)

Justification for this
inactivation request
Course no longer offered.

Requested Effective Date	Fall 2025
Department	Business and Information Tech (RBUS&IT)
Discipline	Info Science & Technology (IS&T)
Course Number	3131
Title	Computing Internals and Operating Systems
Abbreviated Course Title	Comp Internal and Op Sys
Co-Listed Course	

Catalog Description
Design-oriented introduction to computer components and operation. Standard codes; number systems; base conversions; computer arithmetic; boolean algebra; operating system components including memory management, device management, and I/O management; and related issues are covered.

Prerequisite(s):
A grade of "C" or better in IS&T 1562 or IS&T 1552 or Comp Sci 1575.

Corequisite(s):

Credit Hours
Credit Hours

In Workflow

1. RBUS&IT 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. 04/17/25 9:06 am
Cassie Elrod (cassa):
Approved for
RBUS&IT Chair
2. 04/17/25 12:08 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/17/25 1:30 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
4. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Apr 3, 2017 by
barryf

2. Aug 24, 2018 by
ershenb
3. Oct 29, 2018 by
barryf
4. Jul 31, 2024 by Jade
McCain (jm558v)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication
Intensive

Communication
Emphasized

Grading Basis Graded

Repeatable No

Justification

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer
Comments

Course Change Request

A deleted record cannot be edited

Course Inactivation Proposal

Date Submitted: 04/16/25 11:50 am

Viewing: **IS&T 4641 : Digital Commerce and IoT Analytics**

Formerly known as: **IS&T 241**

Last approved: 07/31/24 6:04 am

Last edit: 04/16/25 11:50 am

Changes proposed by: Cassie Elrod (cassa)

Justification for this
inactivation request
Course no longer offered.

Requested Effective Date	Fall 2025
Department	Business and Information Tech (RBUS&IT)
Discipline	Info Science & Technology (IS&T)
Course Number	4641
Title	Digital Commerce and IoT Analytics
Abbreviated Course Title	Digital Commerce & IoT
Co-Listed Course	

Catalog Description
Introduction to methods and concepts of data analytics that provides digital marketers and managers the foundation needed to make decisions or detect patterns based on data from eCommerce websites or from Internet of Things (IoT) devices. Key metrics, process, and challenges will be covered.

Prerequisite(s):
IS&T 1750 and at least Sophomore standing.

Corequisite(s):

Credit Hours
Credit Hours

- In Workflow
1. RBUS&IT 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. 04/17/25 9:06 am
Cassie Elrod (cassa):
Approved for
RBUS&IT Chair
 2. 04/17/25 12:07 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
 3. 04/17/25 1:30 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
 4. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

- History
1. May 2, 2014 by
barryf

2. Jun 30, 2014 by
Lahne Black (lahne)
3. Jul 9, 2018 by barryf
4. Feb 8, 2021 by Cecil
Eng Huang Chua
(cchua)
5. Jul 31, 2024 by Evie
Sherlock (esdk3)

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication
Intensive

Communication
Emphasized

Grading Basis Graded

Repeatable No

Justification

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer
Comments

Course Change Request

Date Submitted: 04/01/25 3:05 pm

Viewing: **MATH 3304 : Elementary Differential Equations**

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

Last edit: 04/07/25 3:27 pm

Changes proposed by: Paul Runnion (prunnion)

Programs
referencing this
course

[NU ENG-BS: Nuclear Engineering BS](#)
[NU ENG-MI: Nuclear Engineering Minor](#)
[PE ENG-BS: Petroleum Engineering BS](#)
[PHYSIC-BS: Physics BS](#)
[AE ENG-BS: Aerospace Engineering BS](#)
[AP MATH-BS: Applied Mathematics BS](#)
[ARC ENG-BS: Architectural Engineering BS](#)
[CR ENG-BS: Ceramic Engineering BS](#)
[CH ENG-BS: Chemical Engineering BS](#)
[CV ENG-BS: Civil Engineering BS](#)
[CP ENG-BS: Computer Engineering BS](#)
[EL ENG-BS: Electrical Engineering BS](#)
[GE ENG-BS: Geological Engineering BS](#)
[MATH-MI: Mathematics Minor](#)
[BIOMED-BS: Biomedical Engineering BS](#)
[PROPOSED: Semiconductor Engineering BS](#)
[ENG MG-BS: Engineering Management BS](#)
[EV ENG-BS: Environmental Engineering BS](#)
[GL&GPH-BS: Geology and Geophysics BS](#)
[MC ENG-BS: Mechanical Engineering BS](#)
[MT ENG-BS: Metallurgical Engineering BS](#)
[MI ENG-BS: Mining Engineering BS](#)

Requested Effective Date	Fall 2025
Department	Mathematics & Statistics (RMATHEMA)
Discipline	Mathematics (MATH)
Course Number	3304
Title	Elementary Differential Equations
Abbreviated Course Title	Elem Differen Equations
Co-Listed Course	

In Workflow

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

Approval Path

1. 04/03/25 10:44 am
John Singler
(singlerj): Approved for RMATHEMA Chair
2. 04/07/25 3:30 pm
Jade McCain
(jm558v): Approved for CCC Secretary
3. 04/25/25 9:10 am
Katie Shannon
(shannonk): Approved for Sciences DSCC Chair
4. 04/28/25 2:23 pm
Jade McCain
(jm558v): Approved for Pending CCC Agenda post

Catalog Description

First order differential equations and linear differential equations of higher order are studied. The Laplace transform and systems of linear equations as well as selected physical applications are covered. Credit will not be given for both Math 3329 and Math 3304.

Prerequisite(s):

A grade of "C" or better in either Math 1215 or Math 1221. ~~1215~~.

Corequisite(s):

History

1. Feb 21, 2022 by
Paul Runnion
(prunnion)

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Changing the prerequisite to accept both versions of Calculus II. This corrects an oversight from when we changed the Math 3304 prerequisite from Calculus III to Calculus II in 2022 and makes this prerequisite match other math/stat courses which require Calculus II.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/07/25 3:27 pm)**: Selected "no" for communication intensive and
Comments communication emphasized per the department's request via email on 4/7/2025.

Course Change Request

A deleted record cannot be edited

Course Inactivation Proposal

Date Submitted: 03/25/25 2:20 pm

Viewing: **MIN ENG 5922 : Tunneling & Underground Construction Techniques**

Last edit: 03/25/25 2:20 pm

Changes proposed by: Stephen Casey (caseysc)

Justification for this inactivation request

Please inactivate. I have submitted the Exp Tech CT revision forms to dept chair for review and then will forward them to other office for signature and then to the CCC for final approval of updates.

Requested Effective Date	Fall 2025
Department	Mining and Explosives Engineering (RMINENG)
Discipline	Mining Engineering (MIN ENG)
Course Number	5922
Title	Tunneling & Underground Construction Techniques
Abbreviated Course Title	Tun&Undergrnd Const
Co-Listed Course	

Catalog Description	Mechanical and conventional excavation techniques in underground tunneling and construction. Topics include tunneling layouts design, equipment and performance modeling, ground control systems including support, drainage, and structural integrity. Construction specifications, advance rate and contractual and cost estimation.
Prerequisite(s):	Successful background check. Consent of instructor.
Corequisite(s):	

Credit Hours
Credit Hours

In Workflow

1. RMINENG 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. 03/31/25 9:44 am
Kwame Awuah-Offei (kabp3): Approved for RMINENG Chair
2. 04/08/25 2:59 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/24/25 8:59 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 04/28/25 2:23 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Credit Type		Credit Hours
Lecture		2
Laboratory		1
Total:	3	

Required for Majors No

Elective for Majors

Communication
Intensive

Communication
Emphasized

Grading Basis Graded

Repeatable No

Justification

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer
Comments

Course Change Request

Date Submitted: 04/08/25 3:18 pm

Viewing: **PET ENG 2510 : Properties of Hydrocarbon Fluids**
~~Rock and Fluid Properties~~

Last approved: 03/05/25 6:03 am

Last edit: 04/10/25 1:32 pm

Changes proposed by: Jade McCain (jm558v)

In Workflow

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

Approval Path

- 1. 04/08/25 3:19 pm
Stephen Gao (sgao):
Approved for
RGEOENG Chair
- 2. 04/10/25 1:33 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
- 3. 04/24/25 9:06 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
- 4. 04/28/25 2:24 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

Programs referencing this course	PE ENG-BS: Petroleum Engineering BS GE ENG-BS: Geological Engineering BS
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Requested Effective Date	Fall 2025
Department	Earth Sciences and Engineering (RGEOENG)
Discipline	Petroleum Engineering (PET ENG)
Course Number	2510
Title	Properties of Hydrocarbon Fluids Rock and Fluid Properties
Abbreviated Course Title	Prop Of Hydrocar Fluid Rock and Fluid Properties
Co-Listed Course	

Catalog Description	Physical properties of petroleum fluids; chemical components of petroleum fluids. Elementary phase behavior; calculations of the physical properties of gases, liquids, and gas-liquid mixtures in equilibrium. Properties of petroleum reservoir rocks, including lithology, porosity, absolute permeability, pore surface area, relative and effective permeability, fluid saturations, rock wettability, capillary characteristics, acoustic properties, and electrical properties. Darcy's law for single phase linear horizontal, tilted and radial flow.
Prerequisite(s):	Chem 1310
Corequisite(s):	

<u>Credit Hours</u>
Credit Hours

History

1. Mar 5, 2025 by
Mingzhen Wei
(weim)

Credit Type	Credit Hours
Lecture	<u>2</u> 3
Laboratory	1

Total: 3 4

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Department is reversing changes made previously due to students still needing to take PET ENG 3320 for Fall 2025.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/10/25 1:32 pm):** Selected "no" for communication emphasized and
Comments communication intensive and corrected title.

Key: 9182

[Preview Bridge](#)

Course Change Request

Course Reactivation Proposal

Date Submitted: 04/08/25 3:21 pm

Viewing: **PET ENG 3320 : Petrophysics**

Last approved: 03/01/25 6:03 am

Last edit: 04/08/25 3:21 pm

Changes proposed by: Jade McCain (jm558v)

Programs
referencing this
course

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

Requested Effective Date	Fall 2025
Department	Earth Sciences and Engineering (RGEOSENG)
Discipline	Petroleum Engineering (PET ENG)
Course Number	3320
Title	Petrophysics
Abbreviated Course Title	Petrophysics
Co-Listed Course	

Catalog Description

Properties of petroleum reservoir rocks, including lithology, porosity, absolute permeability, pore surface area, relative and effective permeability, fluid saturations, rock wettability, capillary characteristics, acoustic properties, and electrical properties. Darcy's law for single phase linear horizontal, tilted and radial flow.

Prerequisite(s):

Preceded or accompanied by Physics 1135.

Corequisite(s):

Credit Hours

Credit Hours

In Workflow

- RGEOSENG Chair
- CCC Secretary
- Engineering DSCC Chair
- Pending CCC Agenda post
- CCC Meeting Agenda
- Campus Curricula Committee Chair
- FS Meeting Agenda
- Faculty Senate Chair
- Registrar
- CAT entry
- Peoplesoft

Approval Path

- 04/08/25 3:22 pm
Stephen Gao (sgao):
Approved for
RGEOSENG Chair
- 04/10/25 1:23 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
- 04/24/25 9:07 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
- 04/28/25 2:24 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

- Oct 16, 2017 by
Ralph Flori (reflori)
- Jun 20, 2019 by

Ralph Flori (reflori)
3. Oct 28, 2019 by
Ralph Flori (reflori)
4. Mar 1, 2025 by
Mingzhen Wei
(weim)

Credit Type	Credit Hours
Lecture	2
Laboratory	1

Total: 3

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Department is reversing changes made previously due to students still needing to take PET ENG 3320 for Fall 2025.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer
Comments

Key: 4189

[Preview Bridge](#)

Course Change Request

Date Submitted: 03/11/25 12:17 pm

Viewing: PSYCH 5710 ~~ENG MGT 5330~~ : Advanced Human Factors

Also listed as: **ENG MGT 5330**

Last approved: 07/31/24 6:03 am

Last edit: 03/11/25 12:17 pm

Changes proposed by: Clair Kueny (reynoldscla)

In Workflow

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

Approval Path

1. 03/19/25 7:22 pm
Amaury Lendasse (altmg): Approved for RENG MNGT Chair
2. 03/20/25 5:47 am
Clair Kueny (reynoldscla): Approved for RPSYCHOL Chair
3. 03/26/25 3:49 pm
Jade McCain (jm558v): Approved for CCC Secretary
4. 04/02/25 3:18 pm
Jade McCain (jm558v): Approved for CCC Secretary
5. 04/24/25 9:14 pm
Kelly Liu (liukh):

Programs referencing this course

ENG MGT 5330:
[ARC ENG-BS: Architectural Engineering BS](#)
[HUM SIM-CT: Human Sys Integration CT](#)
PSYCH 5710:
[INORGPS-MS: Industrial-Organizational Psychology MS](#)
[HUMFACT-CT: Human Factors Psychology CT](#)
[PROPOSED: Applied Psychology PhD](#)

Requested Effective Date	Fall 2025		
Department	<u>Psychological Science (RPSYCHOL)</u> Engineering Mgt & Sys Engr (RENGMNGT)		
Discipline	<u>Psychology (PSYCH)</u> Engineering Management (ENG MGT)		
Course Number	<u>5710</u> 5330		
Title	Advanced Human Factors		
Abbreviated Course Title	Advanced Human Factors		
Co-Listed Course	PSYCH 5710	Department	Psychological Science (RPSYCHOL)
	<u>ENG MGT 5330</u>	Department	<u>Engineering Mgt & Sys Engr (RENGMNGT)</u>

Catalog Description

An in-depth review of the foundations of human factors, focusing on the interaction of people

with various forms of technology in a variety of environments. Topics include research and evaluation methods, displays (e.g., visual, auditory), attention and information processing, decision making, motor skills, anthropometry, and biomechanics.

Prerequisite(s):

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes No

Communication Intensive

Communication Emphasized

Grading Basis Graded

Repeatable No

Justification This course is now required for two psychology degree programs: the Human Factors - Psychology graduate certificate and the Applied Cognitive Psychology track of the Applied Psychology PhD program. Since it is an elective course for Engineering Management but now a required course for two Psychology programs, we thought that changing the primary department would better align with departmental uses of the course.

Semesters Previously Offered

Term(s) Offered as

Approved for Engineering DSCC Chair
6. 04/25/25 8:47 am Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair
7. 04/28/25 2:24 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- 1. Jun 27, 2016 by Steven Corns (cornss)
- 2. Jul 31, 2024 by Evie Sherlock (esdk3)

experimental

Is this a MOTR
Course?

Reviewer
Comments

Course Change Request

New Course Proposal

Date Submitted: 03/21/25 10:46 am

Viewing: **SEMI ENG 1100 : Engineering in the Silicon Age**

Last edit: 04/10/25 1:21 pm

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 10:51 am
Michael Moats (moatsm):
Approved for RMATSENG Chair
- 2. 04/10/25 1:21 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:15 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
- 4. 04/28/25 2:24 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

PROPOSED: Semiconductor Engineering BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Semiconductor Engineering (SEMI ENG)
Course Number	1100
Title	Engineering in the Silicon Age
Abbreviated Course Title	Eng Si Age
Co-Listed Course	

Catalog Description

An introductory seminar detailing the rise and impact of the Silicon Age on the modern world. Discussions will include: historical perspectives on the development and application of semiconductor materials; current and future major scientific, technological, and societal challenges; and career opportunities.

Prerequisite(s):

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Recitation/Seminar/Discussion	1

Total:	1
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Required for Majors	Yes
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Elective for Majors	No
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Communication Intensive	No
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Communication Emphasized	No
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Grading Basis	Graded
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Repeatable	No
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Justification	First-year seminar required for SEMI ENG students. Undecided engineering students and other students may take this course to learn more about semiconductor engineering as a possible career path.
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Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer Comments	Jade McCain (jm558v) (04/10/25 1:21 pm): Added grading basis.
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Key: 10279

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/21/25 10:48 am

Viewing: **SEMI ENG 2100 : Fundamentals of Semiconductor Materials**

Last edit: 04/10/25 11:13 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 10:51 am Michael Moats (moatsm): Approved for RMATSENG Chair
- 2. 04/10/25 1:20 pm Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:15 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
- 4. 04/28/25 2:25 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post

PROPOSED: Semiconductor Engineering BS

Programs referencing this course

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Semiconductor Engineering (SEMI ENG)
Course Number	2100
Title	Fundamentals of Semiconductor Materials
Abbreviated Course Title	Fund Semi Mater
Co-Listed Course	

Catalog Description
A broad overview of elemental, compound, and wide-bandgap semiconductor materials covering chemical bonding, crystal structures, defects, interfaces, heterostructures, and structure-property relationships.

Prerequisite(s):
A grade of "C" or better in Chem 1320 and Physics 2135.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total:	3
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Required for Majors	Yes
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Elective for Majors	No
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Communication Intensive	No
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Communication Emphasized	No
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Grading Basis	Graded
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Repeatable	No
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Justification	Required second-year course for SEMI ENG majors.
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Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer Comments	Jade McCain (jm558v) (03/24/25 10:58 am): Added grading basis and corrected prerequisite wording.
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Key: 10280

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 04/10/25 8:58 am

Viewing: **SEMI ENG 3019 : Cleanroom Facilities and Practices Laboratory**

Last edit: 04/10/25 8:58 am

Changes proposed by: David Lipke (lipked)

Programs PROPOSED: Semiconductor Engineering BS
referencing this course

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Semiconductor Engineering (SEMI ENG)
Course Number	3019
Title	Cleanroom Facilities and Practices Laboratory
Abbreviated Course Title	Cleanroom Fac Practice Lab
Co-Listed Course	

Catalog Description
Introduction to cleanroom practices, cleanroom layout and systems, operations and hazards, microcontamination management, environmental control strategies, testing and inspection methods, and electronic cleaning procedures.

Prerequisite(s):
A grade of "C" or better in Chem 1319.

Corequisite(s):

Credit Hours

Credit Hours

In Workflow

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

Approval Path

1. 03/21/25 10:51 am
Michael Moats (moatsm):
Approved for RMATSENG Chair
2. 04/09/25 3:33 pm
Crystal Wilson (wilsoncry):
Rollback to Initiator
3. 04/10/25 7:42 am
Michael Moats (moatsm):
Approved for RMATSENG Chair
4. 04/10/25 8:54 am
Crystal Wilson (wilsoncry):
Rollback to Initiator
5. 04/10/25 10:09 am
Michael Moats (moatsm):
Approved for RMATSENG Chair
6. 04/10/25 1:22 pm

Jade McCain
(jm558v): Approved
for CCC Secretary
7. 04/24/25 9:16 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
8. 04/28/25 2:25 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

Credit Type	Credit Hours
Laboratory	1

Total: 1

Required for Majors Yes

Elective for Majors No

Communication
Intensive No

Communication
Emphasized No

Grading Basis Graded

Repeatable No

Justification Required course for SEMI ENG majors. Qualifies students to safely work in cleanroom. Number changed to 3019 to avoid conflict with 3001 (special topics) or 3010 (seminar).

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (03/24/25 11:02 am):** Added grading basis and corrected prerequisite
Comments wording.

Crystal Wilson (wilsoncry) (04/09/25 3:33 pm): Rollback: Rollback for department to provide a
different course number. 3001 is for experimental courses (special topics).

Crystal Wilson (wilsoncry) (04/10/25 8:54 am): Rollback: Rollback for department to provide a different course number. 3010 is for seminar courses.

Key: 10281

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/21/25 10:52 am

Viewing: **SEMI ENG 3100 : Semiconductor Materials Processing**

Last edit: 03/24/25 11:09 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 10:59 am Michael Moats (moatsm): Approved for RMATSENG Chair
- 2. 04/10/25 1:18 pm Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:16 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
- 4. 04/28/25 2:25 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post

PROPOSED: Semiconductor Engineering BS

Programs referencing this course

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Semiconductor Engineering (SEMI ENG)
Course Number	3100
Title	Semiconductor Materials Processing
Abbreviated Course Title	Semi Mater Proc
Co-Listed Course	

Catalog Description
Examination of semiconductor processing stages, including cleaning, oxidation, ion implantation, diffusion and thermal processing, deposition and epitaxy, etching, metallization, and lithography.

Prerequisite(s):
A grade of "C" or better in Semi Eng 2100 or with instructor permission.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total:	3
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Required for Majors	Yes
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Elective for Majors	No
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Communication Intensive	No
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Communication Emphasized	No
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Grading Basis	Graded
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Repeatable	No
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Justification	Required course for SEMI ENG majors.
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Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer Comments	Jade McCain (jm558v) (03/24/25 11:07 am): Added grading basis and corrected prerequisite wording.
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Key: 10282

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/21/25 10:53 am

Viewing: **SEMI ENG 3101 : Semiconductor Materials Processing Laboratory**

Last edit: 04/10/25 11:25 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 10:59 am Michael Moats (moatsm): Approved for RMATSENG Chair
- 2. 04/10/25 1:18 pm Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:17 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
- 4. 04/28/25 2:25 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post

PROPOSED: Semiconductor Engineering BS

Programs referencing this course

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Semiconductor Engineering (SEMI ENG)
Course Number	3101
Title	Semiconductor Materials Processing Laboratory
Abbreviated Course Title	Semi Mater Proc Lab
Co-Listed Course	

Catalog Description
Front-end unit semiconductor process operations and testing, including cleaning, oxidation, ion implantation, diffusion and thermal processing, deposition and epitaxy, etching, metallization, and lithography.

Prerequisite(s):
A grade of "C" or better in Semi Eng 3019 and Elec Eng 2101; preceded or accompanied by Semi Eng 3100 or with instructor permission.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
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Credit Type	Credit Hours
Lecture	1
Laboratory	2

Total: 3

Required for Majors Yes

Elective for Majors No

Communication Intensive No

Communication Emphasized Yes

Grading Basis Graded

Repeatable No

Justification Required course for SEMI ENG majors.

Semesters Previously Offered

Term(s) Offered as experimental

Previous Course Code

Is this a MOTR Course?

Reviewer **Jade McCain (jm558v) (03/24/25 11:09 am):** Added grading basis and corrected prerequisite wording.

Comments **Jade McCain (jm558v) (03/28/25 11:21 am):** Selected "no" for communication intensive per department request via email on 3/28.

Key: 10283

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/21/25 10:55 am

Viewing: **SEMI ENG 4100 : Semiconductor Device Simulation**

Last edit: 03/24/25 11:13 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 10:59 am Michael Moats (moatsm): Approved for RMATSENG Chair
- 2. 04/10/25 1:18 pm Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:17 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
- 4. 04/28/25 2:25 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post

PROPOSED: Semiconductor Engineering BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Semiconductor Engineering (SEMI ENG)
Course Number	4100
Title	Semiconductor Device Simulation
Abbreviated Course Title	Semi Device Sim
Co-Listed Course	

Catalog Description
Semiconductor device simulation concepts: conventional and advanced MOS devices, bipolar transistors, heterostructures. Modern simulation tools such as SPICE and TCAD will be employed.

Prerequisite(s):
Preceded or accompanied by Elec Eng 3250 or Semi Eng 4101.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Laboratory	1

Credit Type		Credit Hours
Lecture		2
Total:	3	

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Required course for SEMI ENG majors (semiconductor device engineering emphasis area only).

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (03/24/25 11:03 am):** Added grading basis.
Comments

Course Change Request

New Course Proposal

Date Submitted: 03/21/25 10:56 am

Viewing: **SEMI ENG 4101 : Semiconductor Device
Fabrication and Testing Laboratory**

Last edit: 03/28/25 11:22 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 10:59 am
Michael Moats (moatsm):
Approved for RMATSENG Chair
- 2. 04/10/25 1:17 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:18 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
- 4. 04/28/25 2:25 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

PROPOSED: Semiconductor Engineering BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Semiconductor Engineering (SEMI ENG)
Course Number	4101
Title	Semiconductor Device Fabrication and Testing Laboratory
Abbreviated Course Title	Semi Device Fab Test Lab
Co-Listed Course	

Catalog Description
Unit process operations, including back-end operations, inspection, and metrology for process control, are integrated into complete manufacturing sequences for fabrication and testing of semiconductor devices.

Prerequisite(s):
A grade of "C" or better in Semi Eng 3101 and preceded by Elec Eng 2200 or Elec Eng 3250.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Laboratory	2

Credit Type	Credit Hours
Lecture	1

Total: 3

Required for Majors Yes

Elective for Majors No

Communication Intensive No

Communication Emphasized Yes

Grading Basis Graded

Repeatable No

Justification Required course for SEMI ENG majors.

Semesters Previously Offered

Term(s) Offered as experimental

Previous Course Code

Is this a MOTR Course?

Reviewer Comments **Jade McCain (jm558v) (03/24/25 11:03 am):** Added grading basis and corrected prerequisite wording.

Jade McCain (jm558v) (03/28/25 11:22 am): Selected "no" for communication intensive per department request via email on 3/28.

Key: 10285

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/21/25 10:57 am

Viewing: **SEMI ENG 4200 : Semiconductor Process Simulation**

Last edit: 03/24/25 11:14 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 10:59 am Michael Moats (moatsm): Approved for RMATSENG Chair
- 2. 04/10/25 1:17 pm Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:18 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
- 4. 04/28/25 2:25 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post

PROPOSED: Semiconductor Engineering BS

Programs referencing this course

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Semiconductor Engineering (SEMI ENG)
Course Number	4200
Title	Semiconductor Process Simulation
Abbreviated Course Title	Semi Proc Sim
Co-Listed Course	

Catalog Description
Semiconductor process simulation using modern simulation tools. Concepts include ion implantation, diffusion, oxidation, deposition and epitaxy, etching, and photolithography.

Prerequisite(s):
A grade of “C” or better in Semi Eng 3100.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Laboratory	1

Credit Type		Credit Hours
Lecture		2
Total:	3	

Required for Majors Yes

Elective for Majors No

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Required course for SEMI ENG majors.

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer
Comments

Course Change Request

New Course Proposal

Date Submitted: 03/21/25 10:58 am

Viewing: **SEMI ENG 4300 : Polymers for Semiconductor Devices and Processes**

Last edit: 03/24/25 11:15 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 10:59 am
Michael Moats (moatsm):
Approved for RMATSENG Chair
- 2. 04/10/25 1:17 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:19 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
- 4. 04/28/25 2:25 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

PROPOSED: Semiconductor Engineering BS

Programs
referencing this
course

Requested Effective Date Fall 2025

Department Materials Science & Engineering (RMATSENG)

Discipline Semiconductor Engineering (SEMI ENG)

Course Number 4300

Title Polymers for Semiconductor Devices and Processes

Abbreviated Course Title Polymer Semi Device Proc

Co-Listed Course

Catalog Description

Fundamentals of polymers for semiconductor device and process engineering. Roles in advanced semiconductor technology, optoelectronics, and organic electronics.

Prerequisite(s):

Semi Eng 3100.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total:	3
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Required for Majors	Yes
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Elective for Majors	No
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Communication Intensive	No
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Communication Emphasized	No
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Grading Basis	Graded
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Repeatable	No
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Justification	Required for SEMI ENG majors.
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Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer Comments	Jade McCain (jm558v) (03/24/25 11:05 am): Added grading basis and punctuation.
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Key: 10287

[Preview Bridge](#)

Course Change Request

New Course Proposal

Date Submitted: 03/21/25 10:59 am

Viewing: **SEMI ENG 4400 : Microelectronics Packaging and Integration**

Last edit: 03/24/25 11:15 am

Changes proposed by: David Lipke (lipked)

In Workflow

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

Approval Path

- 1. 03/21/25 10:59 am Michael Moats (moatsm): Approved for RMATSENG Chair
- 2. 04/10/25 1:16 pm Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:21 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
- 4. 04/28/25 2:25 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post

PROPOSED: Semiconductor Engineering BS

Programs
referencing this
course

Requested Effective Date	Fall 2025
Department	Materials Science & Engineering (RMATSENG)
Discipline	Semiconductor Engineering (SEMI ENG)
Course Number	4400
Title	Microelectronics Packaging and Integration
Abbreviated Course Title	Microelec Pack Integrate
Co-Listed Course	

Catalog Description
Materials selection, thermal management principles, manufacturing concepts, testing and reliability models for packaging and heterogeneous integration of semiconductor devices.

Prerequisite(s):
Semi Eng 4101 and Semi Eng 4300.

Corequisite(s):

Credit Hours

Credit Hours

Credit Type	Credit Hours
Lecture	3

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

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

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

Communication Intensive	No
-------------------------	----

Communication Emphasized	No
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Grading Basis	Graded
---------------	--------

Repeatable	No
------------	----

Justification	Required for SEMI ENG majors (semiconductor device engineering emphasis area only).
---------------	---

Semesters Previously Offered

Term(s) Offered as
experimental

Previous Course
Code

Is this a MOTR
Course?

Reviewer Comments	Jade McCain (jm558v) (03/24/25 10:54 am): Added grading basis.
----------------------	---

Key: 10288

[Preview Bridge](#)

Course Change Request

Date Submitted: 04/15/25 8:25 am

Viewing: **SP&M S 3250 : Interpersonal Communication**

Last approved: 03/22/21 6:01 am

Last edit: 04/15/25 2:55 pm

Changes proposed by: Kristine Swenson (kswenson)

Programs
referencing this
course

[COMM ST-MI: Communication Studies Minor](#)
[PROPOSED: Special Program, Applied Innovation Minor](#)
[L COMM-MI: Leadership Communication Minor](#)

Requested Effective Date	Fall 2025
Department	English & Tech Communication (REGLISH)
Discipline	Speech & Media Studies (SP&M S)
Course Number	3250
Title	Interpersonal Communication
Abbreviated Course Title	Interpersonal Communicat
Co-Listed Course	

Catalog Description

Explores the theoretical and practical dimensions of human communication in significant one-on-one relationships. Emphasis on theoretical approaches to identify and achieve particular outcomes desired in professional and personal interactions.

Prerequisite(s):
~~Sp&M S 2181~~

Corequisite(s):

Credit Hours

Credit Hours

In Workflow

1. REGLISH Chair

2. CCC Secretary

3. Arts & Humanities DSCC Chair

4. Pending CCC Agenda post

5. CCC Meeting Agenda

6. Campus Curricula Committee Chair

7. FS Meeting Agenda

8. Faculty Senate Chair

9. Registrar

10. CAT entry

11. Peoplesoft

Approval Path

1. 04/15/25 8:29 am
Kristine Swenson (kswenson):
Approved for
REGLISH Chair

2. 04/15/25 2:55 pm
Jade McCain (jm558v): Approved
for CCC Secretary

3. 04/15/25 5:00 pm
Petra Dewitt (dewittp): Approved
for Arts &
Humanities DSCC
Chair

4. 04/28/25 2:25 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

History

1. Mar 22, 2021 by

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes ~~No~~

Communication No
Intensive

Communication No
Emphasized

Grading Basis Graded

Repeatable No

Justification Existing prerequisite is rarely taught and unnecessary.

Semesters Previously Offered

Term(s) Offered as
experimental

Is this a MOTR
Course?

Reviewer **Jade McCain (jm558v) (04/15/25 2:54 pm):** Selected "no" for communication emphasized and
Comments communication intensive.

Jade McCain (jm558v) (04/15/25 2:55 pm): Selected "yes" for elective for majors.

Program Change Request

A deleted record cannot be edited

Program Inactivation Proposal

Date Submitted: 03/28/25 2:33 pm

Viewing: **ADV MAT-CT : Advanced Engineering
Materials Certificate**

Last approved: 08/25/20 9:26 am

Last edit: 04/07/25 9:26 am

Changes proposed by: David Lipke (lipked)

Catalog Pages Using
this Program

[Materials Science and Engineering](#)

Final Catalog

FS2025-SP2026

Rationale for
Inactivation

In Workflow

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

Approval Path

- 1. 03/28/25 2:47 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
- 2. 04/07/25 9:29 am
Jade McCain
(jm558v): Approved
for CCC Secretary
- 3. 04/24/25 8:01 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
- 4. 04/28/25 2:16 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

- 1. Jul 1, 2020 by F.
Scott Miller (smiller)
- 2. Aug 25, 2020 by
Crystal Wilson
(wilsoncry)

Insufficient interest to justify continued offering

Supporting Documents [Advanced Engineering Materials Cert Deactivate.docx](#)
[MDHE Approval Letter ST September 2024 GradCertsDeletions or Inactivations.pdf](#)

Effective Catalog Edition FS2025-SP2026

Start Term

Program Type

Academic Level	
Program Code	ADV MAT-CT
Department	Materials Science & Engineering
Discipline	Materials Science & Engineering
Title	Advanced Engineering Materials Certificate
CIP Code	

Program Requirements and Description

Missouri University of Science and Technology offers a graduate certificate in Advanced Engineering Materials for working professionals. The graduate certificate program consists of four courses from existing graduate-level courses. While the students admitted to the certificate program will have non-matriculated status, if they complete the four course sequence with a grade of B or better in each of the courses taken, they will be admitted to the master's degree program, if they so choose. The certificate credits taken by students admitted to the master's program will count toward their master's degrees.

The Advanced Engineering Materials Certificate Program is open to all persons holding a B.S., M.S., or Ph.D. degree in Engineering, Science, and/or Mathematics and who have a minimum of one year of professional employment experience, or are currently accepted into a graduate degree program at Missouri S&T. Once admitted to the program, the student must take the four designated courses (provided in the curriculum section). In order to receive a Graduate Certificate, the student must have an average cumulative grade point of 3.0 or better in the certificate courses. Once admitted to the program, a student will be given three years to complete the program.

Students admitted to the Advanced Engineering Materials Certificate Program will have non-degree graduate status, however, they will earn graduate credit for the courses they complete. If the four-course sequence is completed with a grade of B or better in each of the courses taken, the student, upon application, will be admitted to the Master's degree program sponsoring the graduate certificate, provided that all other program prerequisites and admission requirements are met. The certificate credits taken by the students admitted to the M.S. degree program will count towards their master's degrees. Students who do not have all of the prerequisite courses necessary to begin the courses in the Advanced Engineering Materials Certificate Program will be allowed to take "bridge" courses at either the graduate or undergraduate level to prepare for the formal certificate courses.

Students enrolled in this certificate will take one required course and three elective courses.

Required Course:

<u>MET ENG 5810</u>	Principles Of Engineering Materials	3
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Any three of the following courses:

<u>CER ENG 5230</u>	Glass Science And Engineering	3
-------------------------------------	-------------------------------	---

<u>CER ENG 5310</u>	Advanced Ceramic Processing	3
<u>CER ENG 6230</u>	Composite Materials	3
<u>MS&E 5230</u>	Energy Materials	3
<u>MET ENG 5150</u>	Introduction to Metal Additive Manufacturing	3
<u>MET ENG 5330</u>	Nonferrous Alloys	3

Justification for
request

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (04/07/25 9:26 am): Uploaded MDHE approval letter.

Program Change Request

A deleted record cannot be edited

Program Inactivation Proposal

Date Submitted: 04/16/25 1:11 pm

Viewing: **ADVCNTL-CT : Advanced Control Systems CT**

Last approved: 09/20/24 2:58 pm

Last edit: 04/16/25 1:11 pm

Changes proposed by: Jade McCain (jm558v)

Catalog Pages Using
this Program
Electrical Engineering

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

Final Catalog FS2025-SP2026

Rationale for
Inactivation

Approval Path

1. 04/16/25 1:14 pm
Jonathan Kimball
(kimballjw):
Approved for
RELECENG Chair
2. 04/17/25 11:52 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 9:24 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:16 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Jun 12, 2019 by
ershenb
2. Apr 8, 2021 by
Crystal Wilson
(wilsoncry)
3. Apr 27, 2021 by
Crystal Wilson
(wilsoncry)
4. Sep 20, 2024 by
Kelvin Erickson (kte)

Inactivating due to Provost's office recommendation.

Supporting Documents [Advanced Control Systems Cert Deactivate.docx](#)
[MDHE Approval Letter ST September 2024 GradCertsDeletions or Inactivations.pdf](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	
Program Type	
Academic Level	
Program Code	ADVCNTL-CT
Department	Electrical & Computer Engr
Discipline	Electrical Engineering
Title	Advanced Control Systems CT
CIP Code	

Program Requirements and Description

Advanced Control Systems

This graduate certificate program is designed to provide specialized graduate level education in the area of advanced control systems.

Curriculum

Students enrolled in this graduate certificate program will take two required courses and two elective courses. Alternative courses may be substituted with departmental approval.

Required courses:

<u>ELEC ENG 5300</u>	Digital Control
<u>ELEC ENG 6300</u>	Linear Control Systems

Choose two of the following:

<u>ELEC ENG 5320</u>	Neural Networks Control and Applications
<u>ELEC ENG 5350</u>	Plantwide Process Control
<u>ELEC ENG 5360</u>	System Simulation And Identification
<u>ELEC ENG 5380</u>	Autonomous Mobile Robots
<u>ELEC ENG 6310</u>	Optimal Control and Estimation
<u>ELEC ENG 6330</u>	Robust Control Systems
<u>ELEC ENG 6335</u>	Discrete-Time Neural Network Control

or ELEC ENG 6350	Neural Network Control of Nonlinear Continuous-time Systems
ELEC ENG 5325	Applied Nonlinear Control
or ELEC ENG 6320	Nonlinear Control Systems

Justification for
request

Attach Budget

System Approval
Letter

MDHE Approval

Supporting Documents [ECE Grad Certificate Revision 20240508.pdf](#)
[Revised-ECE-Advance Control Systems GCT.pdf](#)

Reviewer
Comments

Program Change Request

Date Submitted: 04/09/25 3:05 pm

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

Last approved: 04/30/24 10:16 am

Last edit: 04/24/25 10:46 am

Changes proposed by: Nishant Kumar (nkwtb)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	AE ENG-BS
Department	Mechanical & Aerospace Engineering
Discipline	Aerospace Engineering
Title	

In Workflow

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

Approval Path

1. 03/11/25 1:08 pm
David Bayless (djbkqf): Approved for RMECHENG Chair
2. 04/02/25 10:36 am
Jade McCain (jm558v): Rollback to Initiator
3. 04/11/25 4:42 pm
David Bayless (djbkqf): Approved for RMECHENG Chair
4. 04/14/25 9:57 am
Jade McCain (jm558v): Approved for CCC Secretary
5. 04/24/25 8:05 pm
Kelly Liu (liukh):

Approved for
Engineering DSCC
Chair

6. 04/28/25 2:16 pm

Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Apr 28, 2014 by J.
Keith Nisbett
(nisbett)
2. Aug 1, 2014 by
pantaleoa
3. Jul 14, 2015 by
pantaleoa
4. Mar 27, 2017 by
Shauntae Ellis
(smetg6)
5. Nov 2, 2018 by
Kakkattukuzhy Isaac
(isaac)
6. Jun 14, 2019 by
ershenb
7. Mar 3, 2020 by
ershenb
8. Oct 28, 2021 by J.
Keith Nisbett
(nisbett)
9. May 2, 2022 by J.
Keith Nisbett
(nisbett)
10. Apr 30, 2024 by J.
Keith Nisbett
(nisbett)

Aerospace Engineering BS

CIP Code

Program Requirements and Description

Bachelor of Science Aerospace Engineering

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

Students must comply with the requirements specified in the current online catalog published by the registrar. For the bachelor of science degree in aerospace engineering a minimum of 128 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. At least two grade points per credit hour must also be attained in all courses taken in aerospace engineering.

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u>	1	<u>MECH ENG 1720</u>	3
CHEM 1310⁴	4	<u>MATH 1215⁴</u>	4
<u>CHEM 1305⁴</u>	<u>4</u>	<u>PHYSICS 1135⁴</u>	4
<u>CHEM 1319</u>	1	H/SS Economics elective³	3
<u>ENGLISH 1120</u>	3	<u>Gen. Ed. Elective²</u>	<u>3</u>
<u>MATH 1214</u> or <u>1211⁴</u>	4		
H/SS History Elective²	3		
<u>History 1200, or 1300 or 1310 or Pol Sci 12003</u>			
	16		14

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CIV ENG 2200⁴</u>	3	<u>AERO ENG 2780</u>	2
<u>MATH 2222⁴</u>	4	<u>AERO ENG 2360⁴</u>	3
<u>PHYSICS 2135⁴</u>	4	<u>MECH ENG 2519⁴</u>	3
<u>AERO ENG 2861⁴</u>	3	<u>MATH 3304⁴</u>	3
Programming elective ¹	3	<u>CIV ENG 2210⁴</u>	3
		<u>AERO ENG 2790</u>	2
	17		16

Junior Year

First Semester	Credits	Second Semester	Credits
<u>AERO ENG 3613</u> ⁴	3	<u>AERO ENG 3251</u> ⁴	3
<u>AERO ENG 3131</u> ⁴	3	<u>AERO ENG 3361</u>	3
<u>ELEC ENG 2800</u>	3	<u>AERO ENG 3171</u>	3
<u>MET ENG 2110</u>	3	<u>AERO ENG 4882</u>	2
Electives-Advanced Math/Cmp Sci ⁵	3	Elective/Ethics ⁹	3
		Elective/Communications ⁷	3
		<u>General Elective - Ethics</u> ³	<u>3</u>
		<u>ENGLISH 1160, OR 3560, OR SP&M 1185</u>	<u>3</u>
	15		17
Senior Year			
First Semester	Credits	Second Semester	Credits
<u>AERO ENG 4535</u>	3	<u>AERO ENG 4781</u> or <u>4791</u>	3
<u>AERO ENG 4253</u>	3	Electives-Technical ⁶	3
<u>AERO ENG 4780</u> or <u>4790</u>	3	Electives-Technical ⁶	3
<u>AERO ENG 4883</u>	2	<u>AERO ENG 4885</u>	1
Electives-Technical ⁶	3	Electives-Hum/Soc Sci	3
Depth Elective/Hum/Soc Sci ⁸	3	Elective/Literature	3
<u>Gen. Ed. Elective</u> ²	<u>3</u>	<u>Gen. Ed. Elective</u> ²	<u>3</u>
		<u>Gen. Ed. Elective</u> ²	<u>3</u>
	17		16

Total Credits: 128

1

The programming elective consists of a lecture and lab combination, and may be selected from COMP SCI 1972/COMP SCI 1982 or COMP SCI 1570 / COMP SCI 1580. Note that COMP SCI 1570/ COMP SCI 1580 requires one more credit hour.

2

Gen. Ed. Elective must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

3

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

4

A grade of "C" or better in CHEM 1305, MATH 1214 or MATH 1211, MATH 1215, MATH 2222, MATH 3304, PHYSICS 1135, PHYSICS 2135, CIV ENG 2200, CIV ENG 2210, and computer programming elective, AERO ENG 2360, AERO ENG 2861, and MECH ENG 2519, as prerequisite for follow-up courses in the curriculum and for graduation.

5

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

6

Electives must be approved by the student's advisor. Nine hours of technical electives must be in mechanical and aerospace engineering. Three hours of departmental technical electives must be at the 5000-level.

AERO ENG 3877 and the 5000-level Asteroid Mining course co-listed with geological engineering are not to be used for 5000-level technical elective.

7

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

8

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

9

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

~~Each student's program of study must contain a minimum of 24 credit hours of course work in general education and must be chosen to satisfy the following requirements: ENGLISH 1120, HISTORY 1200, HISTORY 1300, HISTORY 1310, or POL SCI 1200ECON 1100 or ECON 1200ENGLISH 1160 or ENGLISH 3560 or SP&M S 1185A literature elective*An ethics elective*Depthelective.A humanities or social science elective that has a humanities or social science course already taken as a prerequisite*A humanities or social science elective* *Humanities and social science elective must be at least 3 credit hours of lecture designation, and also meet the requirements as specified under "Engineering Degree Requirements" published in the current undergraduatecatalog.~~

Justification for
request

Updating AE curriculum to remove/delete any language that references old engineering requirements. The DC form reflects the adoption and implementation of the new General Education program.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (04/02/25 10:24 am): Corrected CHEM 1305 in plan of study grid and removed CHEM 1310 from the footnotes.

Jade McCain (jm558v) (04/02/25 10:36 am): Rollback: Rollback per department request.

Jade McCain (jm558v) (04/14/25 9:25 am): Corrected plan of study grid.

Jade McCain (jm558v) (04/24/25 10:46 am): Added footnote to Chem 1305.

Program Change Request

Date Submitted: 04/16/25 2:55 pm

Viewing: **ANA&DTA-MI : Business Analytics and Data Science Minor**

Last approved: 02/03/21 10:50 am

Last edit: 04/25/25 4:13 pm

Changes proposed by: Cecil Eng Huang Chua (cecq8z)

Catalog Pages Using
this Program

- [Business and Management Systems](#)
- [Information Science and Technology](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Minor
Academic Level	Undergraduate
Program Code	ANA&DTA-MI
Department	Information Science & Tech
Discipline	Info Science & Technology
Title	

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

Approval Path

1. 04/25/25 4:08 pm
Cassie Elrod (cassa):
Approved for
RINFSCTE Chair
2. 04/25/25 4:14 pm
Jade McCain (jm558v): Approved
for CCC Secretary
3. 04/25/25 10:20 pm
Cecil Eng Huang Chua (cchua):
Approved for Social
Sciences DSCC Chair
4. 04/28/25 2:16 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

History

1. Mar 17, 2015 by
barryf
2. Jul 28, 2015 by
kleb6b
3. Jul 29, 2015 by
pantaleoa
4. Jul 29, 2015 by
pantaleoa
5. Feb 1, 2016 by
barryf
6. Sep 19, 2017 by
barryf
7. Feb 3, 2021 by Cecil
Eng Huang Chua
(cchua)

Business Analytics and Data Science Minor

CIP Code

Program Requirements and Description

Minor in Business Analytics and Data Science

The minor in business analytics and data science requires the following 15 hours of coursework:

<u>IS&T 1750</u>	Introduction to Management Information Systems	3
<u>IS&T 3423</u>	Database Management	3
<u>IS&T 3420</u>	Introduction to Data Science and Management	3
Two courses from the following list:		6
<u>IS&T 4641</u>	Digital Commerce and IoT Analytics	
<u>IS&T 5420</u>	Business Analytics and Data Science	
<u>IS&T 5450</u>	Introduction to Information Visualization	
<u>IS&T 5520</u>	Data Science and Machine Learning with Python	
<u>BUS 5730</u>	Machine Learning and Artificial Intelligence for Business	

Justification for

request

Inactivating IST4641

Attach Budget

System Approval

Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Jade McCain (jm558v) (04/25/25 4:13 pm): Changed start term to Fall 2025.

Program Change Request

Date Submitted: 03/31/25 3:23 pm

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

Last approved: 07/05/24 9:42 am

Last edit: 04/14/25 10:37 am

Changes proposed by: Crystal Wilson (wilsoncry)

Catalog Pages Using this Program

Mathematics

Final Catalog
Rationale for
Inactivation
Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	
Academic Level	Undergraduate
Program Code	AP MATH-BS
Department	Mathematics & Statistics
Discipline	Mathematics
Offered by	
Title	Applied Mathematics BS
CIP Code	27.0301 - Applied Mathematics, General.

Purpose
Intended Audience

Program-Specific Admission

Program Requirements and Description

In Workflow

- Paul Runnion
- RMATHEMA Chair
- CCC Secretary
- Sciences DSCC Chair
- Pending CCC Agenda post
- CCC Meeting Agenda
- Campus Curricula Committee Chair
- FS Meeting Agenda
- Faculty Senate Chair
- Registrar

Approval Path

- 04/09/25 5:06 pm
Paul Runnion (prunnion): Approved for prunnion
- 04/10/25 11:52 am
John Singler (singlerj): Approved for RMATHEMA Chair
- 04/14/25 10:37 am
Jade McCain (jm558v): Approved for CCC Secretary
- 04/25/25 9:18 am
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
- 04/28/25 2:16 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- Apr 28, 2014 by imorgan
- Apr 28, 2014 by Lahne Black (lahne)
- Jun 13, 2014 by pantaleoa
- Jun 13, 2014 by pantaleoa
- Jul 21, 2015 by pantaleoa
- Jul 21, 2015 by pantaleoa
- Apr 25, 2016 by imorgan
- Aug 12, 2016 by cladmin-bdietzler
- Jun 14, 2019 by Paul Runnion (prunnion)
- Jul 1, 2020 by Paul Runnion (prunnion)
- Feb 3, 2021 by Paul Runnion (prunnion)
- Mar 9, 2021 by Marita Raper (tibbettsmg)
- Mar 9, 2021 by Marita Raper (tibbettsmg)
- May 5, 2021 by Paul Runnion (prunnion)
- Jun 14, 2022 by Paul Runnion (prunnion)
- Jun 14, 2024 by Paul Runnion (prunnion)
- Jul 5, 2024 by Crystal Wilson (wilsoncry)

Bachelor of Science

Applied Mathematics

A minimum of 120 credit hours is required for a bachelor of science degree in applied mathematics. A minimum grade of “C” is required by the department in each mathematics and statistics course counted toward the B.S. in applied mathematics. Moreover, the department requires that an average of at least two grade points per credit hour must be obtained for all courses taken within the department. These requirements for the B.S. degree are in addition to credit received for algebra, trigonometry, and basic ROTC.

The applied mathematics curriculum requires fifteen semester hours of technical electives, except where this requirement is reduced to compensate for extra requirements of emphasis areas, in addition to basic required courses in the sciences and economics. Specific requirements for the bachelor’s degree are outlined in the sample program below.

Freshman Year			
First Semester	Credits	Second Semester	Credits
MATH 1101 ¹	1	MATH 1215 or 1221 ¹	4
MATH 1214 or 1211 ¹	4	Science Requirement ⁵	5
OR		COMP SCI 1500	3
MATH 1208 ¹	3	COMP SCI 1570	3
COMP SCI 1500	3	COMP SCI 1580	1
ECON 1100 or 1200	3	ENGLISH 1160 or SPM S 1185 ⁸	3
Campus History Requirement ²	3	PHYSICS 1135	4
ENGLISH 1120	3	Basic ROTC (if elected) ¹⁶	0
Basic ROTC (if elected) ¹⁶	0		
	14		15
Sophomore Year			
First Semester	Credits	Second Semester	Credits
MATH 2222 ¹	4	MATH 3109 ¹	3
MATH 3108 ¹	3	MATH 3304 ¹	3
COMP SCI 1570	3	Statistics Requirement ^{1,3}	3
COMP SCI 1580	1	Science Requirement ⁵	4
PHYSICS 1135	4	Literature	3
Science Requirement ⁹	3	Humanities and Fine Arts Requirement ^{11,13}	3
Behavioral and Social Sciences Requirement ^{10,13}	3	Electives - Technical ¹⁴	3
Electives ¹⁵	3	Basic ROTC (if elected) ¹⁶	0
Basic ROTC (if elected) ¹⁶	0		
	16		15
Junior Year			
First Semester	Credits	Second Semester	Credits
MATH 4209 ¹	3	MATH 4211 ^{1, 12}	3
SP&M S 1185 or 3245 ¹⁴	3	Humanities/Social Science Elective ³	3
Electives-Math or Stat ^{1,7,9}	3	Electives - Math ^{1,4}	3
Electives-Technical ¹⁰	3	Electives - Statistics ^{1,5}	3
Electives - Math or Stat ^{1,6}	3	Electives-Technical ¹⁰	3
Humanities and Fine Arts Requirement ^{11,13}	3	Humanities, Arts, and Social Sciences Requirement ^{12,13}	3
Electives - Technical ¹⁴	3	Electives - Technical ¹⁴	3
Electives ¹⁵	3	Electives ¹⁵	3
	15		15
Senior Year			
First Semester	Credits	Second Semester	Credits
Capstone Course ^{1,7}	3	Electives-Math or Stat ^{1,7,9}	3
Electives-Math or Stat ^{1,7,9}	3	Electives-Technical ¹⁰	3
Electives-Technical ¹⁰	6	Electives - Math or Stat ^{1,6}	3
Humanities/Social Science Elective ³	3	Electives - Technical ¹⁴	3
Electives - Math or Stat ^{1,6}	3	Electives ¹⁵	9
Electives - Technical ¹⁴	3		
Electives ¹⁵	6		
	15		15

Total Credits: 120

¹ A minimum grade of “C” is required by the department in each mathematics and statistics course counted toward the B.S. in applied mathematics.

² No course may be used to satisfy more than one degree requirement, except as otherwise noted.

³ The Statistics Requirement may be met by [STAT 3113](#), [STAT 3115](#), or [STAT 3117](#).

⁴ The Mathematics Elective may be met by [MATH 4211](#), [MATH 5105](#), [MATH 5215](#), or [MATH 5585](#). The Mathematics Elective is not required for students earning the Data Science and Statistics emphasis area.

⁵ The Statistics Elective may be met by any statistics lecture course at the 4000 or 5000 level. Research ([STAT 4099](#), [STAT 5099](#)) does not fulfill this requirement. Special topics and special problems courses are acceptable.

⁶ The three Math/Stat Electives may be chosen from any 4000 or 5000 level MATH or STAT lecture courses. Research ([MATH 4099](#), [MATH 5099](#), [STAT 4099](#), [STAT 5099](#)) and seminars ([MATH 4010](#), [MATH 5010](#)) do not fulfill this requirement. Special topics and special problems courses are acceptable.

⁷ The capstone experience for all applied mathematics majors (other than students completing the secondary education emphasis area) consists of a course chosen from the following list: [MATH 4098](#) (three credits), [MATH 4099](#) or [STAT 4099](#) (three credits), [MATH 5107](#), [MATH 5601](#), [MATH 5602](#), [MATH 5603](#), [MATH 5604](#), [MATH 5680](#), [MATH 5737](#), [MATH 5762](#), [STAT 4210](#), [STAT 5260](#), [STAT 5290](#), [STAT 5346](#), [STAT 5353](#), [STAT 5755](#), [STAT 5756](#), [STAT 5814](#)

⁸ May also be satisfied by [ENGLISH 3560](#).

⁹ The Science Requirement may be met by Biology courses ([BIO SCI 1113](#) or higher), Chemistry courses ([CHEM 1301](#) or higher), or Geology courses ([GEOLOGY 1110](#) or higher).

¹⁰ The Behavioral and Social Sciences Requirement may be met by selecting one course from [ECON 1100](#), [ECON 1200](#), [FRENCH 1101](#), [FRENCH 1102](#), [FRENCH 1180](#), [GERMAN 1101](#), [GERMAN 1102](#), [GERMAN 1180](#), [HISTORY 1100](#), [HISTORY 1200](#), [HISTORY 2110](#), [PHILOS 1105](#), [PHILOS 1115](#), [POL SCI 1200](#), [PSYCH 1101](#), [RUSSIAN 1101](#), [RUSSIAN 1102](#), [RUSSIAN 1180](#), [SPANISH 1101](#), [SPANISH 1102](#), or [SPANISH 1180](#).

¹¹ The Humanities and Fine Arts Requirement may be met by selecting two courses from two different disciplines from [HISTORY 1300](#), [HISTORY 1310](#), [ART 1180](#), [MUSIC 1150](#), [THEATRE 1150](#), and [ENGLISH 1211](#), [ENGLISH 1212](#), [ENGLISH 1221](#), [ENGLISH 1222](#), and [ENGLISH 1231](#) (or Non-prerequisite Literature).

¹² The Humanities, Arts, and Social Sciences Requirement may be met by selecting three additional credit hours from History, Art, Music, Theater, English and Technical Communication, Philosophy, Political Science, Psychology, Economics, Etymology, or Foreign Languages.

13
When selecting courses to fulfill the Behavioral and Social Science Requirement, the Humanities and Fine Arts Requirement, and the Humanities, Arts, and Social Sciences Requirement, you must select at least one course from [HISTORY 1200](#), [HISTORY 1300](#), [HISTORY 1310](#), or [POL SCI 1200](#) to satisfy the Williams Law requirement.

14
Technical Electives are courses in biology, business, chemistry, computer science, economics, education, engineering, finance, geology, geophysics, information science and technology, marketing, mechanics, physics, or technical communication approved by advisor. The general math curriculum requires 15 credit hours; actuarial science emphasis area, 9 credit hours; computational math emphasis area, 12 credit hours. All technical elective requirements are built into the statistics emphasis area via the included computer science minor.

15
Sufficient free electives to earn a minimum of 120 credit hours.

16
Basic ROTC may be elected in the freshman and sophomore years, but is not creditable toward a degree. Up to six credit hours of advanced ROTC may be credited as free electives towards a degree.

Emphasis Areas at the Bachelor of Science Level

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

Actuarial Science Emphasis Area

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

In addition, the student must pass the first actuarial science exam. Note that the capstone ~~requirement, requirement and the~~ [three four](#) math/stat ~~electives, and the one stat elective~~ [electives](#) are included in, not separate from, this list of courses.

When selecting a 3000-level statistics course to satisfy the major requirements, it is recommended that students pursuing an Actuarial Science emphasis select Stat 3117.

Computational Mathematics Emphasis Area

Required courses:		
COMP SCI 1575	Data Structures	3
COMP SCI 1585	Data Structures Laboratory	1
MATH 5601	Introduction to Numerical Analysis	3
STAT 5346	Regression Analysis ²	3
Select three of the following: ¹		
MATH 5302	Intermediate Differential Equations	3
MATH 5325	Partial Differential Equations	3
MATH 5602	Mathematical Foundation of Finite Element Methods	3
MATH 5603	Methods of Applied Mathematics	3
MATH 5604	Introduction to Numerical Methods for Differential Equations	3
MATH 5680	Mathematics of Machine Learning	3
Select one of the following:		
Statistics elective ³		3

¹
At least one of these three courses must be [MATH 5602](#) or [MATH 5604](#). These three courses replace the math/stat electives listed in the general degree.

²
This fulfills the capstone requirement.

³
Any 4000 or 5000 level statistics lecture course. This fulfills the second statistics requirement for the degree.

Secondary Education Emphasis Area

You may earn a B.S. degree in applied mathematics from Missouri S&T and certification to teach at the secondary level in the schools of Missouri with this emphasis area program. This program is approved by the Missouri Department of Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at <https://teaching.missouri.edu/student/state-authorization/mst/licensure>. This program can be completed in four academic years. Students interested in this emphasis area should consult with the advisor for mathematics education majors in the mathematics and statistics department.

In order to successfully complete this emphasis area, students must attain at least a [2.5 GPA in all mathematics and statistics coursework and must attain at least a 3.0 GPA in all](#) ~~GPA in all mathematics, statistics, and~~ education courses as required by the Missouri Department of Elementary ~~and and~~ Secondary Education for teacher certification. Current Missouri S&T or transfer students who wish to pursue this emphasis area must meet these GPA requirements to be accepted into the program. Students must also meet all requirements listed on the teacher education website. 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 coursework.

A degree in this emphasis area requires 120 credit hours. The required courses and a sample four-year program are provided below.

Freshman Year			
First Semester	Credits	Second Semester	Credits
MATH 1101 ¹	1	MATH 1215 or 1221 ¹	4
MATH 1214 or 1211 ¹	4	EDUC 1164	2
OR		EDUC 1174	2
MATH 1208 ¹		ENGLISH 1160 or SPM S 1185	3
COMP SCI 1500	3	PHYSICS 1135	4
EDUC 1074	3	PSYCH 1101	3
EDUC 1104	1		
ENGLISH 1120	3		

HISTORY 1300 or 1310	3		
EDUC 1040	2		
	15		16
Sophomore Year			
First Semester	Credits	Second Semester	Credits
MATH 2222 ¹	4	MATH 3109 ¹	3
MATH 3108 ¹	3	ENGLISH 1160	3
COMP SCI 1500	3	MATH 3304 ¹	3
PHYSICS 2135	4	PSYCH 3310	3
SP&MS 1185	3	STAT 3113, or 3115, or 3117	3
HISTORY 1300 or 1310	3	Statistics Requirement ³	3
Science Requirement ⁷	3	Electives ⁹	3
Humanities and Fine Arts Requirement ^{8,9}	3		
	16		15
Junior Year			
First Semester	Credits	Second Semester	Credits
MATH 4209 ¹	3	MATH 4211	3
ECON 1100 or 1209	3	MATH 4530 ¹	3
ENGLISH 3170	3	Electives - Math ^{1,4}	3
EDUC 3170	3	EDUC 3280	3
EDUC 3216	3	EDUC 3340	3
EDUC 3298	1	PSYCH 2300 or EDUC 2102	3
POL SCI 1200	3		
Electives	2		
	15		15
Senior Year			
First Semester	Credits	Second Semester	Credits
Electives-Math or Stat ^{1,5}	6	EDUC 4298	13
		& EDUC 4299 ⁶	
PSYCH 4310 or EDUC 2310	3		
Electives ⁹	6		
	15		13

Total Credits: 120

- 1
- A minimum grade of "C" is required by the department in each mathematics and statistics course counted toward the B.S. in applied mathematics.
- 2
- No course may be used to satisfy more than one degree requirement, except as otherwise noted.
- 3
- The Statistics Requirement may be met by [STAT 3113](#), [STAT 3115](#), or [STAT 3117](#).
- 4
- The Mathematics Elective may be met by [MATH 4211](#), [MATH 5105](#), [MATH 5215](#), or [MATH 5585](#). The Mathematics Elective is not required for students earning the Data Science and Statistics emphasis area.
- 5
- Any two three-hour courses from the following list with the approval of the mathematics education advisor. [MATH 5105](#) [MATH 5106](#), [MATH 5107](#),[MATH 5108](#), [MATH 5215](#) [MATH 5222](#), [MATH 5302](#), [MATH 5325](#), [MATH 5351](#), [MATH 5483](#) , [MATH 5512](#),[MATH 5585](#) [MATH 5601](#), [MATH 5602](#), [MATH 5603](#), [MATH 5604](#), [MATH 5680](#), [MATH 5737](#), [MATH 5762](#), [STAT 4210](#), [STAT 5260](#), [STAT 5290](#), [STAT 5346](#),[STAT 5353](#), [STAT 5643](#), [STAT 5644](#), [STAT 5755](#), [STAT 5756](#), [STAT 5814](#)
- 6
- Student Teaching satisfies the capstone requirement for students completing this emphasis area.
- 7
- The Science Requirement may be met by Biology courses ([BIO SCI 1113](#) or higher), Chemistry courses ([CHEM 1301](#) or higher), or Geology courses ([GEOLOGY 1110](#) or higher).
- 8
- The Humanities and Fine Arts Requirement may be met by selecting one course from from [ART 1180](#), [MUSIC 1150](#), [THEATRE 1150](#), and [ENGLISH 1211](#), [ENGLISH 1212](#), [ENGLISH 1221](#), [ENGLISH 1222](#), and [ENGLISH 1231](#) (or Non-prerequisite Literature).
- 9
- Sufficient free electives to earn a minimum of 120 credit hours.

~~(A minimum grade of "C" is required by the department in all mathematics and statistics courses counted toward this degree.No course may be used to satisfy more than one degree requirement, except as otherwise noted.)~~**Data Science and Statistics Emphasis Area**

Required courses:		
STAT 4210	Introduction to Statistical Data Science	3
STAT 5643	Probability And Statistics	3
STAT 5644	Mathematical Statistics	3
STAT 5346	Regression Analysis ²	3
STAT 5353	Statistical Data Analysis (Satisfies Capstone requirement) ¹	3
Select one of the following:		6
STAT 5260	Statistical Data Analysis Using SAS	3
STAT 5290	Computational Bayesian Methods using Python	3
STAT 5814	Applied Time Series Analysis	3
or another approved computational statistics course		
Complete the following CS courses (in addition to those required for all Applied Mathematics majors):		
COMP SCI 1200	Discrete Mathematics for Computer Science ²	3
COMP SCI 1575	Data Structures ²	3
COMP SCI 1585	Data Structures Laboratory ²	1
COMP SCI 2300	File Structures and Introduction to Database Systems ²	3
COMP SCI 2500	Algorithms ²	3
and one of the following two courses:		
COMP SCI 5400	Introduction To Artificial Intelligence ²	3
COMP SCI 5402	Introduction to Data Mining ²	3

¹
Satisfies Capstone requirement.

Satisfies the requirements for a minor in Computer Science (when combined with [COMP SCI 1500](#), [COMP SCI 1570](#), and [COMP SCI 1580](#) which are required for all Applied Mathematics majors).

Justification for request

We are updating the degree program to match the new campus General Education requirements. We have also updated the Secondary Education emphasis to reflect the changes in general education requirements and to reflect the recent Education course changes. Footnotes in the secondary education emphasis were adjusted to better match the general degree program (including moving some information from the narrative above the 8-semester table to the footnotes below).

A small adjustment was made to the notes below the Actuarial Science emphasis area table that should have been made one year ago when we adjusted our upper division elective requirements.

Finally, we are adjusting our upper division math requirements to increase flexibility. Previously, all students except those in the Statistics and Data Science emphasis had to take Math 4211. Now, students can choose from Math 4211, 5105, 5215, and 5585.

Attach Budget

System Approval Letter

MDHE Approval

Supporting Documents

[MDHE Approval Letter_S&T_FEB 2024.pdf](#)
[PC Form - Mathematics - Emphasis Deletion.pdf](#)

Reviewer Comments

Jade McCain (jm558v) (04/14/25 10:37 am): Hyperlinked courses in footnotes.

Program Change Request

Date Submitted: 04/10/25 12:22 pm

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

Last approved: 07/01/20 1:37 pm

Last edit: 04/10/25 12:22 pm

Changes proposed by: John Singler (singlerj)

Catalog Pages Using
this Program

[Mathematics and Statistics](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Master of Science</u>
Academic Level	<u>Graduate</u>
Program Code	AP MATH-MS
Department	Mathematics & Statistics
Discipline	Mathematics
Title	

In Workflow

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

Approval Path

1. 04/10/25 12:22 pm
John Singler (singlerj): Approved for RMATHEMA Chair
2. 04/14/25 11:57 am
Crystal Wilson (wilsoncry): Approved for CCC Secretary
3. 04/25/25 9:18 am
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 04/28/25 2:16 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Sep 12, 2013 by pantaleoa
2. Mar 6, 2014 by imorgan
3. Jul 23, 2014 by imorgan
4. Jul 23, 2015 by pantaleoa
5. Jun 27, 2016 by imorgan
6. Jul 1, 2020 by Paul Runnion (prunnion)

Applied Mathematics MS

CIP Code

Program Requirements and Description

The program for the M.S. in Applied Mathematics without a thesis must include at least 30 hours of graduate credit, with the following additional specifications:

At least 18 hours must come from Department of Mathematics & Statistics ~~Department~~ lecture courses at the 5000-level or higher.

At least ~~9~~ 6 of the 18 hours ~~of must come from Mathematics & Statistics Department~~ lecture courses at the 6000-level, of which at least 6 hours must come from the Department of Mathematics & Statistics. ~~6000-level.~~

At least three of the following courses must be taken: A minimum of 3 additional hours must come from 6000-level lecture courses. MATH 5302, MATH 5325, MATH 5601, STAT 5643

The program for the M.S. in Applied Mathematics with a thesis must include at least 30 hours of graduate credit, with the following additional specifications:

At least 12 hours must come from Department of Mathematics & Statistics ~~Department~~ lecture courses at the 5000-level or higher.

At least 6 of the 12 hours must come from Department of Mathematics & Statistics ~~Department~~ lecture courses at the 6000-level.

At least 6 hours of Graduate Research (MATH 5099, MATH 6099, STAT 5099, or STAT 6099). ~~STAT 6099) must be completed.~~

Candidates must pass an oral thesis defense.

The program for the M.S. in Applied Mathematics with Statistics emphasis without a thesis must include at least 30 hours of graduate credit, with the following additional specifications:

At least 18 hours must come from Department of Mathematics & Statistics lecture courses at the 5000-level or

higher.

At least 9 hours of lecture courses at the 6000-level, of which at least 6 hours must come from the Department of Mathematics & Statistics.

All of the following courses: STAT 5346, STAT 5643, STAT 5644

STAT 5290 or another computational statistics course

The program for the M.S. in Applied Mathematics with Statistics emphasis with a thesis must include at least 30 hours of graduate credit, with the following additional specifications:

At least 6 hours of Department of Mathematics & Statistics lecture courses at the 6000-level.

At least 6 hours of Graduate Research (MATH 5099, MATH 6099, STAT 5099, or STAT 6099).

All of the following courses: STAT 5346, STAT 5643, STAT 5644

STAT 5290 or another computational statistics course

Candidates must pass an oral thesis defense.

All M.S. candidates are encouraged to include in their program courses in engineering or science that are closely related to their interests. ~~interests. For those intending to terminate study at the M.S. level, specializations supporting specific career goals are possible.~~

Justification for

request

Minor modification in wording suggested by graduate education

The department approved the four listed courses as requirements to ensure core competencies in the non-thesis MS.

The registrar's office determined that the statistics emphasis area was in the 2003-2004 graduate catalog. However, the emphasis area was not added to Courseleaf - and we did not realize it until recently. The department approved the requirements for the emphasis area.

Attach Budget

System Approval

Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Program Change Request

Date Submitted: 04/18/25 8:45 am

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

Last approved: 04/06/22 12:31 pm

Last edit: 04/18/25 8:45 am

Changes proposed by: Jade McCain (jm558v)

Catalog Pages Using
this Program
Architectural Engineering

Rationale for
Supporting

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Bachelor of Science</u>
Academic Level	<u>Undergraduate</u>
Program Code	ARC ENG-BS
Department	Civil Engineering
Discipline	Architectural Engineering
Title	

In Workflow

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

Approval Path

1. 04/04/25 12:11 pm
Mohamed Elgawady (elgawadym):
Approved for RCIVILEN Chair
2. 04/09/25 11:22 am
Jade McCain (jm558v): Rollback to Initiator
3. 04/18/25 9:40 am
Mohamed Elgawady (elgawadym):
Approved for RCIVILEN Chair
4. 04/18/25 11:24 am
Jade McCain (jm558v): Approved for CCC Secretary
5. 04/24/25 9:26 pm
Kelly Liu (liukh):

Approved for
Engineering DSCC
Chair

6. 04/28/25 2:16 pm

Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Sep 27, 2013 by
Lahne Black (lahne)
2. Sep 27, 2013 by
Lahne Black (lahne)
3. Apr 28, 2014 by
Lahne Black (lahne)
4. Aug 4, 2014 by
pantaleoa
5. Jan 30, 2015 by
Stuart Baur (baur)
6. Sep 21, 2015 by
Stuart Baur (baur)
7. Sep 15, 2016 by
Crystal Wilson
(wilsoncry)
8. Feb 27, 2018 by
Stuart Baur (baur)
9. Jan 29, 2019 by
Stuart Baur (baur)
10. Mar 3, 2020 by
ershenb
11. Apr 6, 2022 by Jody
Seely (seelyj)

Architectural Engineering BS

CIP Code

Intended Audience

Program Requirements and Description

Architectural Engineering

Bachelor of Science

For the Bachelor of Science degree in Architectural Engineering, a minimum of 129 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. An average of at least two grade points per credit hour must also be maintained in all courses taken in Architectural Engineering.

~~Each student's program of study must contain a minimum of 21 credit hours of course work in general education and must be chosen according to the following rules: All students are required to take one American history course, one economics course, one humanities course, and ENGLISH 1120. The history course is to be selected from HISTORY 1200 (preferred), HISTORY 1300, or HISTORY 1310. The economics course may be either ECON 1100 or ECON 1200. ART 3203 is required. Depth requirement. Three credit hours must be taken in humanities or social sciences at the 2000-level or above. This will be satisfied by taking the required HISTORY 2510 and HISTORY 4550. All courses taken to satisfy the depth requirement must be taken after graduating from high school. The Gen Ed course chosen must meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog and may include one communications course in addition to ENGLISH 1120. Special topics and special problems and honors seminars are allowed only by petition to and approval by the student's department chair.~~

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

Freshman Year

First Semester	Credits	Second Semester	Credits
CHEM 1100	1	<u>MATH 1215</u>	4
FR ENG 1100²	1	<u>General Ed Elective¹</u>	<u>3</u>
MATH 1214 or 1211	4	<u>ENGLISH 1160, or 3560, or SPM S 1185¹</u>	<u>3</u>
ENGLISH 1120	3	<u>MECH ENG 1720</u>	3
General Ed Elective¹	3	<u>PHYSICS 1135</u>	4
CHEM 1310	5		
& CHEM 1319			

<u>CHEM 1305</u>	<u>5</u>		
<u>& CHEM 1319</u>			
<u>HISTORY 1200, or 1300, or 1310, or POL SCI 1200^{1,5}</u>	<u>3</u>		
	17		14
Sophomore Year			
First Semester	Credits	Second Semester	Credits
<u>CIV ENG 2200²</u>	3	<u>GEOLOGY 1110</u>	3
<u>MATH 2222</u>	4	<u>CIV ENG 2210</u>	3
<u>PHYSICS 2135</u>	4	<u>CIV ENG 2211</u>	1
<u>CIV ENG 2401²</u>	3	<u>ARCH ENG 2103</u>	3
<u>ARCH ENG 2003</u>	3	<u>ART 3203⁵</u>	3
		<u>MATH 3304</u>	3
		<u>MECH ENG 2350</u>	2
	17		18
Junior Year			
First Semester	Credits	Second Semester	Credits
<u>ARCH ENG 3201²</u>	3	<u>STAT 3113</u>	3
<u>CIV ENG 3330²</u>	3	<u>ARCH ENG 4800</u>	3
<u>MECH ENG 2527</u>	3	<u>CIV ENG 3116</u>	3
<u>ARCH ENG 3804</u>	3	<u>HISTORY 2510⁵</u>	3
<u>ENG MGT 1210</u>	2	<u>ARCH ENG 3220</u>	3
<u>CIV ENG 3715</u>	3		
	17		15
Senior Year			
First Semester	Credits	Second Semester	Credits
<u>ARCH ENG 4010</u>	1	<u>ARCH ENG 4097</u>	3
<u>ARCH ENG 3210</u>	3	ARCH ENG Technical Elective ^{3,4}	3
<u>ARCH ENG 4448</u>	3	<u>CIV ENG 4729</u>	3
ARCH ENG Technical Elective ^{3,4}	3	<u>General Education Elective^{1,5}</u>	3
<u>HISTORY 4550⁵</u>	3	ARCH ENG Technical Elective ^{3,4}	3
<u>ARCH ENG 4850</u>	3		
	16		15
Total Credits: 129			

1

Gen Ed electives must fulfill the Missouri S&T general education requirements as applicable to the students catalog year.

2

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

3

A grade of 'C' or better may be required in ARCH ENG technical elective prerequisite courses. Refer to the

Missouri S&T undergraduate catalog for this prerequisite information.

4

Choose technical electives from approved lists under Emphasis Areas for Architectural Engineering Students. A maximum of 3 credits of independent study ([ARCH ENG 5000](#) or [ARCH ENG 4099](#)) may be used as a technical elective. Additional independent study course may be taken but will not count towards the B.S. Architectural Engineering degree.

5

=

General education disciplines specific required course.

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

Emphasis Areas and Course Listings by Area for Architectural Engineering Students

Area I, Structural Engineering

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

Area II, Construction Engineering and Project Management

ARCH ENG 5442	Construction Planning and Scheduling Strategies	3
ARCH ENG 5445	Construction Methods	3

<u>ARCH ENG 5446</u>	Management Of Construction Costs	3
<u>ARCH ENG 5448</u>	Green Engineering: Analysis of Constructed Facilities	3
<u>ARCH ENG 5449</u>	Engineering and Construction Contract Specifications	3
<u>ENG MGT 5110</u>	Managerial Decision Making	3
<u>ENG MGT 5613</u>	Value Analysis	3
<u>ENG MGT 5711</u>	Total Quality Management	3
Area III, Environmental Systems for Buildings		
<u>ARCH ENG 5001</u>	Wind Engineering	0-6
<u>ARCH ENG 5642</u>	Sustainability, Population, Energy, Water, and Materials	3
<u>ARCH ENG 5665</u>	Indoor Air Pollution	3
<u>ARCH ENG 5820</u>	Building Lighting Systems	3
<u>ARCH ENG 5850</u>	Renewable Energy -PV Fundamentals	3
<u>ENG MGT 5513</u>	Energy and Sustainability Management Engineering	3
<u>ENG MGT 5330</u>	Advanced Human Factors	3
<u>IS&T 5885</u>	Human-Computer Interaction and User Experience	3
Mechanical Emphasis Courses		
<u>MECH ENG 5309</u>	Engineering Acoustics I	3
<u>MECH ENG 5566</u>	Solar Energy Technology	3
<u>MECH ENG 5575</u>	Mechanical Systems For Environmental Control	3
Electrical Emphasis Courses		
<u>ELEC ENG 3340</u>	Basic Programmable Logic Controllers	3
<u>ELEC ENG 5150</u>	Photovoltaic Systems Engineering	3
<u>COMP ENG 2210</u> & <u>COMP ENG 2211</u>	Introduction to Digital Logic and Computer Engineering Laboratory	4
Area IV, Construction Materials		
<u>ARCH ENG 5203</u>	Applied Mechanics In Structural Engineering	3
<u>CIV ENG 5113</u>	Composition And Properties Of Concrete	3

<u>CIV ENG 5118</u>	Smart Materials and Sensors	3
<u>CIV ENG 5156</u>	Pavement Design	3
<u>CER ENG 5810</u>	Principles Of Engineering Materials	3
Architectural Engineering Courses		
<u>ARCH ENG 2103</u>	Architectural Materials And Methods Of Construction	3
<u>ARCH ENG 3804</u>	Architectural Design II	3
<u>ART 3203</u>	Architectural Design I	3
<u>ARCH ENG 5820</u>	Building Lighting Systems	3
Architectural Engineering Courses (cross-list with existing civil engineering courses)		
<u>ARCH ENG 2003</u>	Engineering Communications and Computations	3
<u>ARCH ENG 2001</u>	Special Topics	0-6
<u>ARCH ENG 3000</u>	Special Problems	1-6
<u>ARCH ENG 3001</u>	Special Topics	0-6
<u>ARCH ENG 2002</u>	Cooperative Engineering Training	1
<u>ARCH ENG 4010</u>	Senior Seminar: Engineering In A Global Society	1
<u>ARCH ENG 3201</u>	Structural Analysis I	3
<u>ARCH ENG 3210</u>	Structural Design in Metals	3
<u>ARCH ENG 3220</u>	Reinforced Concrete Design	3
<u>ARCH ENG 4447</u>	Ethical, Legal and Professional Engineering Practice	2
<u>ARCH ENG 4448</u>	Fundamentals Of Construction Engineering & Management	3
<u>ARCH ENG 4097</u>	Senior Design Project	3
<u>ARCH ENG 5000</u>	Special Problems	6
<u>ARCH ENG 5001</u>	Wind Engineering	6
<u>ARCH ENG 5205</u>	Structural Analysis II	3
<u>ARCH ENG 5260</u>	Analysis And Design Of Wood Structures	3
<u>ARCH ENG 5207</u>	Computer Methods of Structural Analysis	3
<u>ARCH ENG 5210</u>	Advanced Steel Structures Design	3

<u>ARCH ENG 5220</u>	Advanced Concrete Structures Design	3
<u>ARCH ENG 5222</u>	Prestressed Concrete Design	3
<u>ARCH ENG 5445</u>	Construction Methods	3
<u>ARCH ENG 5446</u>	Management Of Construction Costs	3
<u>ARCH ENG 5449</u>	Engineering and Construction Contract Specifications	3
<u>ARCH ENG 5231</u>	Infrastructure Strengthening with Composites	3
<u>ARCH ENG 4099</u>	Undergraduate Research	6
Civil Engineering Courses (required courses, emphasis area, and/or technical electives)		
<u>CIV ENG 3715</u>	Fundamentals of Geotechnical Engineering	3
<u>CIV ENG 3116</u>	Construction Materials, Properties And Testing	3
<u>CIV ENG 4729</u>	Foundation Engineering	3
<u>CIV ENG 3330</u>	Engineering Fluid Mechanics	3
<u>CIV ENG 5113</u>	Composition And Properties Of Concrete	3
<u>CIV ENG 5117</u>	Asphalt Pavement Design	3
<u>CIV ENG 5729</u>	Foundation Engineering II	3
<u>CIV ENG 5441</u>	Professional Aspects Of Engineering Practice	3
<u>CIV ENG 5445</u>	Construction Methods	3
<u>CIV ENG 5446</u>	Management Of Construction Costs	3
<u>CIV ENG 5449</u>	Engineering and Construction Contract Specifications	3

Justification for
request

General Education Credit Hour Requirements.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (04/09/25 11:22 am): Rollback: Rollback per General Education requirements should only be listed in the footnotes and plan of study grid.

Program Change Request

Date Submitted: 03/21/25 8:00 pm

Viewing: **BIO SC-BA : Biological Sciences BA**

Last approved: 10/25/24 3:23 pm

Last edit: 04/25/25 9:12 am

Changes proposed by: Crystal Wilson (wilsoncry)

Catalog Pages Using
this Program

[Biological Sciences](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Arts
Academic Level	Undergraduate
Program Code	BIO SC-BA
Department	Biological Sciences
Discipline	Biological Sciences
Title	

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

Approval Path

1. 03/23/25 9:41 am
David Duvernell (duvernell):
Approved for
RBIOLSCI Chair
2. 03/24/25 10:35 am
Jade McCain (jm558v): Approved
for CCC Secretary
3. 03/30/25 5:16 pm
Katie Shannon (shannonk):
Approved for
Sciences DSCC Chair
4. 04/10/25 2:56 pm
Jade McCain (jm558v): Rollback
to Sciences DSCC
Chair for Pending
CCC Agenda post
5. 04/25/25 9:12 am

Katie Shannon
(shannonk):
Approved for
Sciences DSCC Chair
6. 04/28/25 2:16 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

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)
9. Jun 10, 2021 by Katie Shannon
(shannonk)
10. Jun 14, 2022 by Katie Shannon
(shannonk)

- 11. Jun 30, 2022 by Jennifer Pohlsander (jpnfd)
- 12. Jun 30, 2022 by Evie Sherlock (esdk3)
- 13. Jun 1, 2023 by Jennifer Pohlsander (jpnfd)
- 14. Jun 2, 2023 by Jennifer Pohlsander (jpnfd)
- 15. Jul 5, 2024 by Crystal Wilson (wilsoncry)
- 16. Oct 25, 2024 by Katie Shannon (shannonk)

Biological Sciences BA

CIP Code 26.0101 - Biology/Biological Sciences, General.

Program Requirements and Description

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. General Requirements for the B.A. ~~courses~~ must fulfill the Missouri S&T general education requirements applicable to the student’s catalog year.

Core Courses		
<u>BIO SCI 1201</u>	Biological Sciences Freshman Seminar	1
<u>BIO SCI 1113</u>	General Biology	3
or <u>BIO SCI 1213</u>	Principles of Biology	

<u>BIO SCI 1219</u>	General Biology Lab	1
<u>BIO SCI 1223</u>	Biodiversity	3
<u>BIO SCI 1229</u>	Biodiversity Lab	1
<u>BIO SCI 2213</u>	Cell Biology	3
<u>BIO SCI 2219</u>	Cell Biology Laboratory	1
<u>BIO SCI 2223</u>	General Genetics	3
<u>BIO SCI 2263</u>	Ecology	3
<u>BIO SCI 3233</u>	Evolution	3
<u>BIO SCI 4010</u>	Seminar	1
Advanced courses, 2000 level or higher (at least one with laboratory and one 3000 or 4000 level)		9
Chemistry		
<u>CHEM 1310</u>	General Chemistry I	4
<u>CHEM 1319</u>	General Chemistry Laboratory	1
<u>CHEM 1320</u>	General Chemistry II	3
<u>CHEM 1100</u>	Introduction To Laboratory Safety & Hazardous Materials	1
<u>CHEM 2210</u>	Organic Chemistry I	3
<u>CHEM 2220</u>	Organic Chemistry II	3
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:)		
<u>COMP SCI 1570</u> & <u>COMP SCI 1580</u>	Introduction To C++ Programming and Introduction To Programming Laboratory	4
<u>COMP SCI 1971</u> & <u>COMP SCI 1981</u>	Introduction To Programming Methodology and Programming Methodology Laboratory	3
<u>STAT 3111</u>	Statistical Tools For Decision Making	3
<u>STAT 3425</u>	Introduction to Biostatistics	4
General Requirements for BA		
English Composition		

<u>ENGLISH 1120</u>	Exposition And Argumentation	3
One additional composition course		3
Western Civilizations		
<u>HISTORY 1100</u>	Early Western Civilization	3
<u>HISTORY 1200</u>	Modern Western Civilization	3
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:		
<u>CHEM 2219</u>	Organic Chemistry I Lab	1
<u>CHEM 2229</u>	Organic Chemistry II Lab	1
2 semesters of Physics and labs:		
<u>PHYSICS 1145</u>	College Physics I	4
or <u>PHYSICS 1135</u>	Engineering Physics I	
<u>PHYSICS 2145</u>	College Physics II	4
or <u>PHYSICS 2135</u>	Engineering Physics II	
The following classes are highly recommended:		
<u>BIO SCI 3333</u>	Human Anatomy and Physiology I	3
<u>BIO SCI 3343</u>	Human Anatomy and Physiology II	3
<u>BIO SCI 3359</u>	Physiology Lab	1

<u>CHEM 4610</u>	General Biochemistry	3
<u>PREMED 3010</u>	Communication Workshop for the Pre-Health Student	1
<h2>Bachelor of Arts</h2> <h2>Biological Sciences</h2> <h2>Secondary Education Emphasis Area</h2> <h2>Degree Requirements</h2>		
<p>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 anywhere in the state.</p> <p>Students interested in this emphasis area should consult with the advisor for biological sciences education majors in the biological sciences department.</p> <p>In order to successfully complete this emphasis area, students must 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. This program is approved by the Missouri Department of Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at https://teaching.missouri.edu/student/state-authorization/mst/licensure. Students must also meet all requirements listed under the teacher education website including passing the state-required assessments. A degree in this emphasis area requires <u>127</u> 128 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. <u>Humanities and Social Science courses for the B.A. must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.</u></p>		
Humanities: 18 semester hours		
<u>ENGLISH 1120</u>	Exposition And Argumentation	3
<u>ENGLISH 1160</u>	Writing And Research	3
or <u>ENGLISH 3560</u>	Technical Writing	
<u>SP&M S 1185</u>	Principles Of Speech	3
At least one course in each of the following: Literature, Philosophy and Fine Arts		9
Social Sciences: 15 semester hours		
<u>HISTORY 3530</u>	History of Science	3
<u>HISTORY 1100</u>	Early Western Civilization	3
<u>HISTORY 1200</u>	Modern Western Civilization	3

<u>POL SCI 1200</u>	American Government	3
<u>PSYCH 1101</u>	General Psychology	3
Mathematics/Physical Science: 9 semester hours		
<u>MATH 1103</u>	Fundamentals Of Algebra	3
<u>PHYSICS 1145</u>	College Physics I	3
or <u>PHYSICS 1505</u>	Introductory Astronomy	
<u>GEOLOGY 1110</u>	Physical and Environmental Geology	3
Computer Science/Statistics: 3 semester hours		
3 semester hours of Computer Science or Statistics		3
Chemistry: 15 semester hours		
<u>CHEM 1310</u>	General Chemistry I	4
<u>CHEM 1319</u>	General Chemistry Laboratory	1
<u>CHEM 1320</u>	General Chemistry II	3
<u>CHEM 1100</u>	Introduction To Laboratory Safety & Hazardous Materials	1
<u>CHEM 2210</u>	Organic Chemistry I	3
<u>CHEM 2220</u>	Organic Chemistry II	3
Biological Sciences: 26 semester hours		
<u>BIO SCI 1201</u>	Biological Sciences Freshman Seminar	1
<u>BIO SCI 1213</u>	Principles of Biology	3
or <u>BIO SCI 1113</u>	General Biology	
<u>BIO SCI 1219</u>	General Biology Lab	1
<u>BIO SCI 1223</u>	Biodiversity	3
<u>BIO SCI 1229</u>	Biodiversity Lab	1
<u>BIO SCI 1173</u>	Introduction to Environmental Sciences	3
<u>BIO SCI 2213</u>	Cell Biology	3
<u>BIO SCI 2219</u>	Cell Biology Laboratory	1
<u>BIO SCI 2223</u>	General Genetics	3
<u>BIO SCI 2263</u>	Ecology	3

<u>BIO SCI 3233</u>	Evolution	3
<u>BIO SCI 4010</u>	Seminar	1
Education: 41 semester hours		
EDUC 1040	Perspectives In Education	2
<u>EDUC 1074</u>	<u>Foundations of Education in a Diverse Society</u>	<u>3</u>
<u>EDUC 1104</u>	Teacher Field Experience I	1
<u>EDUC 1164</u>	Teacher Field Experience II	2
EDUC 1174	School Organization and Administration For Teachers	2
<u>EDUC 2310</u>	Education Of The Exceptional Child	3
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3216</u>	Instructional Literacy in the Content Area	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3
<u>EDUC 3298</u>	Teacher Field Experience III	1
<u>EDUC 3340</u>	Assessment of Student Learning	3
<u>EDUC 4298</u>	Student Teaching Seminar	1
<u>EDUC 4299</u>	Student Teaching	12
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
<u>PSYCH 2300/</u> <u>EDUC 2102</u>	Educational Psychology	3
<u>PSYCH 3310</u>	Developmental Psychology	3

Justification for
request

Updated Education course requirements to match previous CCC changes.

Gen Ed statements added

Attach Budget

System Approval
Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Jade McCain (jm558v) (04/10/25 2:56 pm): Rollback: Rollback per department needs to add Gen Ed. statement.

Program Change Request

Date Submitted: 04/10/25 4:25 pm

Viewing: **BIO SC-BS : Biological Sciences BS**

Last approved: 10/25/24 3:23 pm

Last edit: 04/10/25 4:25 pm

Changes proposed by: Katie Shannon (shannonk)

Catalog Pages Using
this Program

[Biological Sciences](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	BIO SC-BS
Department	Biological Sciences
Discipline	Biological Sciences
Title	

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

Approval Path

1. 04/10/25 4:27 pm
David Duvernell (duvernell): Approved for RBIOLSCI Chair
2. 04/11/25 11:37 am
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/25/25 9:16 am
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 04/28/25 2:16 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Aug 1, 2014 by Katie Shannon (shannonk)
2. Feb 1, 2016 by imorgan
3. Jun 18, 2018 by Katie Shannon (shannonk)
4. Jan 30, 2020 by Katie Shannon (shannonk)
5. Apr 28, 2020 by Katie Shannon (shannonk)
6. Feb 3, 2021 by Katie Shannon (shannonk)
7. Jun 14, 2022 by Katie Shannon (shannonk)
8. Apr 14, 2023 by Katie Shannon (shannonk)
9. Jun 1, 2023 by Jennifer Pohlsander (jpnfd)
10. Apr 30, 2024 by Katie Shannon (shannonk)
11. Oct 25, 2024 by Katie Shannon (shannonk)

Biological Sciences BS

CIP Code

Program Requirements and Description

Bachelor of Science

Biological Sciences

Degree Requirements

A minimum of 120 credit hours is required for a Bachelor of Science degree in Biological Science.

A minimum grade of "C" is required for each Biological Science course used to fulfill the B.S. degree requirements.

Humanities and Social Science courses must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

These requirements for the B.S. degree are in addition to credit that is received for basic ROTC.

The Biological Science B.S. degree must include 48 semester hours of biological sciences course work, to include:

<u>BIO SCI 1201</u>	Biological Sciences Freshman Seminar	1
<u>BIO SCI 1113</u>	General Biology	3
or <u>BIO SCI 1213</u>	Principles of Biology	
<u>BIO SCI 1219</u>	General Biology Lab	1
<u>BIO SCI 1223</u>	Biodiversity	3
<u>BIO SCI 1229</u>	Biodiversity Lab	1
<u>BIO SCI 2213</u>	Cell Biology	3
<u>BIO SCI 2219</u>	Cell Biology Laboratory	1
<u>BIO SCI 2223</u>	General Genetics	3
<u>BIO SCI 2263</u>	Ecology	3
<u>BIO SCI 3233</u>	Evolution	3
<u>BIO SCI 4010</u>	Seminar	1

Advanced biological sciences or approved course work in other departments for a total of 48 credit hours of biology-related classes to include at least two laboratory courses from the following:

<u>BIO SCI 2242</u>	Cave Biology	2
<u>BIO SCI 2252</u>	Vegetation of the Ozarks	2
<u>BIO SCI 2264</u>	Field Ecology	2
<u>BIO SCI 2389</u>	Plant Biology Laboratory	1
<u>BIO SCI 3319</u>	Microbiology Lab	2

<u>BIO SCI 3353</u>	Comparative Vertebrate Anatomy	4
<u>BIO SCI 3359</u>	Physiology Lab	1
<u>BIO SCI 4099</u>	Undergraduate Research (minimum 2 hours)	1-3
<u>BIO SCI 4329</u>	Molecular Genetics Laboratory	2
<u>BIO SCI 4369</u>	Freshwater Ecology Laboratory	1
<u>BIO SCI 5453</u>	Forest Insect Diversity & Ecology	2
<u>BIO SCI 5523</u>	Ichthyology	4
17 semester hours of chemistry to include general chemistry		
<u>CHEM 1310</u>	General Chemistry I	4
<u>CHEM 1319</u>	General Chemistry Laboratory	1
<u>CHEM 1320</u>	General Chemistry II	3
<u>CHEM 1100</u>	Introduction To Laboratory Safety & Hazardous Materials	1
<u>CHEM 2210</u>	Organic Chemistry I	3
<u>CHEM 2219</u>	Organic Chemistry I Lab	1
<u>CHEM 2220</u>	Organic Chemistry II	3
<u>CHEM 2229</u>	Organic Chemistry II Lab	1
2 semesters of College (Engineering) Physics and labs		
<u>PHYSICS 1145</u>	College Physics I	4
or <u>PHYSICS 1135</u>	Engineering Physics I	
<u>PHYSICS 2145</u>	College Physics II	4
or <u>PHYSICS 2135</u>	Engineering Physics II	
Math and Statistics		
<u>STAT 3425</u>	Introduction to Biostatistics	4
<u>MATH 1211</u>	Calculus I-B	4
or <u>MATH 1212</u>	Survey of Calculus	
or <u>MATH 1214</u>	Calculus I	
12 semester hours of humanities, excluding foreign language, and to include:		12
<u>ENGLISH 1120</u> & <u>ENGLISH 1160</u>	Exposition And Argumentation and Writing And Research (entering students will normally take ENGLISH	

1120 either semester of the first year)	
9 hours of social sciences, to include:	9
<u>HISTORY 1200</u>	Modern Western Civilization (or equivalent)
or <u>HISTORY 1300</u>	American History To 1877
or <u>HISTORY 1310</u>	American History Since 1877
or <u>POL SCI 1200</u>	American Government
Elective credits: In consultation with his or her advisor, each student will elect sufficient additional courses to complete a minimum of 120 credit hours.	

Justification for
request
adding Gen Ed requirement language

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 04/03/25 9:40 am

Viewing: **BIOMED-BS : Biomedical Engineering BS**

Last approved: 02/15/25 7:17 am

Last edit: 04/11/25 2:23 pm

Changes proposed by: Christi Luks (luksc)

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

Rationale for
Supporting

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	BIOMED-BS
Department	Chemical and Biochemical Engineering
Discipline	Chemical Engineering
Title	

In Workflow

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

Approval Path

1. 04/10/25 3:02 pm
Hu Yang (huyang):
Approved for
RCHEMENG Chair
2. 04/11/25 1:57 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 8:07 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:17 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Apr 30, 2024 by
Christi Luks (luksc)
2. Nov 25, 2024 by
Christi Luks (luksc)
3. Feb 15, 2025 by
Crystal Wilson
(wilsoncry)

Biomedical Engineering BS

CIP Code

Intended Audience

Program-Specific
Admission

Program Requirements and Description

~~Bachelor of Science Biomedical Engineering~~ Bachelor of Science

Biomedical Engineering

The biomedical engineering program at Missouri S&T is designed to prepare students for engineering careers in the health and life-sciences field. The two tracks focus on biomanufacturing and on biomaterials and can be customized to accommodate students preparing for medical school. The interdisciplinary program will equip graduates with the knowledge and skills required to excel in career paths in biotechnology, biomedical device development, pharmaceutical manufacturing, and healthcare management.

For the bachelor of science degree in biomedical engineering a minimum of 129 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry and basic ROTC courses. An average of at least two grade points per credit hour (equivalent to a grade of C) must be attained. At least two grade points per credit hour must also be attained in all courses taken in biomedical engineering (BME), chemical engineering (Chem Eng), and materials science and engineering (MS&E).

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

and must be chosen according to the following rules: All students are required to take one American history course, one economics course, one humanities course, and ENGLISH 1120. The history course is to be selected from HISTORY 1200, HISTORY 1300, HISTORY 1310, or POL SCI 1200. The economics course may be either ECON 1100 or ECON 1200. The humanities course must be selected and meet the requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog. Depth requirement. Three credit hours must be taken in humanities or social sciences at the 2000 level or above and must be selected from the approved list. This course must have as a prerequisite one of the humanities or social sciences courses already taken. Foreign language courses numbered 1180 will be considered to satisfy this requirement. Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 3000 level or above. All courses taken to satisfy the depth requirement must be taken after graduating from high school. The remaining courses are to be chosen and meet the requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog and may include one communications course in addition to ENGLISH 1120. Any specific departmental requirements in the general studies area must be satisfied and meet the requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog. The prerequisites for the upper level course must be completed with a passing grade. Special topics, special problems, and honors seminars are allowed only by petition to and approval by the student's department chairman. Biomedical engineering and chemical engineering majors are encouraged to take the fundamentals of engineering exam prior to graduation. It is the first step toward becoming a registered professional engineer. Students pursuing a pre-med minor should consider taking BIO SCI 1113 and BIO SCI 1219 (4 cr. hr.) in year 1, which will count as a track elective. The general education elective may ~~ECON 1100 or ECON 1200 can~~ be taken in a later semester.

Biomedical Engineering

Biomanufacturing Track

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u>	1	<u>CHEM 1320</u>	3
<u>CHEM 1100</u>	1	<u>COMP SCI 1500</u> or <u>1972 and 1982</u>	3
<u>CHEM 1310</u>	4	<u>MATH 1215</u> ⁴	4
<u>CHEM 1319</u>	1	<u>PHYSICS 1135</u>	4
<u>MATH 1214</u> or <u>1211</u> ⁴	4	<u>ECON 1100 or 1200</u>	3
<u>ENGLISH 1120</u>	3	<u>Gen.Ed. Elective</u> ²	<u>3</u>
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3		
	17		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 2100</u> ¹	4	<u>CHEM ENG 2110</u> ¹	3
<u>MATH 2222</u>	4	<u>CHEM ENG 3210</u>	3
<u>PHYSICS 2135</u>	4	<u>CHEM 2210</u>	3
<u>BIO SCI 2213</u>	3	<u>CHEM 2219</u>	1

<u>BIO SCI 2219</u>	1	<u>MATH 3304</u>	3
		Track Elective ³	3
	16		16
Junior Year			
First Semester	Credits	Second Semester	Credits
<u>BME 3100</u>	4	<u>CHEM ENG 3150</u>	3
<u>CHEM ENG 3120</u> ¹	3	Track Elective ³	3
<u>BIO SCI 3333</u>	3	Track Elective ³	3
<u>BIO SCI 3359</u>	1	SP&M S 1185	3
<u>SP&M S 1185</u> ⁵	<u>3</u>	<u>ENGLISH 3560</u> ⁵	<u>3</u>
<u>STAT 3425</u>	4	<u>PHILOS 3223</u> ⁵	<u>3</u>
PHILOS 3223	3		
	18		15
Senior Year			
First Semester	Credits	Second Semester	Credits
<u>BME 4091</u>	3	<u>BME 4097</u> ²	3
<u>CHEM ENG 4201</u>	3	<u>BME 5300</u>	3
<u>CHEM ENG 4241</u>	3	<u>CHEM ENG 4210</u>	3
<u>CHEM ENG 5250</u>	3	<u>CHEM ENG 4220</u>	3
<u>MS&E 5210</u>	3	Upper Level Humanities or Social Science	3
		Elective	
		<u>Gen.Ed. Elective</u> ²	<u>3</u>
	15		15

Total Credits: 129

Note: The minimum number of hours required for a degree in biomedical engineering is 129.

1.

=

A grade of "C" or better is required in CHEM ENG 2100 & CHEM ENG 2110 in order to enroll in CHEM ENG 3120.

2.

=

Gen.Ed. electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

3.

=

A minimum of 9 cr. hr. from BIO SCI 1113 and BIO SCI 1219, or BIO SCI 2223, or BIO SCI 3783, or BIO SCI 4353, or BIO SCI 4373, or CHEM 2220 and CHEM 2229, or CHEM ENG 3131, or CHEM ENG 3141, or CHEM ENG 4110 or BME 5100, or BME 5200, or BME 4099, or any class from the approved list published on the Chemical Engineering web site. Only 3 cr. hr. of BME 4099 may be used.

4.

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MATH 1208 or MATH 1210 and MATH 1211 may be substituted for MATH 1214. MATH 1221 may be substituted for MATH 1215.

5.

=

Gen.E. discipline-specific required course

~~1 A grade of "C" or better is required in CHEM ENG 2100 & CHEM ENG 2110 in order to enroll in~~

~~CHEM ENG 3120.2 Communications emphasized course (See bachelor of science degree, general education communications requirement). 3A minimum of 9 cr. hr. from BIO SCI 1113 and BIO SCI 1219, or BIO SCI 2223, or BIO SCI 3783, or BIO SCI 4353, or BIO SCI 4373, or CHEM 2220 and CHEM 2229, or CHEM ENG 3131, or CHEM ENG 3141, or CHEM ENG 4110, or BME 5100, or BME 5200, or BME 4099, or any class from the approved list published on the Chemical Engineering website. Only 3 cr. hr. of BME 4099 may be used. 4MATH 1208 or MATH 1210 and MATH 1211 may be substituted for MATH 1214. MATH 1221 may be substituted for MATH 1215.~~

Biomedical Engineering

Biomaterials Track

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u>	1	<u>CHEM 1320</u>	3
<u>CHEM 1100</u>	1	<u>COMP SCI 1500</u> or <u>1972</u> and <u>1982</u>	3
<u>CHEM 1310</u>	4	<u>MATH 1215</u> ³	4
<u>CHEM 1319</u>	1	<u>PHYSICS 1135</u>	4
<u>MATH 1214</u> or <u>1211</u> ³	4	<u>SP&M S 1185</u> ⁴	<u>3</u>
<u>ENGLISH 1120</u>	3		
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3		
	17		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CER ENG 2210</u>	2	<u>CER ENG 3230</u>	3
<u>CHEM 2210</u>	3	<u>CIV ENG 2200</u>	3
<u>MATH 2222</u>	4	<u>CHEM 2220</u>	3
<u>PHYSICS 2135</u>	4	<u>MATH 3304</u>	3
<u>BIO SCI 2213</u>	3	<u>STAT 3425</u>	4
<u>BIO SCI 2219</u>	1		
	17		16

Junior Year

First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 3210</u>	3	CER ENG 3220	3
<u>BME 3100</u>	4	<u>MS&E 5210</u>	3
<u>BME 4100</u>	3	<u>MS&E 4810</u>	<u>3</u>
<u>BIO SCI 3333</u>	3	<u>ENGLISH 3560</u> ⁴	<u>3</u>
<u>BIO SCI 3359</u>	1	<u>PHILOS 3223</u> ⁴	<u>3</u>
ECON 1100 or 1200	3	Track Elective ²	3
<u>Gen.Ed. Elective</u> ¹	<u>3</u>	SP&M S 1185	3
	17		15

Senior Year

First Semester	Credits	Second Semester	Credits
<u>BME 4091</u>	3	<u>BME 4097</u> ¹	3

<u>MS&E 5310</u>	3	<u>BME 5100</u>	3
Track Elective ²	3	<u>BME 5200</u>	3
PHILOS 3223	3	<u>BIO SCI 3783</u>	3
Upper Level Humanities or Social Science Elective	3	Track Elective ²	3
<u>Track Elective²</u>	<u>3</u>	Track Elective²	3
<u>Gen.Ed. Elective¹</u>	<u>3</u>		
	15		15

Total Credits: 129

Note: The minimum number of hours required for a degree in biomedical engineering is 129.

1.

=

Gen.Ed. electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

2.

=

A minimum of 12 cr. hr. of track electives. At least 3 must be selected from CHEM ENG 5250 or ELEC ENG 2100 and ELEC ENG 2101 or ELEC ENG 2200 and ELEC ENG 2201 or BME 4099. The remaining 9 cr. hr. may be from that list or BIO SCI 1113 and BIO SCI 1219 or BIO SCI 4383 or BIO SCI 4666 or BIO SCI 5533 or CHEM 2219 or CHEM 2229. Only 3 cr. hr. of BME 4099 may be used.

3.

=

MATH 1208 or MATH 1210 and MATH 1211 may be substituted for MATH 1214. MATH 1221 may be substituted for MATH 1215.

4.

=

Gen.Ed. discipline-specific required course.

~~1Communications emphasized course (See bachelor of science degree, general education communications requirement). 2A minimum of 12 cr. hr. of track electives. At least 3 must be selected from CHEM ENG 5250 or MS&E 4810 or MS&E 5810 or ELEC ENG 2100 and ELEC ENG 2101 or ELEC ENG 2200 and ELEC ENG 2201 or BME 4099. The remaining 9 cr. hr. may be from that list or BIO SCI 1113 and BIO SCI 1219 or BIO SCI 4383 or BIO SCI 4666 or BIO SCI 5533 or CHEM 2219 or CHEM 2229. Only 3 cr. hr. of BME 4099 may be used. 3 MATH 1208 or MATH 1210 and MATH 1211 may be substituted for MATH 1214. MATH 1221 may be substituted for MATH 1215.~~

Justification for
request

Updated for new general education requirements and switched a track elective course to be required at the request of the MS&E faculty. Rearranged courses so that Philos 3223 is in the Spring and semester workload is better balanced.

Note: The footnotes in this file are not editable in the same way as for older programs, so they

may need to be revised. I don't know how to do that.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting Documents

<u>MDHE Approval Letter _S&T_ October 2023.pdf</u>
<u>mstbsbiomedicaleng.pdf</u>
<u>Biomedical Engineering BS- Email Steve Raper.pdf</u>
<u>FlowchartsBME.pdf</u>
<u>MDHE Approval Letter _ST_ October 2023 CORRECTED.pdf</u>

Reviewer

Comments

Jade McCain (jm558v) (04/11/25 12:29 pm): Corrected footnote formatting.

Program Change Request

Date Submitted: 04/11/25 12:44 pm

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

Last approved: 07/15/24 8:25 am

Last edit: 04/11/25 2:30 pm

Changes proposed by: Cecil Eng Huang Chua (cecq8z)

Catalog Pages Using
this Program

[Business and Management Systems](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	BUS&MS-BS
Department	Business and Information Tech
Discipline	Business
Title	

In Workflow

1. RBUS&IT 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

Approval Path

1. 04/11/25 9:40 am
Cassie Elrod (cassa): Rollback to Initiator
2. 04/11/25 12:48 pm
Cassie Elrod (cassa): Approved for RBUS&IT Chair
3. 04/11/25 2:31 pm
Jade McCain (jm558v): Approved for CCC Secretary
4. 04/11/25 4:39 pm
Cecil Eng Huang Chua (cchua): Approved for Social Sciences DSCC Chair
5. 04/28/25 2:17 pm
Jade McCain (jm558v): Approved for Pending CCC

History

1. Aug 5, 2014 by
barryf
2. Jan 30, 2015 by
barryf
3. Jun 17, 2015 by
pantaleoa
4. Jul 14, 2015 by
pantaleoa
5. Mar 7, 2016 by
barryf
6. Nov 2, 2018 by
barryf
7. Jun 10, 2021 by
Cecil Eng Huang
Chua (cchua)
8. Jun 14, 2024 by
Cassie Elrod (cassa)
9. Jul 15, 2024 by
Crystal Wilson
(wilsoncry)

Business and Mgmt Systems BS

CIP Code 52.9999 - Business, Management, Marketing,
and Related Support Services, Other.

Program Requirements and Description

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 Business and Information Technology helps provide students with

skills to succeed in a fast-changing and globalized environment. Business Core courses with Business and Information Technology Electives provide students with comprehensive knowledge in technological business disciplines.

A minimum grade of "C" is required in the courses designated accordingly.

Students have 9 credit hours for free electives.

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>BUS 1110</u>	3	<u>IS&T 1750</u>	3
<u>BUS 1810</u>	1	<u>ENGLISH 2560</u> (or TECHCOM 2560) ³	3
<u>PSYCH 1101</u> ³	3	<u>MATH 1212</u>	4
<u>ENGLISH 1120</u> ³	3	<u>MATH 1210</u> ³	5
Mathematical Science or Science Elective ¹	4	<u>POL SCI 1200</u> ³	3
<u>Science Elective</u> ^{1,3}	3	Science Elective ^{1,3}	3
<u>Science Lab</u> ³	1		
	14		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>BUS 1210</u>	3	<u>ERP 2110</u>	3
<u>IS&T 1551</u>	3	<u>FINANCE 2150</u>	3
<u>ECON 1200</u> ³	3	<u>IS&T 1552</u>	3
<u>SP&M S 1185</u> ³	3	<u>IS&T 4654</u>	3
Mathematical Science or Science Elective ¹	3	<u>ECON 1100</u> ³	3
<u>Free Elective</u>	3		
	15		15

Junior Year

First Semester	Credits	Second Semester	Credits
<u>BUS 3220</u>	3	<u>BUS 2910</u>	3
<u>MKT 3110</u>	3	<u>BUS 5580</u>	3
<u>STAT 3111</u> or <u>1115</u>	3	<u>BUS 5730</u>	3
Business Electives	6	Business Elective	3
		Free Elective	3
	15		15

Senior Year

First Semester	Credits	Second Semester	Credits
<u>BUS 5111</u>	3	<u>BUS 5360</u>	3
<u>FINANCE 5310</u>	3	<u>BUS 5980</u>	3
<u>MKT 5310</u> or <u>BUS 5150</u>	3	Business Elective	3
Business Elective	3	Fine Art, Social Science, or Humanities <u>Elective</u> ³	3
Free Elective	3	<u>Fine Art, or Humanities Elective</u> ^{2,3}	3
		Free Elective	2

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](#), [FINANCE 2150](#), [FINANCE 5310](#), [MKT 3110](#), [MKT 5310](#) or [BUS 5150](#), [ECON 1100](#), [ECON 1200](#), [BUS 1110](#), [BUS 1210](#), [BUS 2910](#), [BUS 3220](#), [BUS 5111](#), [BUS 5360](#), [BUS 5580](#), [BUS 5730](#), [BUS 5980](#), and all Business Electives (any BUS, ERP, FINANCE, MKT or IST designated course at the 3000-level or above).

1

Any course in two of the following areas: Biology, Chemistry, Geology, or Physics.

2

Any course in the following areas: Art, history, music, or theater.

3

General education discipline required course. These fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

Bachelor of Science

Business and Management Systems

Military Science and Leadership Emphasis Area

Degree Requirements

You may earn a B.S. degree in business and management systems from Missouri S&T with an emphasis in Military Science as a member of the Army ROTC Program at Missouri S&T. This program can be completed in four academic years.

Students interested in this emphasis area should consult with an advisor for business and management systems degree program in the business and information technology department.

In order to successfully complete this emphasis area, students must maintain a cumulative GPA of at least 2.0.

Current Missouri S&T or transfer students who wish to pursue this emphasis area must meet this GPA requirement to be eligible for the emphasis area.

~~A degree in this emphasis area requires 123 credit hours.~~ 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 and/or emphasis area.

Successful completion of coursework in a minor ~~The courses~~ listed below will count as ~~are required for~~ the corresponding number of credit hours in the Military Science ~~military science~~ and Leadership Emphasis Area. ~~leadership emphasis.~~ These courses are in lieu ~~of 15 credit hours of "business electives" and 9 credit hours of business/free/humanities electives in the Business and Management Systems Bachelor~~ "free electives" in the traditional business and management systems bachelor of Science ~~science~~ curriculum.

~~An additional 3 credit hours of courses will be required for a total of 27 credit hours in Military Science.~~

Military Aerospace Minor (12 credit hours)

~~MIL ARMY 2500 Foundations of Tactical Leadership MIL ARMY 3250 Adaptive Tactical~~

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 is approved by the Missouri Department of Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at <https://teaching.missouri.edu/student/state-authorization/mst/licensure>.

~~This program can be completed in four academic years and field experiences are arranged with public schools anywhere in the state.~~

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

In order to successfully complete this emphasis area, students must maintain at least a 2.5 ~~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. ~~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.~~ To be eligible for student teaching and certification, students must have a 2.5 content GPA and a 3.0 education GPA. Students must also pass the appropriate content assessment. 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 136 credit hours.

The required courses for a secondary education emphasis with the Bachelor ~~are listed below. A minimum grade of~~ Science in Business and Management Systems degree are listed below. A minimum grade of "C" is required by ~~the~~ the department in all courses designated BUS, MKT, FINANCE, IS&T, ECON, or ERP that are counted toward this degree. ~~General~~

Education

EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
<u>EDUC 1074</u>	<u>Foundations of Education in a Diverse Society</u>	<u>3</u>
<u>EDUC 1104</u>	Teacher Field Experience I	1
<u>EDUC 1164</u>	Teacher Field Experience II	2

<u>EDUC 2310</u>	Education Of The Exceptional Child	3
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3216</u>	Instructional Literacy in the Content Area	3
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3
<u>EDUC 3290</u>	Coordination of Cooperative Education	3
<u>EDUC 3298</u>	Teacher Field Experience III	1
<u>EDUC 3340</u>	Assessment of Student Learning	3
<u>EDUC 4298</u>	Student Teaching Seminar	1
<u>EDUC 4299</u>	Student Teaching	12
<u>PSYCH 2300</u>	<u>Educational Psychology</u>	<u>3</u>
<u>PSYCH 3310</u>	<u>Developmental Psychology</u>	<u>3</u>
Common Core Courses and Management Education		
BUS 1110	Introduction to Management and Entrepreneurship	3
BUS 1210	Financial Accounting	3
BUS 2910	Business Law	3
BUS 3220	Managerial Accounting	3
BUS 5111	Business Negotiations	3
BUS 5360	Business Operations	3
BUS 5580	Strategic Management	3
BUS 5730	Machine Learning and Artificial Intelligence for Business	3
BUS 5980	Business Models for Entrepreneurship and Innovation	3
ERP 2110	Introduction to Enterprise Resource Planning	3
FINANCE 2150	Corporate Finance I	3
FINANCE 5310	Financial Technology and Analytics	3
IS&T 1551	Implementing Information Systems: User Perspective	3
IS&T 1552	Implementing Information Systems: Data Perspective	3
IS&T 1750	Introduction to Management Information Systems	3
MKT 3110	Marketing	3

MKT 5310	Digital Marketing and Promotions	3
¹ Any course in the following areas: Biology, Chemistry, Geology, Geological Engineering, Physics²		
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		
PSYCH 1101	General Psychology	3
PSYCH 2300	Educational Psychology	3
PSYCH 3310	Developmental Psychology	3
Science Elective¹		3
Mathematical Science or Science²		7
Fine Art, Social Science or Humanities Elective³		3
ECON 1100	Principles Of Microeconomics	3
ECON 1200	Principles Of Macroeconomics	3
POL SCI 1200	American Government	3
MATH 1212	Survey of Calculus	4
STAT 3111	Statistical Tools For Decision Making	3
or STAT 1115	Statistics For The Social Sciences I	
ENGLISH 1120	Exposition And Argumentation	3
IS&T 4654	Introduction to Web Design and Digital Media Studies	3

Justification for
request

Updated Education course requirements to match previous CCC changes. Change in GenEd requirements. Revision based on discussion with MATH department.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting Documents [MDHE Approval Letter _S&T_ April 2024.pdf](#)
[New Emphasis-BIT-Mil Sci and Leadership.pdf](#)

Reviewer

Comments

Cassie Elrod (cassa) (04/11/25 9:40 am): Rollback: More degree changes needed after Jade updated the Teacher Ed emphasis changes were entered.

Jade McCain (jm558v) (04/11/25 2:30 pm): Added content GPA statement per department request.

Program Change Request

Date Submitted: 04/03/25 9:28 am

Viewing: **CH ENG-BS : Chemical Engineering BS**

Last approved: 12/13/24 11:43 am

Last edit: 04/22/25 9:05 am

Changes proposed by: Christi Luks (luksc)

Catalog Pages Using
this Program

[Chemical & Biochemical Engineering](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	CH ENG-BS
Department	Chemical and Biochemical Engineering
Discipline	Chemical Engineering
Title	

In Workflow

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

Approval Path

1. 04/03/25 9:32 am
Hu Yang (huyang):
Approved for
RCHEMENG Chair
2. 04/11/25 2:33 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 8:15 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:18 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Mar 18, 2014 by
Lahne Black (lahne)
2. May 2, 2014 by
Lahne Black (lahne)
3. Jan 30, 2015 by
kleb6b
4. Jul 15, 2015 by
pantaleoa
5. Jul 15, 2015 by
pantaleoa
6. Nov 18, 2015 by
marlene
7. Mar 7, 2016 by
Daniel Forciniti
(forcinit)
8. Mar 27, 2017 by
Daniel Forciniti
(forcinit)
9. May 3, 2018 by
Daniel Forciniti
(forcinit)
10. May 7, 2018 by
ershenb
11. May 7, 2018 by
ershenb
12. May 7, 2018 by
ershenb
13. Jul 3, 2018 by
ershenb
14. Nov 2, 2018 by Jee
C. Wang (jcwang)
15. Jan 29, 2019 by Jee
C. Wang (jcwang)
16. Jan 30, 2019 by
ershenb
17. Jan 30, 2019 by
ershenb
18. Mar 3, 2020 by

ershenb

19. May 5, 2021 by
Christi Luks (luksc)
20. Apr 6, 2022 by
Christi Luks (luksc)
21. Oct 25, 2024 by
Christi Luks (luksc)
22. Dec 13, 2024 by
Crystal Wilson
(wilsoncry)
23. Dec 13, 2024 by
Jade McCain
(jm558v)
24. Dec 13, 2024 by
Jade McCain
(jm558v)

Chemical Engineering BS

CIP Code

Program Requirements and Description

Bachelor of Science Chemical Engineering

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

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

Chemical engineering majors are encouraged to take the fundamentals of engineering exam prior to graduation. It is the first step toward becoming a registered professional engineer.

Freshman Year

First Semester

FR ENG 1100

Credits

1

Second Semester

MECH ENG 1720

Credits

3

<u>CHEM 1310</u>	4	<u>CHEM 1320</u>	3
<u>CHEM 1319</u>	1	<u>COMP SCI 1500</u>	3
<u>ENGLISH 1120</u>	3	OR	
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3	<u>COMP SCI 1972</u> & <u>COMP SCI 1982</u>	
<u>MATH 1214</u> or <u>1211</u> ⁶	4	<u>MATH 1215</u> ⁶	4
<u>CHEM 1100</u>	1	<u>PHYSICS 1135</u>	4
	17		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 2100</u> ¹	4	<u>CHEM ENG 2110</u> ¹	3
<u>CHEM 2210</u>	3	Science Elective ⁴	4
<u>MATH 2222</u>	4	<u>MATH 3304</u>	3
<u>PHYSICS 2135</u>	4	<u>STAT 3113</u> or <u>3115</u>	3
		Humanities and Social Sciences Elective⁴	3
		<u>Gen.Ed. Elective²</u>	<u>3</u>
	15		16
Junior Year			
First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 3101</u>	4	<u>CHEM ENG 3131</u>	3
<u>CHEM ENG 3111</u>	3	<u>CHEM ENG 3141</u>	3
<u>CHEM ENG 3120</u> ¹	3	<u>CHEM ENG 3150</u>	3
ECON 1100 or 1200	3	<u>SP&M S 1185</u> ³	3
Upper level Humanities or Social Science Elective⁴	3	<u>ENGLISH 3560</u> ³	3
<u>Gen.Ed. Elective²</u>	<u>3</u>		
<u>Gen.Ed. Elective²</u>	<u>3</u>		
	16		15
Senior Year ³			
First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 4091</u>	3	<u>CHEM ENG 4097</u>	3
<u>CHEM ENG 4101</u>	3	<u>CHEM ENG 4130</u>	3
<u>CHEM ENG 4110</u>	3	<u>CHEM ENG 4311</u>	1
<u>CHEM ENG 4241</u>	3	CHEM ENG 5XXX-Chem Eng Elective ⁵	3
CHEM ENG 5XXX-Chem Eng Elective ⁵	3	Chem Eng 5xxx--Chem Eng Elective⁶	3
<u>CHEM ENG 4301</u>	1	Chem Eng 5xxx--Chem Eng Elective⁶	3
		<u>CHEM ENG 5XXX-Chem Eng Elective⁵</u>	<u>3</u>
		<u>CHEM ENG 5XXX-Chem Eng Elective⁵</u>	<u>3</u>
	16		16

Total Credits: 128

~~Each student's program of study must contain a minimum of 21 credit hours of course work in general~~

~~education and must be chosen according to the following rules: All students are required to take one American history course, one economics course, one humanities course, and ENGLISH 1120. The history course is to be selected from HISTORY 1200, HISTORY 1300, HISTORY 1310, or POL SCI 1200. The economics course may be either ECON 1100 or ECON 1200. The humanities course must be selected and meets the requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog. Depth requirement. Three credit hours must be taken in humanities or social sciences at the 1000 level or above and must be selected from the approved list. This course must have as a prerequisite one of the humanities or social sciences courses already taken. Foreign language courses numbered 1180 will be considered to satisfy this requirement. Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 3000 level or above. All courses taken to satisfy the depth requirement must be taken after graduating from high school. The remaining two courses are to be chosen and meets the requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog and may include one communications course in addition to ENGLISH 1120. Any specific departmental requirements in the general studies area must be satisfied and meets the requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog. Special topics and special problems and honors seminars are allowed only by petition to and approval by the student's department chairman.~~ **Note:** The minimum number of hours required for a degree in chemical engineering is 128.

A cumulative grade point average of 2.50 or better and a "C" or better in [CHEM 1310](#), [CHEM 1319](#), [CHEM 1320](#), [MATH 1214](#), [MATH 1215](#) and [PHYSICS 1135](#) are required to be admitted into the chemical engineering major. [MATH 1208](#) or [MATH 1210](#) and [MATH 1211](#) may be substituted for [MATH 1214](#). [MATH 1221](#) may be substituted for [MATH 1215](#).

1

A grade of "C" or better is required in [CHEM ENG 2100](#) & [CHEM ENG 2110](#) in order to enroll in [CHEM ENG 3120](#) .

2

Gen.Ed. electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

3

Gen.Ed. discipline-specific required course.

4

[CHEM 2510](#), or [CHEM 4610](#) and [CHEM 4619](#), or [BIO SCI 2213](#) and [BIO SCI 2219](#) or [CHEM 2220](#) and [CHEM 2219](#), or [BIO SCI 3313](#) and [BIO SCI 3319](#), or [CHEM 3420](#) and [CHEM 2459](#).

5

A minimum of 12 cr. hr. from any Chem Eng 5xxx or BME 5xxx and any class from the approved list published on the Chemical Engineering web site but only 3 cr. hr. of [CHEM ENG 4000](#), [CHEM ENG 4099](#) . Students may have no more than three hours from approved out-of-department electives.

6

[MATH 1208](#) or [MATH 1210](#) and [MATH 1211](#) may be substituted for [MATH 1214](#) [MATH 1221](#) may be substituted for [MATH 1215](#).

7

~~[MATH 1208](#) or [MATH 1210](#) and [MATH 1211](#) may be substituted for [MATH 1214](#) [MATH 1221](#) may be substituted for [MATH 1215](#).~~

Chemical Engineering

Biochemical Engineering Emphasis

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u>	1	<u>MECH ENG 1720</u>	3
<u>CHEM 1310</u>	4	<u>COMP SCI 1500</u>	3
<u>CHEM 1319</u>	1	OR	
<u>ENGLISH 1120</u>	3	<u>COMP SCI 1972</u>	
		& <u>COMP SCI 1982</u>	
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3	<u>CHEM 1320</u>	3
<u>MATH 1214</u> or <u>1211</u> ⁵	4	<u>MATH 1215</u> ⁵	4
<u>CHEM 1100</u>	1	<u>PHYSICS 1135</u>	4
	17		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 2100</u> ¹	4	<u>CHEM ENG 2110</u> ¹	3
<u>CHEM 2210</u>	3	<u>STAT 3113</u> or <u>3115</u>	3
<u>MATH 2222</u>	4	Science Elective ⁴	4
<u>PHYSICS 2135</u>	4	<u>MATH 3304</u>	3
		ECON 1100 or 1200	3
		<u>Gen.Ed. Elective</u> ²	<u>3</u>
	15		16

Junior Year

First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 3101</u>	4	<u>CHEM ENG 3131</u>	3
<u>CHEM ENG 3111</u>	3	<u>CHEM ENG 3141</u>	3
<u>CHEM ENG 3120</u> ¹	3	<u>CHEM ENG 3150</u>	3
<u>SP&M S 1185</u> ³	3	<u>ENGLISH 3560</u> ³	3
Science Elective ⁴	4	<u>CHEM ENG 5250</u>	3
	17		15

Senior Year³

First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 4091</u>	3	<u>CHEM ENG 4097</u> ²	3
<u>CHEM ENG 4110</u>	3	<u>CHEM ENG 4220</u>	3
<u>CHEM ENG 4201</u>	3	<u>CHEM ENG 4241</u>	3
Upper Level Humanities or Social Sciences Elective ⁴	3	Humanities or Social Science Elective ⁴	3

<u>CHEM ENG 4210</u>	3	<u>CHEM ENG 4311</u>	1
<u>CHEM ENG 4301</u>	1	Science Elective ⁴	4
<u>Gen.Ed. Elective²</u>	<u>3</u>	<u>Gen.Ed. Elective²</u>	<u>3</u>
	16		17

Total Credits: 130

Note: The minimum number of hours required for a degree in chemical engineering with an emphasis in biochemical engineering is 130.

A cumulative grade point average of 2.50 or better and a "C" or better in CHEM 1310, CHEM 1319, CHEM 1320, MATH 1214, MATH 1215 and PHYSICS 1135 are required to be admitted into the chemical engineering major.

1

A grade of "C" or better is required in CHEM ENG 2100 & CHEM ENG 2110 in order to enroll in CHEM ENG 3120.

2

Gen. Ed. electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

3

Gen. Ed. discipline-specific required course

4

A minimum of 12 credit hours in Science Electives are required. Select three courses from CHEM 2220, CHEM 4610, CHEM 4620, BIO SCI 2213, BIO SCI 3313, and BIO SCI 4323; and a minimum of two laboratory courses from CHEM 2229 or CHEM 2219, CHEM 4619, BIO SCI 2219, BIO SCI 3319, and BIO SCI 4329.

5

MATH 1208 or MATH 1210 and MATH 1211 may be substituted for MATH 1214. MATH 1221 may be substituted for MATH 1215.

6

~~MATH 1208 or MATH 1210 and MATH 1211 may be substituted for MATH 1214. MATH 1221 may be substituted for MATH 1215.~~

Justification for

request

New general education requirements incorporated

Updated to include Biomedical Engineering courses as technical electives

Attach Budget

System Approval

Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Jade McCain (jm558v) (04/22/25 9:05 am): Removed Chem Eng 4099H due to inactivation.

Program Change Request

Date Submitted: 02/18/25 4:07 pm

Viewing: **CHEM-BA : Chemistry BA**

Last approved: 12/20/24 3:04 pm

Last edit: 04/25/25 3:33 pm

Changes proposed by: Thomas Schuman (tschuman)

Catalog Pages Using
this Program
[Chemistry](#)

Rationale for
Supporting

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Arts
Academic Level	Undergraduate
Program Code	CHEM-BA
Department	Chemistry
Discipline	Chemistry
Title	

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

Approval Path

1. 02/18/25 9:11 pm
Chariklia Sotiriou-Leventis (cslevent): Approved for RCHEMIST Chair
2. 02/20/25 11:01 am
Jade McCain (jm558v): Approved for CCC Secretary
3. 03/18/25 1:17 pm
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 03/21/25 2:27 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post
5. 04/01/25 10:32 am
Jade McCain

(jm558v): Approved
for CCC Meeting
Agenda

6. 04/01/25 10:48 am
Petra Dewitt
(dewittp): Approved
for Campus
Curricula
Committee Chair

7. 04/11/25 3:32 pm
Jade McCain
(jm558v): Rollback
to Sciences DSCC
Chair for FS Meeting
Agenda

8. 04/25/25 3:33 pm
Katie Shannon
(shannonk):
Approved for
Sciences DSCC Chair

9. 04/28/25 2:18 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Mar 18, 2014 by
Lahne Black (lahne)
2. Jul 15, 2015 by
pantaleoa
3. Jun 18, 2018 by
Thomas Schuman
(tschuman)
4. Dec 3, 2019 by
Thomas Schuman
(tschuman)
5. Mar 3, 2020 by
Thomas Schuman
(tschuman)

- 6. May 2, 2023 by Thomas Schuman (tschuman)
- 7. Apr 1, 2024 by Thomas Schuman (tschuman)
- 8. Jul 5, 2024 by Crystal Wilson (wilsoncry)
- 9. Dec 20, 2024 by Jade McCain (jm558v)

Chemistry BA

CIP Code 40.0501 - Chemistry, General.

Intended Audience

Program-Specific Admission

Program Requirements and Description

Bachelor of Arts
Chemistry

Freshman Year

First Semester	Credits	Second Semester	Credits
CHEM 1100	1	CHEM 1320	3
CHEM 1110	1	CHEM 1510	2
CHEM 1310	4	MATH 1215	4
CHEM 1319	1	HISTORY 1100	3
ENGLISH 1120	3	Humanities Elective	3
MATH 1214 or 1210 <i>and</i> 1211	4		
	14		15

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CHEM 2210</u>	3	<u>CHEM 2220</u>	3
<u>CHEM 2219</u>	1	<u>CHEM 2229</u>	1
<u>Electives</u>	6	<u>ENGLISH 1160 or 3560</u>	3
<u>HISTORY 1200</u>	3	<u>Foreign Language Elective</u>	4
<u>Foreign Language Elective</u>	4	<u>Social Science Elective</u>	3
<u>Biological Science Elective</u>	3	<u>Elective</u>	6
		<u>Minor Degree Elective</u>	3
	14		17

Junior Year

First Semester	Credits	Second Semester	Credits
<u>CHEM 2510</u>	4	<u>PHYSICS 2135</u>	4
<u>STAT 3113 or 3115</u>	3	<u>Chem Electives (see list below)</u>	4
<u>PHYSICS 1135</u>	4	<u>Electives</u>	7
<u>PHYSICS 1145 or 1135</u>	4	<u>CHEM 2410</u>	3
<u>Foreign Language Elective</u>	4	<u>Chemistry Elective</u>	3
		<u>PHYSICS 2145 or 2135</u>	4
		<u>Humanities Elective</u>	3
		<u>Social Science Elective</u>	3
	15		16

Senior Year

First Semester	Credits	Second Semester	Credits
<u>CHEM 2410</u>	3	<u>CHEM 4010</u>	4
<u>CHEM 3419</u>	1	<u>Chemistry Elective</u>	3
<u>CHEM 4010 or 4099</u>	1	<u>Humanities Elective</u>	3
<u>Chemistry Elective</u>	3	<u>Social Sciences Elective</u>	3
<u>Social Electives</u>	6	<u>Electives</u>	7
<u>Humanities Elective (Literature)</u>	3	<u>Minor Degree Electives</u>	6
<u>Social Science Elective</u>	3		
<u>Minor Degree Elective</u>	3		
	14		15

Total Credits: 120

Students must complete a minimum of 120 ~~121~~ credit hours for the Bachelor ~~bachelor~~ of Arts ~~arts~~ in Chemistry ~~degree and comply with the campus B.A. chemistry degree. requirements.~~

~~Students may have to take more than the minimum number of coursework hours to comply with the B.A. requirements due to variations in minor degree and foreign language requirements within an individual's program of study. Elective credits include a required minor in one of the following areas: English, economics, history, philosophy, psychology, sociology, communications, speech, media, political science, music, mathematics, statistics, foreign language, computer science, biology, or art. Elective credits must include an approved campus minor; see See Undergraduate catalog for courses required for specific minors. minor.~~ All chemistry majors are

encouraged to conduct ~~do~~ research through CHEM 4099 ~~through CHEM 4099~~. A total of 12 credits of a modern foreign language must also be taken as part of the electives above. Chemistry Electives ~~Chem Elective~~ must be selected from 3000 one or higher-level courses. ~~more of the following: CHEM 3310, CHEM 3329, CHEM 4099, CHEM 4210, CHEM 4297, CHEM 4310, CHEM 4410, CHEM 4510, CHEM 4610, CHEM 4619, CHEM 4620, CHEM 4630, CHEM 4810, CHEM 4819, CHEM 4850.~~ This program of study allows students to design, in conjunction with their chemistry advisor, a program for many disciplines including pre-law, business, pre-dentistry, pre-veterinary medicine, as well as pre-medicine. An example of such a program is shown for pre-medical studies: A grade of "C" or better is required for each Chemistry course counted towards the degree.

BIO SCI 1113	General Biology	3
BIO SCI 1219	General Biology Lab	1
BIO SCI 2213	Cell Biology	3
BIO SCI 2219	Cell Biology Laboratory	1
CHEM 4610	General Biochemistry	3
CHEM 4619	General Biochemistry Laboratory	2

degree.

Bachelor of Arts

Chemistry

Secondary Education Emphasis Area

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>CHEM 1100</u>	1	<u>CHEM 1320</u>	3
EDUC 1040	2	<u>CHEM 1510</u>	2
<u>CHEM 1310</u>	4	<u>MATH 1215</u>	4
<u>CHEM 1319</u>	1	<u>EDUC 1104</u>	1
<u>MATH 1214</u> or <u>1210</u> and <u>1211</u>	4	ENGLISH 1160	3
PSYCH 1101	3	<u>BIO SCI 1113</u>	3
<u>EDUC 1074</u>	<u>3</u>	<u>PSYCH 1101</u>	<u>3</u>
<u>ENGLISH 1120</u>	3		
	16		16

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CHEM 2210</u>	3	<u>CHEM 2220</u>	3
<u>CHEM 2219</u>	1	CHEM 2229	1
EDUC 1164	2	<u>EDUC 3216</u>	3
EDUC 1174	2	PHYSICS 2135	4
<u>PHYSICS 1145</u> or <u>1135</u>	<u>4</u>	<u>SP&M S-1185</u>	3

<u>EDUC 2102</u> or <u>PSYCH 2300</u>	<u>3</u>	STAT 3113	3
<u>ENGLISH 1221</u> or <u>1222</u>	<u>3</u>	<u>ENGLISH 1221</u> or <u>1222</u>	<u>3</u>
PHYSICS 1135	4	<u>HISTORY 1100</u>	<u>3</u>
<u>ENGLISH 1160</u> or <u>3560</u>	<u>3</u>	<u>ECON 1100, or 1200, or POL SCI 1200</u>	<u>3</u>
	14		15
Junior Year			
First Semester	Credits	Second Semester	Credits
<u>CHEM 2510</u>	4	<u>CHEM 2410</u>	3
EDUC 3298	1	CHEM 3419	1
<u>ENGLISH 3170</u>	<u>3</u>	<u>EDUC 3298</u>	<u>1</u>
<u>HISTORY 1100</u>	<u>3</u>	<u>PSYCH 4310</u> or <u>EDUC 2310</u>	3
<u>CHEM 4010</u> or <u>4099</u>	<u>1</u>	<u>HISTORY 1200</u>	3
<u>EDUC 1164</u>	<u>2</u>	<u>HISTORY 3530, or PHILOS 4345, or HISTORY 3534</u>	3
<u>BIO SCI 2263</u>	3	<u>ART 1180, or MUSIC 1150, or THEATRE 1190</u>	3
<u>EDUC 3170</u>	<u>3</u>		
<u>PHYSICS 1505</u> or <u>GEOLOGY 1110</u>	3		
	16		16
Senior Year			
First Semester	Credits	Second Semester	Credits
CHEM 4010	1	<u>EDUC 4298</u>	1
<u>CHEM 4610</u>	3	<u>EDUC 4299</u>	12
CHEM 4619	2		
<u>CHEM 3419</u>	<u>1</u>		
<u>EDUC 3280</u>	3		
<u>EDUC 3340</u>	3		
<u>PSYCH 3310</u>	3		
<u>PHILOS 1105</u>	3		
	16		13

Total Credits: 122

Students must complete a minimum of 122 ~~133~~ credit hours for the Bachelor of Arts in Chemistry degree with a Secondary Education Emphasis Area. The degree program is intended to culminate in a Certification Recommendation for an initial Missouri teaching certification. Students should also consult the Education department for Teacher Certification requirements. This program is approved by the Missouri Department of Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at <https://teaching.missouri.edu/student/state-authorization/mst/licensure>.

~~Students should also consult the Secondary Teacher Education Program section for Teacher Certification requirements through the Education department. This program is approved by the Missouri Department of Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at <https://teaching.missouri.edu/student/state-authorization/mst/licensure>. A Bachelor of Science in Chemistry degree with a Secondary Education Emphasis Area may be obtained by taking an additional 40 credit hours of~~

~~mostly upper level Chemistry courses (see your academic advisor for a schedule of classes or more information).~~ For this Bachelor of Arts degree program, the minor degree and foreign language requirements of the typical program of study are waived and there are other course substitutions in lieu of education coursework and requirements. A total of nine humanities credit hours are required to be selected from [ENGLISH 1221](#) or [ENGLISH 1222](#) ; [PHILOS 1105](#) ; and one of [ART 1180](#) , [MUSIC 1150](#) , or [THEATRE 1190](#) . All chemistry majors are encouraged to conduct research through CHEM 4099. A grade of "C" or better is required for each Chemistry course counted towards the degree.

~~Four credit hours of Chemistry Elective must be selected from one or more of the following: CHEM 4210, CHEM 4297, CHEM 4410, CHEM 4510, CHEM 4610, CHEM 4619, CHEM 4620, CHEM 4710, CHEM 4810, CHEM 4819, CHEM 4850, and/or CHEM 4099. CHEM 4099 may not count for more than 3 credit hours toward the degree. All chemistry majors are encouraged to do research through CHEM 4099. A grade of "C" or better is required for each Chemistry course counted towards the degree.~~

Justification for
request

Reduction of degree hours to 120 total crhr. With the education emphasis degree, due to overlapping minimum constraints of the BA minima, the Chemistry major, and DESE teaching requirements, a minimum degree size of 122 crhr is achieved. The course changes include addition of an Econ or Polysci to meet BA minima, change to updated education course EDUC 1074 required for teacher certification, and other course deletions or substitutions to reduce total degree hours but provide optimum degree content for secondary education teacher preparation. The redline document with justification showing how the degree meets the BA minima for the BA degree changes is provided as a supporting document.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting Documents [Bachelor of Arts Chemistry sp2025 redline.docx](#)

Reviewer
Comments

Jade McCain (jm558v) (03/06/25 2:29 pm): Changed humanities elective formatting for consistency and removed EDUC 4310 due to the course number changing.

Jade McCain (jm558v) (03/20/25 10:02 am): Removed English 3170 and added EDUC 3170 to Secondary Education Emphasis per Education department's request and Chemistry department and DSCC approval via email on 3/20.

Jade McCain (jm558v) (04/11/25 3:32 pm): Rollback: Rollback per department needs to add general education requirements.

Program Change Request

Date Submitted: 04/12/25 10:54 am

Viewing: **CHEM-BS : Chemistry BS**

Last approved: 06/14/24 1:06 pm

Last edit: 04/12/25 10:54 am

Changes proposed by: Thomas Schuman (tschuman)

Catalog Pages Using
this Program

[Chemistry](#)

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

Approval Path

1. 04/12/25 12:18 pm
Chariklia Sotiriou-
Leventis (cslevent):
Approved for
RCHEMIST Chair
2. 04/14/25 10:50 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/25/25 3:34 pm
Katie Shannon
(shannonk):
Approved for
Sciences DSCC Chair
4. 04/28/25 2:18 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Apr 28, 2014 by
Thomas Schuman

- (tschuman)
2. Jun 19, 2015 by
Klaus 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)
7. Jun 10, 2021 by
Thomas Schuman
(tschuman)
8. Jun 14, 2022 by
Thomas Schuman
(tschuman)
9. Apr 1, 2024 by
Thomas Schuman
(tschuman)
10. Apr 15, 2024 by Evie
Sherlock (esdk3)
11. Jun 14, 2024 by
Jennifer Pohlsander
(jpnfd)

Rationale for
Inactivation
Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Bachelor of Science</u>
CIM Prospectus	
Academic Level	<u>Undergraduate</u>

Program Code	CHEM-BS
Department	Chemistry
Discipline	Chemistry
Offered by	
Title	Chemistry BS
CIP Code	

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Science Chemistry

A minimum of 120 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.

General Education Electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year. The Chemistry science curriculum requires twelve (12) semester hours in humanities and must include ENGLISH 1120 and ENGLISH 1160 or ENGLISH 3560 . A minimum of nine (9) 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 1100	1	CHEM 1320	3
CHEM 1110	1	CHEM 1510	2
CHEM 1310	4	MATH 1215	4
CHEM 1319	1	COMP SCI 1500	3
MATH 1214 or 1210 <i>and</i> 1211	4	ENGLISH 1160	3
ENGLISH 1120	3		
	14		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 2410	3
PHYSICS 1135	4	CHEM 2510	4
Humanities elective	3	PHYSICS 2135	4
	15		15
Junior Year			
First Semester	Credits	Second Semester	Credits
CHEM 2420	3	CHEM 2459	2
CHEM 3310	3	CHEM 3320	3
CHEM 3510	4	CHEM 3329	1
STAT 3113 or 3115	3	CHEM 4010 or 4099	1
Humanities elective	3	CHEM 4099	1
		Social science elective	3
		General elective	3
	16		14
Senior Year			
First Semester	Credits	Second Semester	Credits
CHEM 4099	1	CHEM 4297	3
CHEM 4610	3	Social science elective	3
CHEM 4810	3	General electives	9
HISTORY 1200 , or 1300 , or 1310 , or POL SCI 1200	3		
General electives	6		
	16		15

Total Credits: 120

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: The degree has eighteen (18) hours of general electives credit that may not include Math courses prerequisite to calculus. Not more than one (1) credit hour of [CHEM 4010](#) can be included for degree credit. Up to eight (8) credit hours may be taken of [CHEM 4099](#).

Chemistry

Biochemistry Emphasis Area

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>CHEM 1100</u>	1	<u>BIO SCI 2213</u>	3
<u>CHEM 1110</u>	1	<u>BIO SCI 2219</u>	1
<u>CHEM 1310</u>	4	<u>CHEM 1320</u>	3
<u>CHEM 1319</u>	1	<u>CHEM 1510</u>	2
<u>ENGLISH 1120</u>	3	<u>ENGLISH 1160</u>	3
<u>MATH 1214</u> or <u>1210</u> <i>and</i> <u>1211</u>	4	<u>MATH 1215</u>	4
	14		16

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CHEM 2210</u>	3	<u>CHEM 2220</u>	3
<u>CHEM 2219</u>	1	<u>CHEM 2229</u>	1
<u>COMP SCI 1500</u>	3	<u>CHEM 2410</u>	3
<u>MATH 2222</u>	4	<u>CHEM 2510</u>	4
<u>PHYSICS 1135</u>	4	<u>PHYSICS 2135</u>	4
	15		15

Junior Year

First Semester	Credits	Second Semester	Credits
<u>CHEM 2420</u>	3	<u>CHEM 3329</u>	1
<u>CHEM 3310</u>	3	<u>CHEM 3320</u>	3
<u>CHEM 4610</u>	3	<u>CHEM 2459</u>	2
<u>CHEM 4619</u>	2	<u>CHEM 4620</u>	3
<u>STAT 3113</u> or <u>3115</u>	3	<u>CHEM 4099</u>	1
		<u>CHEM 4010</u> or <u>4099</u>	1
		Humanities elective	3
	14		14

Senior Year

First Semester	Credits	Second Semester	Credits
<u>CHEM 3510</u>	4	<u>CHEM 4297</u>	3
<u>CHEM 4099</u>	1	Social science electives	6
<u>CHEM 4810</u>	3	General electives	6
<u>CHEM 4630</u>	3		
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3		
Humanities elective	3		
	17		15

Total Credits: 120

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: The degree has six (6) credit hours of general electives credit that may not include Math courses prerequisite to calculus. Three (3) hours upper technical elective credit must be 2xxx, 3xxx, 4xxx (or 5xxx or higher with permission) level in chemistry or can be taken in another technical area with permission of department. Not more than 1 credit hour of [CHEM 4010](#) can be included for degree credit. Up to eight (8) credit hours may be taken of [CHEM 4099](#).

Polymer & Coatings Science Emphasis Area

Freshman Year

First Semester	Credits	Second Semester	Credits
CHEM 1100	1	CHEM 1320	3
CHEM 1110	1	CHEM 1510	2
CHEM 1310	4	COMP SCI 1500	3
CHEM 1319	1	ENGLISH 1160	3
MATH 1214 or 1210 and 1211	4	MATH 1215	4
ENGLISH 1120	3		
	14		15

Sophomore Year

First Semester	Credits	Second Semester	Credits
CHEM 2210	3	CHEM 2220	3
CHEM 2219	1	CHEM 2229	1
CHEM 4810	3	CHEM 2410	3
MATH 2222	4	CHEM 2510	4
PHYSICS 1135	4	PHYSICS 2135	4
	15		15

Junior Year

First Semester	Credits	Second Semester	Credits
CHEM 2420	3	CHEM 2459	2
CHEM 3310	3	CHEM 3320	3
CHEM 3510	4	CHEM 4850	3
PHYSICS 4523	3	CHEM 3329	1
STAT 3113 or 3115	3	CHEM 4099	2
		Humanities elective	3
		Social science elective	3
	16		17

Senior Year

First Semester	Credits	Second Semester	Credits
CHEM 4010	1	CHEM 4297	3
CHEM 4099	1	Social science elective	3
CHEM 4610	3	General electives	6
CHEM 4819	1		
HISTORY 1200 , or 1300 , or 1310 , or POL SCI 1200	3		
Humanities elective	3		
General electives	4		

Total Credits: 120

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: The degree has ten (10) credit hours of general electives credit that may not include Math courses prerequisite to calculus. Not more than 1 credit hour of [CHEM 4010](#) can be included for degree credit. Up to eight (8) credit hours may be taken of [CHEM 4099](#).

Pre-medicine Emphasis Area

Freshman Year

First Semester	Credits	Second Semester	Credits
CHEM 1100	1	BIO SCI 1113	3
CHEM 1110	1	CHEM 1320	3
CHEM 1310	4	CHEM 1510	2
CHEM 1319	1	ENGLISH 1160 or 3560	3
MATH 1214 or 1210 <i>and</i> 1211	4	MATH 1215	4
ENGLISH 1120	3		
	14		15

Sophomore Year

First Semester	Credits	Second Semester	Credits
BIO SCI 2213	3	BIO SCI 2223	3
BIO SCI 2219	1	CHEM 2220	3
CHEM 2210	3	CHEM 2229	1
CHEM 2219	1	CHEM 2510	4
COMP SCI 1500	3	PHYSICS 2145	4
PHYSICS 1145	4		
	15		15

Junior Year

First Semester	Credits	Second Semester	Credits
BIO SCI 3333	3	BIO SCI 3343	3
BIO SCI 3359	1	CHEM 2410	3
CHEM 3310	3	CHEM 3329	1
CHEM 4610	3	CHEM 4010 or 4099	1
CHEM 4619	2	CHEM 4620	3
STAT 3425	4	PSYCH 1101	3
	16		14

Senior Year

First Semester	Credits	Second Semester	Credits
CHEM 3510	4	BIO SCI 3313	3
CHEM 4630	3	CHEM 4297	3
CHEM 4650	3	Humanities elective	3

<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3	Social science elective	3
Humanities elective	3	General elective	3
	16		15

Total Credits: 120

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: The degree has three (3) credit hours of general electives credit that may not include Math courses prerequisite to calculus. Not more than 1 credit hour of CHEM 4010 can be included for degree credit. Up to eight (8) credit hours may be taken of CHEM 4099.

Justification for request Changes as required for Higher Learning Commission motions.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 03/04/25 10:23 am

Viewing: **CM ENG-CT : Carbon Management Engineering CT**

Last approved: 05/17/24 1:26 pm

Last edit: 03/10/25 8:50 am

Changes proposed by: Jee C. Wang (jcwang)

Catalog Pages Using
this Program

[Chemical & Biochemical Engineering](#)

Effective Catalog Edition	FS2024-SP2025
Start Term	01/14/2025
Program Type	Certificate
Academic Level	Graduate
Program Code	CM ENG-CT
Department	Chemical and Biochemical Engineering
Discipline	Chemical Engineering
Title	

In Workflow

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

Approval Path

1. 10/03/24 6:30 pm
Hu Yang (huyang):
Approved for
RCHEMENG Chair
2. 10/07/24 1:08 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 10/08/24 8:09 am
Jade McCain
(jm558v): Rollback
to Initiator
4. 03/04/25 10:25 am
Hu Yang (huyang):
Approved for
RCHEMENG Chair
5. 03/10/25 8:50 am
Jade McCain

(jm558v): Approved
for CCC Secretary

6. 03/21/25 2:37 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair

7. 04/28/25 2:18 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. May 2, 2022 by Jee
C. Wang (jcwang)
2. May 3, 2022 by
Crystal Wilson
(wilsoncry)
3. May 4, 2022 by
Crystal Wilson
(wilsoncry)
4. Jul 13, 2022 by
Jennifer Pohlsander
(jpnfd)
5. Apr 30, 2024 by Jee
C. Wang (jcwang)
6. May 17, 2024 by
Evie Sherlock
(esdk3)

Carbon Management Engineering CT

CIP Code [140701](#) - [140701](#)

Intended Audience

[Main Campus Students](#)

Program-Spe

Admission

Program Requirements and Description

Carbon Management Engineering Certificate

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

In order to be admitted, a student must have an overall GPA of 3.0, or 2.75 with a minimum of one year of work experience. Once admitted to the program, the student must take the four designated courses. To receive the certificate, the student must have an average cumulative grade point of 3.0 or better in the certificate courses. Once admitted to the certificate program, a student will be given three years to complete the program. Students admitted to the Carbon Management Engineering Certificate Program will have non-degree graduate status but will earn graduate credit for the courses they complete. If the students complete the four-course sequence with a grade of B or better in each of the courses taken, they, upon application, will be automatically admitted to the non-thesis MS degree program that is appropriate based on the undergraduate program from which they graduated in either Chemical Engineering, Petroleum Engineering, or Mechanic Engineering. Students may also apply and be considered for admission to thesis-based MS or PhD programs in the same areas. The certificate credits taken by the students admitted to any of these degree programs will count towards their degree requirements.

The following two courses are required:

<u>CHEM ENG 5325</u>	Carbon Capture Process Engineering	3
<u>PET ENG 5050</u>	Carbon Storage	3
<u>MECH ENG 5535</u>	Carbon Conversion and Energy Utilization	3

Two courses selected from the following list:

<u>CHEM ENG 5100</u>	Intermediate Transport Phenomena	3
<u>CHEM ENG 5110</u>	Intermediate Chemical Reactor Design	3
<u>CHEM ENG 5120</u>	Interfacial Phenomena In Chemical Engineering	3
<u>CHEM ENG 5150</u>	Intermediate Process Computing	3
<u>CHEM ENG 5161</u>	Intermediate Molecular Engineering	3
<u>CHEM ENG 5170</u>	Physical Property Estimation	3
<u>CHEM ENG 5190</u>	Plantwide Process Control	3

<u>CHEM ENG 5220</u>	Intermediate Engineering Thermodynamics	3
<u>CHEM ENG 5330</u>	Alternative Fuels	3
<u>CHEM ENG 5335</u>	<u>Introduction to Process Intensification</u>	<u>3</u>
<u>CHEM ENG 5340</u>	Principles of Environmental Monitoring	3
<u>CHEM ENG 5242</u>	<u>Intermediate Chemical Process Safety</u>	<u>3</u>
<u>CHEM ENG 5350</u>	Environmental Chemodynamics	3
<u>CHEM ENG 6150</u>	Molecular Modeling and Simulation	3
<u>CHEM ENG 6180</u>	Advanced Applications of Computational Fluid Dynamics	3
<u>CHEM ENG 6241</u>	<u>Course CHEM ENG 6241 Not Found</u>	<u>3</u>
<u>GEOPHYS 4231</u>	Seismic Interpretation	3
<u>GEOPHYS 5202</u>	Exploration and Development Seismology	3
<u>GEOLOGY 5311</u>	Depositional Systems	3
<u>GEOLOGY 5511</u>	Applied Petroleum Geology	3
<u>GEOLOGY 5513</u>	Petroleum Geology	3
<u>GEOLOGY 5661</u>	Advanced Stratigraphy and Basin Evolution	3
<u>GEOLOGY 6511</u>	Advanced Petroleum Geology	3
<u>GEOLOGY 6621</u>	Clastic Sedimentary Petrology	3
<u>GEOLOGY 6811</u>	Sedimentary Basin Analysis	3
<u>PET ENG 4111</u>	Fundamental Digital Applications In Petroleum Engineering	3
<u>PET ENG 4210</u>	Drilling and Well Integrity	3
<u>PET ENG 4311</u>	Reservoir Characterization	3
<u>PET ENG 4590</u>	Subsurface Energy Economics	3
<u>PET ENG 4720</u>	Reservoir Geomechanics	3
<u>PET ENG 6621</u>	Advanced Applied Reservoir Simulation	3
<u>PET ENG 6711</u>	Geodynamics	3
<u>MECH ENG 5229</u>	Smart Materials and Sensors	3
<u>MECH ENG 5420</u>	Signal Processing for Instrumentation and Control	3
<u>MECH ENG 5523</u>	<u>Course MECH ENG 5523 Not Found</u>	<u>3</u>

<u>MECH ENG 5527</u>	Combustion Processes	3
<u>MECH ENG 5533</u>	Internal Combustion Engines	3
<u>MECH ENG 5537</u>	Fuel Cell Principles	3
<u>MECH ENG 5541</u>	Applied Energy Conversion	3
<u>MECH ENG 5543</u>	Energy Efficiency of Vehicles	3
<u>MECH ENG 5544</u>	Non-Intrusive Measurement Methods	3
<u>MECH ENG 5566</u>	Solar Energy Technology	3
<u>MECH ENG 5571</u>	Environmental Controls	3
<u>MECH ENG 5757</u>	Integrated Product And Process Design	3
<u>MECH ENG 5764</u>	Introduction to Decision Analysis	3

Justification for
request

- (i) MECH ENG 5535 was inactivated recently and thus is removed from the list of required courses.
- (ii) CHEM ENG 6241 changed its course number to CHEM ENG 5242 recently. Therefore, the former is replaced by the latter in the list of elective courses.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting Documents [Revised GRCT Proposal-Carbon Management Engineering.pdf](#)

Reviewer
Comments

Jade McCain (jm558v) (10/08/24 8:09 am): Rollback: Rollback per missing necessary paperwork.

Jade McCain (jm558v) (03/10/25 8:50 am): MECH ENG 5523 removed from course list by the department due to inactivation.

Program Change Request

Date Submitted: 04/10/25 2:10 pm

Viewing: **CMP SC-BS : Computer Science BS**

Last approved: 03/17/25 9:05 am

Last edit: 04/11/25 3:52 pm

Changes proposed by: Venkata Sriram Siddhardh Nadendla (nadendla)

Catalog Pages Using
this Program

[Computer Science](#)

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

Approval Path

1. 04/10/25 2:36 pm
Seung-Jong Park
(spxzb): Approved
for RCOMPSCI Chair
2. 04/11/25 3:57 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 8:18 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:18 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Aug 5, 2014 by
tauritzd

- 2. Aug 13, 2014 by pantaleoa
- 3. Jun 19, 2015 by tauritzd
- 4. Jul 15, 2015 by pantaleoa
- 5. Jun 28, 2017 by tauritzd
- 6. Jun 14, 2019 by tauritzd
- 7. Mar 3, 2020 by ershenb
- 8. Oct 28, 2020 by Marita Raper (tibbettsmg)
- 9. Oct 1, 2021 by Crystal Wilson (wilsoncry)
- 10. Jun 14, 2022 by Peizhen Zhu (zhupe)
- 11. Apr 17, 2023 by Jennifer Pohlsander (jpnfd)
- 12. Mar 27, 2024 by Evie Sherlock (esdk3)
- 13. Mar 17, 2025 by Venkata Sriram Siddhardh Nadendla (nadendla)

Rationale for
Inactivation
Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	
Academic Level	Undergraduate

Program Code	CMP SC-BS
Department	Computer Science
Discipline	Computer Science
Offered by	
Title	Computer Science BS
CIP Code	

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Science Computer Science

For the Bachelor of Science degree in Computer Science, a minimum of 128 credit hours is required. This requirement is in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. A "C" or better grade must be earned in each computer science course used to fulfill B.S. in computer science degree requirements as well as in [COMP ENG 2210](#), [COMP ENG 3150](#), and the required ethics elective.

~~The computer science curriculum requires twelve semester hours in humanities, which must include ENGLISH 1120, one of PHILOS 3225, PHILOS 3235, PHILOS 4340, or PHILOS 4368 for ethics elective; and one of ENGLISH 1160 or ENGLISH 3560 for technical writing. A minimum of nine~~

~~semester hours is required in social sciences, including one of HISTORY 1300, HISTORY 1310, HISTORY 1200, or POL SCI 1200. Specific requirements for the bachelor degree are outlined in the sample program listed below.~~ **Sample Course of Study**

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u>	1	<u>COMP SCI 1200</u>	3
<u>COMP SCI 1010</u>	1	<u>COMP SCI 1570</u>	3
<u>COMP SCI 1500</u> ¹	3	<u>COMP SCI 1580</u>	1
Laboratory Science Elective ^{2, 3}	5	<u>MATH 1215</u> ⁵	4
<u>MATH 1214</u> or <u>1211</u> ^{3, 4}	4	<u>ENGLISH 1160</u> or <u>3560</u> ³	3
<u>ENGLISH 1120</u> ³	3	<u>HISTORY 1300</u> , or <u>1310</u> , or <u>1200</u> , or <u>POL SCI 1200</u> ^{3, 6}	3
	17		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>COMP SCI 1575</u>	3	<u>COMP SCI 2300</u>	3
<u>COMP SCI 1585</u>	1	<u>COMP SCI 2500</u>	3
<u>COMP ENG 2210</u> ⁷	3	<u>COMP SCI 2580</u>	1
<u>MATH 3108</u>	3	Statistics Elective ⁸	3
Sci/Eng Elective⁹	3	Sci/Eng Elective ⁹	3
Humanities / Social Science Elective⁵	3	<u>PHILOS 3225</u> , or <u>3235</u> , or <u>4340</u> , or <u>4368</u> (Ethics Elective) ³	3
<u>Natural Sciences Elective</u> ³	<u>3</u>		
<u>Gen. Ed. Elective</u> ³	<u>3</u>		
	16		16

Junior Year

First Semester	Credits	Second Semester	Credits
<u>COMP SCI 3100</u>	3	<u>COMP SCI 2200</u>	3
<u>COMP SCI 3800</u>	3	<u>COMP SCI 3610</u>	3
<u>COMP ENG 3150</u>	3	Comp Sci Elective ^{10, 11}	3
Comp Sci Elective ^{10, 11}	3	Sci/Eng Elective ⁹	3
Humanities / Social Science Elective⁵	3	<u>SP&M S 1185</u> ^{3, 12}	3
<u>Gen. Ed. Elective</u> ³	<u>3</u>		
	15		15

Senior Year

First Semester	Credits	Second Semester	Credits
<u>COMP SCI 3500</u>	3	<u>COMP SCI 4096</u>	3
<u>COMP SCI 4095</u>	1	Comp Sci Elective ^{10, 11}	3
<u>COMP SCI 4610</u>	3	Comp Sci Elective ^{10, 11}	3
Comp Sci Elective ^{10, 11}	3	Humanities / Social Science Elective⁵	3

Comp Sci Elective^{10, 11}

3

Gen. Ed. Elective³

3

Free Elective^{11, 13}

3

Free Elective^{11, 13}

4

16

16

Total Credits: 128

1

Or [COMP SCI 1971](#) and [COMP SCI 1981](#). May be waived in lieu of a score of 4 or 5 on the AP Computer Science A exam.

2

An approved science lecture-laboratory course pair totaling at least four credit hours. The laboratory is mandatory in all cases. The approved course pairs are: [CHEM 1310](#) and [CHEM 1319](#); [PHYSICS 1505](#) and [PHYSICS 1509](#); [GEOLOGY 1120](#) and [GEOLOGY 1129](#); [BIO SCI 1113](#) and [BIO SCI 1219](#); [BIO SCI 1223](#) and [BIO SCI 1229](#); and [BIO SCI 2213](#) and [BIO SCI 2219](#).

3

Gen. Ed. discipline specific course requirement

4

Or [MATH 1208](#).

5

Or [MATH 1221](#).

6

Any six credit hours of behavioral and social science courses (excluding either one of [PHILOS 3235](#), [PHILOS 4340](#), or [PHILOS 4368](#), which are accounted under the ethics elective) and six credit hours of humanities and fine arts courses (including either one of [HISTORY 1300](#), [HISTORY 1310](#), [HISTORY 1200](#), or [POL SCI 1200](#) which satisfies the Missouri and U.S. Constitution requirement) on the approved lists maintained on the computer science website. [COMP SCI 4700](#) may be counted as a Social Science elective.

7

Laboratory not required.

8

One of [STAT 3113](#), [STAT 3115](#), [STAT 3117](#), or [STAT 5643](#).

9

Any nine hours chosen from departments that offer a degree associated with either the Discipline Specific Curricula Committee for Sciences or the Discipline Specific Curricula Committee for Engineering, excluding Computer Science. The following courses are also excluded: all 1000-level MATH courses, all STAT courses below 4000-level, all 11xx-level Physics courses, [PHYSICS 2111](#), and [PHYSICS 2119](#). However, at most one of [PHYSICS 1135](#) or [PHYSICS 1145](#), and at most one of [PHYSICS 2135](#) or [PHYSICS 2145](#) are allowed to be counted towards Sci/Eng electives.

10

Eighteen hours of elective COMP SCI courses excluding [COMP SCI 2002](#), [COMP SCI 4700](#), [COMP SCI 2001](#) - Domain Exploration and Innovation Methods, [COMP SCI 3001](#) - Skill Development for Entrepreneurs and Innovators, [COMP SCI 4001](#) - Advanced Domain Exploration and Innovation Methods, [COMP SCI 4001](#) - Interpersonal Dynamics for Entrepreneurs and Innovators, and all COMP SCI x9xx courses. At least nine hours must be 5000-level or higher. At least nine hours must be lecture courses.

11

[COMP SCI 4010](#) can be counted as Computer Science Elective or Free Elective, limited to three times.

12

[SP&M S 1185](#) or [SP&M S 3245](#) or [THEATRE 3245](#) or one of the two complete four-course sequences in Advanced ROTC ([MIL ARMY 3250](#), [MIL ARMY 3500](#), [MIL ARMY 4250](#), and [MIL ARMY 4500](#); or [MIL AIR 3110](#), [MIL AIR 3120](#), [MIL AIR 4110](#) and [MIL AIR 4120](#)).

Courses chosen from any discipline so that 128 hours are completed. These and only these courses may be taken pass/fail and only one course may be taken pass/fail each semester. The following courses are excluded: all 1000-level MATH courses, all STAT courses below 4000-level, all 11xx-level Physics courses, PHYSICS 2111, PHYSICS 2119, PHYSICS 2135, PHYSICS 2145, any COMP SCI x9xx courses, and the first two years of ROTC.

Justification for request Updated to satisfy Gen. Ed. requirements for Fall 2025.

Attach Budget

System Approval Letter

MDHE Approval

Supporting Documents

Reviewer Comments **Jade McCain (jm558v) (04/11/25 3:52 pm):** Hyperlinked courses in the footnotes.

Program Change Request

Date Submitted: 04/07/25 10:38 am

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

Last approved: 04/30/24 10:16 am

Last edit: 04/14/25 11:25 am

Changes proposed by: R.Joe Stanley (stanleyj)

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

Final Catalog
Rationale for
Supporting

FS2025-SP2026

Effective Catalog
Edition
Start Term
Program Type
CIM Prospectus
Academic Level
Program Code
Department
Discipline

FS2025-SP2026
Fall 2025
[Bachelor of Science](#)
[Undergraduate](#)
CP ENG-BS
Electrical & Computer Engr
Computer Engineering

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

Approval Path

1. 02/19/25 7:22 pm
Jonathan Kimball (kimballjw):
Rollback to Initiator
2. 02/20/25 10:37 am
Jonathan Kimball (kimballjw):
Approved for RELECENG Chair
3. 02/20/25 12:14 pm
Jade McCain (jm558v): Approved for CCC Secretary
4. 03/11/25 11:30 am
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
5. 03/21/25 2:00 pm
Jade McCain

Offered by

Title

(jm558v): Rollback
to Initiator

6. 04/07/25 11:19 am

Jonathan Kimball

(kimballjw):

Approved for

RELECENG Chair

7. 04/14/25 11:39 am

Jade McCain

(jm558v): Approved

for CCC Secretary

8. 04/24/25 8:20 pm

Kelly Liu (liukh):

Approved for

Engineering DSCC

Chair

9. 04/28/25 2:18 pm

Jade McCain

(jm558v): Approved

for Pending CCC

Agenda post

History

1. Aug 6, 2014 by

R.Joe Stanley

(stanleyj)

2. Aug 13, 2014 by

pantaleoa

3. Sep 21, 2015 by

kleb6b

4. Apr 25, 2016 by

R.Joe Stanley

(stanleyj)

5. Dec 1, 2016 by

R.Joe Stanley

(stanleyj)

6. Sep 19, 2017 by

R.Joe Stanley

(stanleyj)

7. Jun 18, 2018 by

R.Joe Stanley
(stanleyj)

8. Nov 2, 2018 by
R.Joe Stanley
(stanleyj)

9. May 2, 2019 by
R.Joe Stanley
(stanleyj)

10. May 14, 2019 by
ershenb

11. Mar 3, 2020 by
R.Joe Stanley
(stanleyj)

12. May 2, 2022 by
R.Joe Stanley
(stanleyj)

13. Sep 26, 2022 by
R.Joe Stanley
(stanleyj)

14. Jun 7, 2023 by R.Joe
Stanley (stanleyj)

15. Jan 29, 2024 by
R.Joe Stanley
(stanleyj)

16. Apr 30, 2024 by
R.Joe Stanley
(stanleyj)

Computer Engineering BS

CIP Code

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Science Computer Engineering¹

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

~~Electrical and Computer Engineering degree programs will require a minimum of 21 credit hours of humanities/ social sciences as specified below: ENGLISH 1120 HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200 ECON 1100 or ECON 1200 Technical Communication Elective: ENGLISH 1160 or ENGLISH 3560 SP&M S 1185 The remaining minimum of 6 additional credit hours must be three credit hour lecture courses offered in disciplines in the humanities and social sciences. Humanities courses are defined as those in: Art, English and Technical Communication, Etymology, Foreign Languages, Music, Philosophy, Speech and Media Studies, and Theatre. Social Sciences courses are defined as those in: Economics, History, Political Science, and Psychology. Study abroad courses may count as H/SS courses. H/SS courses numbered 2001, 3001, and 4001 (experimental courses) may also be used to complete these elective requirements. Courses in business, education, information science and technology, or any other discipline not listed above will not satisfy the humanities/social sciences elective requirement, although such courses may count toward general education requirements. Transfer credits from other universities in sociology and general humanities may count as humanities or social science electives.~~ The Computer Engineering program at Missouri S&T is characterized by its focus on the scientific basics of engineering and its innovative application; indeed, the underlying theme of this educational program is the application of the scientific basics to engineering practice through attention to problems and needs of the public. The necessary interrelations among the various topics, the engineering disciplines, and the other professions as they naturally come together in the solution of real world problems are emphasized as research, analysis, synthesis, and design. These interrelations are presented and discussed through classroom and laboratory instruction.

Free Electives Footnote:

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

Freshman Year

First Semester

Credits

Second Semester

Credits

<u>FR ENG 1100</u> ²	1	<u>COMP SCI 1500</u>	3
<u>MATH 1214</u> or <u>1211</u> ^{3,21}	4	<u>MATH 1215</u> ³	4
<u>CHEM 1310</u>	4	<u>PHYSICS 1135</u> ^{3,4}	4
<u>CHEM 1319</u>	1	ECON 1100 or 1200	3
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3	Elective-Hum or Soc (any level) ⁵	3
<u>ENGLISH 1120</u>	3	<u>Gen Ed Elective</u> ⁵	<u>6</u>
	16		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits
<u>ELEC ENG 2100</u> ^{3,6,7}	3	<u>COMP ENG 2210</u> ^{3,6,8}	3
<u>ELEC ENG 2101</u> ^{3,6}	1	<u>COMP ENG 2211</u> ^{3,6}	1
<u>MATH 3304</u>	3	<u>ELEC ENG 2120</u> ^{3,7,9}	3
<u>COMP SCI 1570</u> ³	3	<u>MATH 2222</u>	4
<u>COMP SCI 1580</u> ³	1	<u>COMP SCI 1200</u> ³	3
<u>PHYSICS 2135</u> ^{3,4}	4	<u>COMP SCI 1575</u>	3
	15		17
Junior Year			
First Semester	Credits	Second Semester	Credits
<u>COMP ENG 3110</u> ^{3,8}	3	COMP ENG Elective A ^{3,14}	3
<u>COMP ENG 3150</u> ^{3,6,8}	3	<u>ELEC ENG 3410</u> ^{3,6,9}	3
<u>COMP ENG 3151</u> ^{3,6,8}	1	<u>COMP SCI 3800</u> or <u>2500</u> ³	3
<u>ELEC ENG 2200</u> ^{3,6,7}	3	<u>STAT 3117</u> ¹²	3
<u>ELEC ENG 2201</u> ^{3,6,7}	1	Communication Elective ¹³	3
Mathematics Elective ¹⁰	3	<u>ENGLISH 3560 or 1160</u> ¹³	<u>3</u>
<u>SP&M S 1185</u> ¹³	3		
	17		15
Senior Year			
First Semester	Credits	Second Semester	Credits
COMP ENG 5410 ³	3	COMP ENG Elective D ^{3,15,16}	3
COMP ENG Elective C ^{3,19}	3	COMP ENG Elective E ^{3,15,16}	3
<u>COMP ENG 4410</u>	<u>3</u>	<u>COMP ENG 4097</u> ^{3,17}	3
<u>COMP ENG 4096</u> ^{3,17}	1	Professional Development Elective ²⁰	3
Engineering Science Elective ¹¹	3	Free Elective ¹⁸	3
<u>Gen Ed Elective</u> ⁵	<u>3</u>		
COMP ENG Elective B ^{3,14}	3		
	16		15
Total Credits: 128			

1

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

2

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

3

A minimum grade of "C" must be attained in [MATH 1214](#) or [MATH 1211](#), [MATH 1215](#), [MATH 2222](#), and [MATH 3304](#), [PHYSICS 1135](#) and [PHYSICS 2135](#) (or their equivalents), [COMP SCI 1570](#), [COMP SCI 1580](#), [COMP SCI 1575](#), [COMP SCI 1200](#), [COMP SCI 2500](#) or [COMP SCI 3800](#), [COMP ENG 2210](#), [COMP ENG 2211](#), [COMP ENG 3150](#), [COMP ENG 3151](#), [COMP ENG 3110](#), [COMP ENG 4410](#), [COMP ENG 4096](#), and [ELEC ENG 2100](#), [ELEC ENG 2101](#), [ELEC ENG 2120](#), [ELEC ENG 2200](#), [ELEC ENG 2201](#), and [ELEC ENG 3410](#) and the COMP ENG electives A, B, C, D and E. Also, students may not enroll in other courses that use these courses as prerequisites until the minimum grade of "C" is attained.

4

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

5

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

6

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

7

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

8

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

9

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

10

Students must take one of the following courses:

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

11

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

12

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

13

Students may replace SP&M S 1185 with the ROTC sequence of MIL ARMY 4250 and MIL ARMY 4500 or MIL AIR 4110 and MIL AIR 4120

14

Comp Eng Senior Electives A and B, respectively, must be selected from 4xxx or 5xxx courses in Comp Eng, except COMP ENG 4000, COMP ENG 4099, COMP ENG 4096, COMP ENG 4097, COMP ENG 5000, and COMP ENG 5099.

The two courses selected for electives A and B, respectively, should be from two different Comp Eng emphasis areas. The emphasis areas, with course number options, are as follows:

Integrated Circuits and Logic Design: 42xx/52xx

Computational Intelligence 53xx

Computer Architecture and Embedded Systems: 41xx/51xx, 45xx/55xx, 46xx/56xx

Networking, Security, and Reliability: 44xx/54xx, except Comp Eng 4410

15

Comp Eng Senior Electives D and E must be selected from an approved list that contains most 3xxx, 4xxx and 5xxx courses in science, mathematics, and engineering except required courses in Comp Eng, Elec Eng, and Comp Sci and except COMP SCI 3610 and COMP SCI 5600.

16

COMP ENG Electives D and E cannot include more than three hours of COMP ENG 3002/
ELEC ENG 3002, COMP ENG 4000/COMP ENG 4099, ELEC ENG 4000/ELEC ENG 4099, COMP SCI 4000/
COMP SCI 4099.

17

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

18

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

19

Comp Eng Senior Elective C must be selected from 3xxx, 4xxx or 5xxx courses in Comp Eng, Elec Eng, or Comp Sci, except COMP ENG 3000/COMP ENG 4000/COMP ENG 4096/COMP ENG 4097/COMP ENG 4099/
COMP ENG 5000/COMP ENG 5099, ELEC ENG 3000/ELEC ENG 4000/ELEC ENG 4096/ELEC ENG 4097/
ELEC ENG 4099/ELEC ENG 5000/ELEC ENG 5099, COMP SCI 3000/COMP SCI 4000/COMP SCI 4096/
COMP SCI 4097/COMP SCI 4099/COMP SCI 5000, and COMP SCI 5099 and COMP SCI 4010, COMP SCI 3610 . and COMP SCI 5600.

20

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

21

The course combination MATH 1210 and MATH 1211 may be taken in place of MATH 1214.

Emphasis Areas for Computer Engineering

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

Emphasis areas that may be declared, include: **Integrated Circuits and Logic Design, Computer Architecture and Embedded Systems, and Networking, Security, and Dependability**. Note that **Computational Intelligence** is also a Computer Engineering emphasis area but is focused in the graduate program.

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

For students who seek a Computer Engineering degree with a declared emphasis, courses in the declared emphasis area will be applied to COMP ENG Electives A, C, and D in the degree requirements. For students who choose to have multiple emphasis areas, the additional courses will apply to COMP ENG Electives B and E and free elective requirements. Students should seek guidance from their advisors on emphasis areas and on courses that are relevant to more than one emphasis area. Students may have an emphasis area or emphasis areas listed on their transcript by completing **three three-credit-hour courses** in computer engineering from the designated lists. For a single emphasis area, this requirement will be satisfied by completing the relevant 4XXX-level or above course for Elective A and 3XXX-level or above courses for Electives C and D from the designated emphasis area course list. For a second emphasis area, this requirement will be satisfied by completing the relevant 4XXX-level or above course for Elective B, a 3XXX-level or above course for Electives E, and a 3XXX-level or above course for the free elective from the designated second emphasis area course list. Courses not on the emphasis area list, including experimental courses (5001) require departmental approval to apply toward the designated emphasis area.

Computer Engineering Course List Designations:

Integrated Circuits and Logic Design	9
COMP ENG 42XX and COMP ENG 52XX Courses	
Computer Architecture and Embedded Systems	9
COMP ENG 41XX, COMP ENG 51XX, COMP ENG 45XX, COMP ENG 55XX, COMP ENG 46XX, and COMP ENG 56XX Courses	
Networking, Security, and Dependability	9
COMP ENG 44XX and COMP ENG 54XX Courses, Except COMP ENG 4410	
Computational Intelligence	9
COMP ENG 53XX Courses	
.	

Justification for

request

Changed the required Econ 1100 or Econ 1200 to a Gen Ed elective (Freshman 2nd semester).

Approved at the Dec 12, 2024 ECE

Faculty meeting.

All Hum or Soc electives changed to Gen Ed electives (Freshman 2nd semester and Senior 2nd semester).

Attach Budget

System Approval

Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Jonathan Kimball (kimballjw) (02/19/25 7:22 pm): Rollback: Requested rollback for more edits.

Jade McCain (jm558v) (03/21/25 2:00 pm): Rollback: Rollback per requested effective date should to reflect Fall 2026.

Jade McCain (jm558v) (04/14/25 11:25 am): Hyperlinked courses in footnotes.

Program Change Request

Date Submitted: 04/02/25 2:47 pm

Viewing: **CR ENG-BS : Ceramic Engineering BS**

Last approved: 12/20/24 2:05 pm

Last edit: 04/07/25 12:19 pm

Changes proposed by: David Lipke (lipked)

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

Final Catalog
Rationale for
Supporting

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus Academic Level	Undergraduate
Program Code	CR ENG-BS
Department	Materials Science & Engineering
Discipline	Ceramic Engineering

In Workflow

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

Approval Path

1. 04/02/25 3:05 pm
Michael Moats (moatsm):
Approved for
RMATSENG Chair
2. 04/14/25 11:41 am
Jade McCain (jm558v): Approved
for CCC Secretary
3. 04/24/25 8:22 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:18 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

Offered by

Title

History

- 1. Oct 10, 2013 by
Lahne Black (lahne)
- 2. Apr 22, 2014 by
Lahne Black (lahne)
- 3. Aug 6, 2014 by F.
Scott Miller (smiller)
- 4. Jun 19, 2015 by F.
Scott Miller (smiller)
- 5. Jul 15, 2015 by
pantaleoa
- 6. Jun 28, 2017 by F.
Scott Miller (smiller)
- 7. Mar 3, 2020 by
ershenb
- 8. Apr 6, 2022 by F.
Scott Miller (smiller)
- 9. Jun 14, 2024 by
David Lipke (lipke)
- 10. Dec 20, 2024 by
Crystal Wilson
(wilsoncry)

Ceramic Engineering BS

CIP Code

Purpose

Intended Audience

Program-Specific

Admission

Bachelor of Science

Ceramic Engineering

For the Bachelor ~~bachelor~~ of Science ~~science~~ degree in Ceramic Engineering ~~ceramic engineering~~ a minimum of 128 credit hours is required. A cumulative grade point average of at least 2.0 is required for all courses applied toward the degree, as well as for all required courses in the major field of study.

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u>	1	<u>CER ENG 2210¹</u>	<u>2</u>
<u>CHEM 1310¹</u>	4	<u>CHEM 1320¹</u>	3
<u>CHEM 1319</u>	1	<u>MATH 1215 or 1221¹</u>	4
<u>MATH 1214 or 1211</u>	4	<u>MECH ENG 1720</u>	3
<u>ENGLISH 1120</u>	3	<u>PHYSICS 1135</u>	4
<u>H/SS Elective</u>	3	<u>H/SS Elective</u>	3
<u>HISTORY 1200, or 1300, or 1310, or POL SCI 1200</u>	<u>3</u>		
	16		16

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CER ENG 2110¹</u>	3	<u>CER ENG 2120</u>	3
<u>CER ENG 2315</u>	2	<u>CER ENG 2210</u>	2
<u>CER ENG 3230¹</u>	3	<u>CER ENG 2325¹</u>	2
<u>MATH 2222</u>	4	<u>CIV ENG 2200</u>	3
<u>PHYSICS 2135¹</u>	4	<u>MATH 3304¹</u>	3
		<u>H/SS Elective</u>	3
		<u>ENGLISH 1160, or 3560, or SPM S 1185⁵</u>	<u>3</u>
		<u>General Education Elective²</u>	<u>3</u>
	16		17

Junior Year

First Semester	Credits	Second Semester	Credits
<u>CER ENG 3210</u>	3	<u>CER ENG 3325</u>	2
<u>H/SS Elective</u>	3	<u>CER ENG 3410</u>	3
<u>CER ENG 3220¹</u>	3	<u>CER ENG 4310</u>	<u>3</u>
<u>CER ENG 3315¹</u>	2	<u>PHYSICS 2305¹</u>	3
<u>CIV ENG 2210¹</u>	3	<u>H/SS Elective</u>	3

<u>STAT 3113, or 3115, or 3117</u>	<u>3</u>	Advanced Chemistry Elective ³	3
Technical Elective ⁴	<u>2</u>	CER-ENG 4410	3
		<u>General Education Elective²</u>	<u>3</u>
	16		17
Senior Year			
First Semester	Credits	Second Semester	Credits
<u>CER ENG 4096⁴</u>	<u>3</u>	<u>CER ENG 4097</u>	3
CER-ENG 4310	3	<u>CER ENG 4220</u>	3
<u>CER ENG 4250</u>	3	<u>CER ENG 4240</u>	3
<u>CER ENG 4410</u>	<u>3</u>	Statistics Elective¹	3
Technical Elective ⁴	<u>3</u>	Technical Elective ⁴	<u>3</u>
H/SS Elective	3	<u>General Education Elective²</u>	<u>3</u>
<u>General Education Elective²</u>	<u>3</u>		
	15		15

Total Credits: 128

1

A grade of "C" or better is required in the following courses to satisfy prerequisite requirements for subsequent coursework and to meet graduation criteria: CER ENG 2110, CER ENG 2210, CER ENG 2325, CER ENG 3315, CER ENG 3220, CER ENG 3230, CER ENG 4096, CHEM 1310, CHEM 1320, CIV ENG 2210, MATH 1215, MATH 3304, PHYSICS 2135, PHYSICS 2305

2

Gen. Ed. electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

3

All ceramic engineering students must select an advanced chemistry elective with the advisor's approval. The courses that can be considered are CHEM 2210, CHEM 3310, CHEM 3420, CHEM 4310, or CHEM 4810.

4

Technical Electives must be selected from upper-level (i.e., 2000-level with pre-requisite or 3000-level and above) courses with advisor approval in any of the following disciplines: MATH, STAT, PHYS, CHEM, BIO SCI, GEOLOGY, COMP SCI, IS&T, ENG MGT, or any engineering program. Courses designated BUS, ECON, EDUC, ERP, MIL SCI, or any H/SS program do not satisfy Technical Electives requirements.

5

Students may replace SP&M S 1185 with the ROTC sequence of MIL ARMY 4250 and MIL ARMY 4500 or MIL AIR 4110 and MIL AIR 4120.

~~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 per credit hour in ceramic engineering. Each student's program of study must contain a minimum of 18 credit hours of course work from the humanities and the social sciences areas and should be chosen according to the following rules: All students are required to take one 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. Of the remaining hours, 12 credit hours must be taken in humanities or social sciences. These credit hours must be taken in~~

~~humanities or social sciences and must meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog. Special topics, special problems courses and honors seminars are allowed only by petition to and approval by the student's department chair. Specific Degree Requirements Total number of hours required for a degree in ceramic engineering is 128. The assumption is made that a student admitted in the department has completed 34 hours credit towards graduation. The academic program of students transferring from colleges outside Missouri S&T will be decided on a case-by-case basis.~~

Justification for
request

Alignment with gen. ed. requirements. Added "C" or better grade requirement as footnote.

Refined definition of Technical Elective for specificity. Changed recommended sequencing based on current planned teaching schedule.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (04/07/25 10:34 am): Corrected General Education Elective in the plan of study grid and hyperlinked courses in footnotes.

Program Change Request

Date Submitted: 04/09/25 11:45 am

Viewing: **CR ENG-MS : Ceramic Engineering MS**

Last approved: 07/22/15 1:18 pm

Last edit: 04/09/25 11:45 am

Changes proposed by: Haiming Wen (wenha)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Master of Science
Academic Level	Graduate
Program Code	CR ENG-MS
Department	Materials Science & Engineering
Discipline	Ceramic Engineering
Title	

In Workflow

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

Approval Path

1. 04/09/25 12:50 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
2. 04/14/25 8:53 am
Crystal Wilson
(wilsoncry):
Approved for CCC
Secretary
3. 04/24/25 8:24 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:18 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Feb 20, 2014 by F.
Scott Miller (smiller)
2. Jul 22, 2015 by
pantaleoa

Ceramic Engineering MS

CIP Code

Program Requirements and Description

~~M.S. and Ph.D. degrees are offered in ceramic engineering.~~ The total number of hours required for the M.S. in ceramic engineering is 30. The M.S. with thesis is oriented toward the completion ~~A minimum~~ of a research project ~~6 hours of 6000-level lectures~~ and the degree requirements ~~a minimum of 11 hours of graduate research on the Missouri S&T campus~~ are 18 hours of course work and 6 hours of research. ~~required.~~ It is recommended that the student complete the core courses offered by the department including MS&E 6110, MS&E 6120,

and MS&E 6130 which are graduate level crystallography, thermodynamics and kinetics. At least ~~A maximum of~~ 6 hours of course work must ~~4000-level lecture credit may~~ be 6000-level courses. ~~accepted.~~ The other courses are chosen with the approval of the advisor.

Justification for
request

Wording changes/corrections are requested to make the language clearer.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 04/09/25 11:54 am

Viewing: **CR ENG-PHD : Ceramic Engineering PhD**

Last approved: 07/22/15 1:19 pm

Last edit: 04/14/25 8:34 am

Changes proposed by: Haiming Wen (wenha)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Doctor of Philosophy
Academic Level	Graduate
Program Code	CR ENG-PHD
Department	Materials Science & Engineering
Discipline	Ceramic Engineering
Title	

In Workflow

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

Approval Path

1. 04/09/25 12:51 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
2. 04/14/25 8:34 am
Crystal Wilson
(wilsoncry):
Approved for CCC
Secretary
3. 04/24/25 8:26 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:18 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Jul 22, 2015 by
pantaleoa

Ceramic Engineering PhD

CIP Code

Program Requirements and Description

The minimum number of hours (beyond the bachelor's degree) required for the Ph.D. in ceramic engineering is 72. For students with a master's degree, a block ~~At least 12 hours~~ of 30 credit hours can count toward the total 72-hour requirement; a ~~course work outside of ceramic engineering is recommended, a~~ minimum of 12 24 hours of coursework ~~will be dissertation research,~~ and a ~~a~~ minimum of 24 hours of research are required. ~~must be course work.~~ For students without a master's degree, a minimum of 30 hours of coursework and a minimum of 30 hours of research are required. All students are ~~Students will also be~~ required to take the four core graduate courses, including MSE 6110 (Bonding, Crystallography, and Structure-Property Relations), MSE 6120

(Thermodynamics ~~pass-qualifying~~ and Phase Equilibria), MSE 6130 (Kinetic Theory for Materials), and MSE 6140 (Communication ~~comprehensive exams~~ in Materials Science and Engineering). All students will also be required to take and pass qualifying and comprehensive exams, as well as successfully defend the dissertation, in accordance with Missouri S&T rules.

-

Justification for
request

The current language is for the old catalog before 2021. Updates and corrections are requested so that the language is consistent with the campus requirements in the new catalog.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 04/10/25 3:36 pm

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

Last approved: 05/02/22 1:30 pm

Last edit: 04/10/25 3:36 pm

Changes proposed by: William Showalter (wes)

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

In Workflow

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

Approval Path

1. 04/18/25 9:40 am
Mohamed Elgawady
(elgawadym):
Approved for
RCIVILEN Chair
2. 04/18/25 11:25 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 9:29 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:18 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Sep 27, 2013 by
Lahne Black (lahne)
2. Aug 6, 2014 by
Lahne Black (lahne)
3. Sep 21, 2015 by
Genda Chen (gchen)
4. Mar 3, 2020 by
ershenb
5. May 2, 2022 by Jody
Seely (seelyj)

Rationale for
Inactivation
Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Bachelor of Science</u>
CIM Prospectus	
Academic Level	<u>Undergraduate</u>
Program Code	CV ENG-BS
Department	Civil Engineering
Discipline	Civil Engineering
Offered by	
Title	Civil Engineering BS
CIP Code	

Purpose

Intended Audience

Program-Specific
Admission

Program Requirements and Description

Civil Engineering Bachelor of Science

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

For the Bachelor of Science degree in Civil Engineering a minimum of 129 credit hours is required. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. An average of at least two grade points per credit hour must also be attained in all courses taken in Civil Engineering.

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u> ²	1	<u>MECH ENG 1720</u>	3
<u>CHEM 1310</u>	5	<u>MATH 1215</u>	4
& <u>CHEM 1319</u>			
<u>MATH 1214</u> or <u>1211</u>	4	<u>PHYSICS 1135</u>	4
<u>ENGLISH 1120</u>	3	Gen Ed Elective ¹	3
<u>Hist 1200, 1300, 1310 or Poli Sci 1200</u> ¹	3	Gen Ed Elective ¹	3
	16		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CIV ENG 2401</u> ²	3	<u>MECH ENG 2350</u>	2
<u>CIV ENG 2003</u> ²	3	<u>STAT 3113</u>	3
<u>CIV ENG 2200</u> ²	3	<u>GEO ENG 1150</u>	3
<u>MATH 2222</u>	4	<u>CIV ENG 2210</u> ²	3
<u>PHYSICS 2135</u>	4	<u>CIV ENG 2211</u> ²	1
		<u>MATH 3304</u>	3

	17		15
Junior Year			
First Semester	Credits	Second Semester	Credits
ENG MGT 1210 ²	2	CIV ENG 3116 ²	3
CIV ENG 3201 ²	3	CIV ENG 3842 ²	3
CIV ENG 3715 ²	3	CIV ENG 3500 ²	3
CIV ENG 3330 ²	3	CIV ENG 3334 ²	4
CIV ENG 2601 ²	3	CIV ENG 4448 ²	3
English 1160, 3560 or SP&MS 1185 ¹	3		
	17		16
Senior Year			
First Semester	Credits	Second Semester	Credits
CIV ENG 4010 ²	1	CIV ENG 4097 ²	3
(2) CIV ENG Depth Electives ^{3,4}	6	CIV ENG Tech Elective ^{3,5}	3
CIV ENG 3210 ²	3	CIV ENG Depth Elective ^{3,4}	3
Humanities Elective ¹	3	Upper Level Gen Ed Elective ¹	3
CIV ENG 3220 ²	3	CIV ENG Tech Elective ^{3,5}	3
	16		15

Total Credits: 129

1

Gen Ed electives must fulfill the Missouri S&T general education requirements as applicable to the students catalog year.

2

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

3

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

4

Choose depth electives using Guidelines for Depth and Technical Electives.

5

Choose technical electives using Guidelines for Depth and Technical Electives.

~~Each student's program of study must contain a minimum of 21 credit hours of course work in general education and must be chosen according to the following rules: All students are required to take one American history course, one economics course, one humanities course, and ENGLISH 1120. The history course is to be selected from HISTORY 1200, HISTORY 1300, HISTORY 1310, or POL SCI 1200. The economics course may be either ECON 1100 or ECON 1200. The humanities course must be selected from the approved lists for art, English, foreign languages, music, philosophy, speech and media studies, or theater. Depth requirement. Three credit hours must be taken in humanities or social sciences at the 2000-level or above and must be selected from the approved list. This course must have as a prerequisite one of the humanities or social sciences courses already taken. Foreign language courses numbered 1180 will be considered to satisfy this requirement. Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 4000-level. All courses taken to satisfy the depth requirement must be taken after graduating from high school. The remaining two courses are to be chosen~~

~~from the list of approved humanities/social sciences courses and may include one communications course in addition to ENGLISH 1120. Any specific departmental requirements in the general studies area must be satisfied. Special topics and special problems and honors seminars are allowed only by petition to and approval by the student's department chair.~~ **Note:** All Civil Engineering students must take the Fundamentals of Engineering examination prior to graduation. A passing grade on this examination is not required to earn a B.S. degree; however, it is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process as described in Assessment Requirements found elsewhere in this catalog. Students must sign a release form giving the University access to their Fundamentals of Engineering Examination score.

Guidelines for Depth and Technical Electives

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

Course Listings by Area

Construction Engineering

CIV ENG 5441	Professional Aspects Of Engineering Practice	3
CIV ENG 5442	Construction Planning and Scheduling Strategies	3
CIV ENG 5445	Construction Methods	3
CIV ENG 5446	Management Of Construction Costs	3
CIV ENG 5448	Green Engineering: Analysis of Constructed Facilities	3
CIV ENG 5449	Engineering and Construction Contract Specifications	3
CIV ENG 5451	Information Technology Applications in the Construction Industry	3
CIV ENG 5452	Pre-Project Planning and Feasibility Studies	3
CIV ENG 5453	Logistics for Construction Industry	3
CIV ENG 5454	Construction Technology for High-Rise Buildings	3
CIV ENG 5455	Construction Industry Best Practices	3

Materials Engineering

CIV ENG 5112	Bituminous Materials	3
CIV ENG 5113	Composition And Properties Of Concrete	3
CIV ENG 5117	Asphalt Pavement Design	3
CIV ENG 5118	Smart Materials and Sensors	3
CIV ENG 5156	Pavement Design	3

Environmental Engineering

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

Geotechnical Engineering

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

Water Resources Engineering

<u>CIV ENG 5330</u>	Unsteady Flow Hydraulics	3
<u>CIV ENG 5331</u>	Hydraulics Of Open Channels	3
<u>CIV ENG 5332</u>	Transport Processes in Environmental Flows	3
<u>CIV ENG 5333</u>	Intermediate Hydraulic Engineering	3
<u>CIV ENG 5335</u>	Water Infrastructure Engineering	3
<u>CIV ENG 5337</u>	River Mechanics And Sediment Transport	3
<u>CIV ENG 5338</u>	Hydrologic Engineering	3

<u>CIV ENG 5360</u>	Water Resources And Wastewater Engineering	3
Structural Engineering		
<u>CIV ENG 5118</u>	Smart Materials and Sensors	3
<u>CIV ENG 5203</u>	Applied Mechanics In Structural Engineering	3
<u>CIV ENG 5205</u>	Structural Analysis II	3
<u>CIV ENG 5206</u>	Low-Rise Building Analysis and Design	3
<u>CIV ENG 5207</u>	Computer Methods of Structural Analysis	3
<u>CIV ENG 5208</u>	Structural Dynamics	3
<u>CIV ENG 5209</u>	Wind Engineering	3
<u>CIV ENG 5210</u>	Advanced Steel Structures Design	3
<u>CIV ENG 5220</u>	Advanced Concrete Structures Design	3
<u>CIV ENG 5222</u>	Prestressed Concrete Design	3
<u>CIV ENG 5231</u>	Infrastructure Strengthening with Composites	3
<u>CIV ENG 5260</u>	Analysis And Design Of Wood Structures	3
<u>CIV ENG 5270</u>	Structural Masonry Design	3
Transportation Engineering		
<u>CIV ENG 5250</u>	Air Transportation	3
<u>CIV ENG 5510</u>	Geometric Design Of Highways	3
<u>CIV ENG 5513</u>	Traffic Engineering	3
<u>CIV ENG 5515</u>	Advanced Traffic Operations and Capacity Analysis	3

Justification for
request

Edits to Humanities and Social Science requirements to be consistent with campus
requirements per Steve Raper.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 04/18/25 9:20 am

Viewing: **DSCMGMT-CT : Digital Supply Chain
Mgmt CT**

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

Last edit: 04/18/25 9:20 am

Changes proposed by: Cecil Eng Huang Chua (cecq8z)

Catalog Pages Using
this Program

[Information Science and Technology](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Certificate
Academic Level	Graduate
Program Code	DSCMGMT-CT
Department	Business Administration
Discipline	Info Science & Technology
Title	

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

Approval Path

1. 04/02/25 10:21 am
Cassie Elrod (cassa):
Approved for
RBUSADMN Chair
2. 04/14/25 10:39 am
Jade McCain
(jm558v): Rollback
to Initiator
3. 04/19/25 10:24 pm
Cassie Elrod (cassa):
Approved for
RBUSADMN Chair
4. 04/21/25 12:07 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
5. 04/21/25 12:27 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social

Sciences DSCC Chair
6. 04/28/25 2:18 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

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

Digital Supply Chain Mgmt CT

CIP Code

Intended Audience

[Distance \(online\) Students](#)

[Main Campus Students](#)

Program Requirements and Description

Digital Supply Chain Management

Success in today's marketplace requires that organizations deliver products and services that provide easily identified value for their customers. This certificate draws on strengths within two departments to integrate source (strategic procurement and supply management), production (manufacturing and service operations), and delivery processes (demand fulfillment), with a focus on the use of information technologies as the critical enabler of supply chain efficiencies and responsiveness.

The certificate is designed to give students the tools and ideas that help shape and define the various components of value creation. Students can gain knowledge and skills in the full spectrum of supply chain activities: supplier relationships, purchasing management, operations and inventory management, logistics and transportation, quality management, and information technology.

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

Required course:

[ERP 5310](#)

Supply Chain Management Systems in an ERP Environment

Required one of the following:

<u>BUS 5150</u>	<u>Customer Focus and Satisfaction</u>
<u>ERP 6610</u>	Advanced Customer Relationship Management in ERP Environment
Required one of the following:	
<u>BUS 5360</u>	Business Operations
<u>BUS 6425</u>	Supply Chain and Project Management
<u>ENG MGT 5614</u>	Supply Chain Management Systems
<u>ENG MGT 5615</u>	<u>Production Planning And Scheduling</u>
<u>MECH ENG 5656</u>	Design For Manufacture
<u>MECH ENG 5708</u>	Rapid Product Design And Optimization
<u>One elective course from the following:</u>	
<u>ERP 5110</u>	Enterprise Resource Planning Systems Design and Implementation
<u>ERP 5410</u>	Use of Business Intelligence
<u>ERP 6120</u>	Enterprise Resource Planning: Systems Config and Integration
<u>ERP 6220</u>	<u>Data Modeling & Visualization Prototyping for Enterprise Decision Dashboard</u>
<u>ENG MGT 5412</u>	<u>Operations Management Science</u>
<u>MECH ENG 5757</u>	Integrated Product And Process Design
<u>MECH ENG 5760/</u> <u>AERO ENG 5760</u>	Probabilistic Engineering Design
<u>MECH ENG 5763</u>	Computer Aided Design: Theory and Practice

Justification for
request

To modernize and improve the curriculum by incorporating new theories and technologies.

Attach Budget

System Approval Letter [sysapprovsupplychainct.pdf](#)
[Revised Grad Certificate-Digital Supply Chain Management-graded.pdf](#)

MDHE Approval

Supporting
Documents

Reviewer

Comments

Jade McCain (jm558v) (04/14/25 10:39 am): Rollback: Rollback per department needs to attach the approval documents from graduate education and the Provost's Office.

Program Change Request

Date Submitted: 12/10/24 3:00 pm

Viewing: **E ECON-CTU : Energy Economics - CTU**

Last approved: 06/14/24 1:11 pm

Last edit: 04/15/25 8:32 am

Changes proposed by: Melody Lo (mlc2d)

Catalog Pages Using
this Program
Economics

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Certificate</u>
Academic Level	<u>Undergraduate</u>
Program Code	E ECON-CTU
Department	Economics
Discipline	Economics
Title	

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

Approval Path

1. 12/10/24 3:01 pm
Melody Lo (mlc2d):
Approved for
RECONOMI Chair
2. 12/23/24 11:05 am
Jade McCain
(jm558v): Rollback
to RECONOMI Chair
for CCC Secretary
3. 04/01/25 2:45 pm
Melody Lo (mlc2d):
Approved for
RECONOMI Chair
4. 04/11/25 3:56 pm
Jade McCain
(jm558v): Rollback
to RECONOMI Chair
for CCC Secretary
5. 04/11/25 4:19 pm
Melody Lo (mlc2d):

Approved for
RECONOMI Chair

6. 04/15/25 8:41 am
Jade McCain
(jm558v): Approved
for CCC Secretary

7. 04/15/25 1:52 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair

8. 04/28/25 2:19 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. May 2, 2023 by
Michael Davis
(davismc)
2. Jun 14, 2024 by
Melody Lo (mlc2d)

Energy Economics - CTU

CIP Code

Intended Audience

[Main Campus Students](#)

Program Requirements and Description

Energy Economics

This certificate aims to offer students across the campus an opportunity to gain knowledge in Energy Economics. Missouri S&T is recognized as one of the top universities in the nation offering energy engineering programs, and this certificate will further synergize with S&T's research and education focus in energy. This certificate focuses on addressing current and future energy challenges in a comprehensive manner by studying energy choices, policies, and their impacts on the sustainability of the economy, the welfare of society, and the environmental conditions.

The Energy Economics certificate is complementary to those pursuing an undergraduate degree with a focus on energy engineering, environmental sciences, or sustainability. The certificate is especially valuable to students interested in a career in the energy sector.

General requirement: Four classes (12 credit hours) in economics or related disciplines.

Required Two Classes (6 hours):		
<u>ECON 4440</u>	Environmental And Natural Resource Economics	3
<u>ECON 4540</u>	Energy Economics	3
Two of the following classes (6 hours):		
<u>CHEM ENG 5325</u>	Carbon Capture Process Engineering	3
<u>ECON 5658</u>	<u>Building Sustainability and Environmental, Social and Governance (ESG)</u>	<u>3</u>
<u>ELEC ENG 3540</u>	Power System Design And Analysis	3
<u>ELEC ENG 5150</u>	Photovoltaic Systems Engineering	3
<u>ELEC ENG 5510</u>	Electric-Drive Vehicles	3
ECON 3512	Mining Industry Economics	3
or ECON 5532	Advanced Mining Economics	
<u>ENG MGT 5513</u>	Energy and Sustainability Management Engineering	3
<u>ENV ENG 5605</u>	<u>Environmental Systems Modeling</u>	<u>3</u>
<u>ENV ENG 5642</u>	Sustainability, Population, Energy, Water, and Materials	3
<u>ENV ENG 5662</u>	<u>Air Pollution Control Methods</u>	<u>3</u>
<u>MECH ENG 5541</u>	Applied Energy Conversion	3
<u>MECH ENG 5543</u>	Energy Efficiency of Vehicles	3
<u>MIN ENG 3512</u>	<u>Mining Industry Economics</u>	<u>3</u>
or MIN ENG 5532	Advanced Mining Economics	
<u>MS&E 5230</u>	Energy Materials	3
<u>PET ENG 4531</u>	Natural Gas Engineering	3
<u>PET ENG 4590</u>	Subsurface Energy Economics	3
<u>PET ENG 5050</u>	Carbon Storage	3
<u>PET ENG 5801</u>	Petroleum Data Analytics	3
<u>NUC ENG 4207</u>	Nuclear Fuel Cycle	3
NUC ENG 4281	Probabilistic Risk Assessment	3

Justification for
request

Per request of the Nuclear Engineering department, we remove NUC ENG 4281 and add NUC ENG 5281.

The Energy Economics faculty believe that ENV ENG 5605 (Environmental Systems Modeling) and ENV ENG 5662 (Air Pollution Control Methods) are relevant to this certificate and advise adding them as optional courses.

Finally, we add a new economics course, ECON 5658 (Building Sustainability and Environmental, Social and Governance (ESG)) to the certificate.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (12/23/24 11:05 am): Rollback: Rollback due to waiting on the Safety Engineering CT DC form to be submitted so all forms can be submitted at once.

Jade McCain (jm558v) (04/11/25 3:56 pm): Rollback: Rollback per department request.

Jade McCain (jm558v) (04/11/25 4:15 pm): Corrected mining credits per department request via telephone on 4/11/2025.

Jade McCain (jm558v) (04/15/25 8:32 am): This is a minor change per Provost's Office via email on 4/15.

Program Change Request

Date Submitted: 04/06/25 9:28 am

Viewing: **ECON-BS : Economics BS**

Last approved: 12/20/24 3:07 pm

Last edit: 04/06/25 9:28 am

Changes proposed by: Melody Lo (mlc2d)

Catalog Pages Using
this Program

[Economics](#)

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

Approval Path

1. 04/06/25 9:40 am
Melody Lo (mlc2d):
Approved for
RECONOMI Chair
2. 04/14/25 2:21 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/14/25 2:51 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
4. 04/28/25 2:19 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. May 28, 2015 by
pantaleoa
2. May 28, 2015 by

- pantaleoa
3. Nov 18, 2015 by
marcys
4. Aug 14, 2017 by
Crystal Wilson
(wilsoncry)
5. Jun 10, 2021 by
Michael Davis
(davismc)
6. Jun 7, 2023 by
Michael Davis
(davismc)
7. Jun 14, 2024 by
Michael Davis
(davismc)
8. Dec 20, 2024 by
Jade McCain
(jm558v)

Rationale for
Inactivation
Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Bachelor of Science</u>
CIM Prospectus	
Academic Level	<u>Undergraduate</u>
Program Code	ECON-BS
Department	Economics
Discipline	Economics
Offered by	
Title	Economics BS
CIP Code	

Purpose
Intended Audience
Program-Specific
Admission

Program Requirements and Description

Bachelor of Science Economics

In addition to the general university requirements for a bachelor of science [degree and the required general education requirements](#), ~~degree~~, a student must complete:

[ECON 1100](#), [ECON 1200](#), [ECON 2100](#), [ECON 2200](#), [ECON 3300](#), [ECON 3333](#), and [ECON 4538](#) with a minimum grade of “C” in each.

At least 9 additional hours of economics electives, at or above the 2000 level, with a minimum grade of “C” in each.

[BUS 1210](#), [ENG MGT 2110](#), and [STAT 3111](#).

Specific requirements for the Bachelor of Science degree are outlined in the sample program listed below.

Freshman Year

First Semester	Credits	Second Semester	Credits
ECON 1100 ³	3	ECON 1200 ³	3
ENGLISH 1120 ¹	3	HISTORY 1200 , or 1300 , or 1310	3
BIO SCI 1113 , or 1173 , or 1223	3	MATH 1212	4
Lab w/Living or Physical Science Course	1	PSYCH 1101	3
MATH 1140	3	IS&T 1551 , or 1561 , or COMP SCI 1971 ⁴	3
	13		16

Sophomore Year

First Semester	Credits	Second Semester	Credits
ECON 2100 ³	3	ECON 2200 ³	3
SP&M S 1185	3	Chemistry, Geology, Geophysics, or Physics	3
ENGLISH 1211 , or 1212 , or 1231 , or 1221 , or 1222 , or 2230	3	ART 1180 , or 1185 , or MUSIC 1150 , or THEATRE 1190	3
STAT 3111	3	BUS 1210	3
Free Elective	3	Free Electives	3
	15		15

Junior Year			
First Semester	Credits	Second Semester	Credits
<u>ECON 3300</u> ³	3	<u>ECON 3333</u> ³	3
<u>ENGLISH 1600</u>	3	Culture, Society and Religion ²	3
<u>POL SCI 1200</u>	3	Economics Electives ⁵	3
<u>ENG MGT 2110</u>	3	Free Elective	6
Economics Elective ⁵	3		
	15		15
Senior Year			
First Semester	Credits	Second Semester	Credits
<u>ECON 4538</u> ³	3	Economics Elective ⁵	3
Free Electives	12	Free Electives	13
	15		16

Total Credits: 120

1

In-Major Writing Intensive

2

One of [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](#).

3

A Grade of "C" or better is required for [ECON 1100](#), [ECON 1200](#), [ECON 2100](#), [ECON 2200](#), [ECON 3300](#), [ECON 3333](#) and [ECON 4538](#).

4

[COMP SCI 1971](#) must also include [COMP SCI 1981](#).

5

Must be 2000 level or higher, with a minimum grade of C.

Decision Data Analytics Emphasis

Junior and Senior Years		
<u>ECON 5360</u>	Data Driven Strategic Insights	3
<u>ECON 5380</u>	Data Intelligence using Case Studies	3

Financial Economics and Technology Emphasis

Junior and Senior Years		
<u>ECON 4383</u>	Financial Economics	3
<u>ECON 5337</u>	Financial Mathematics	3
<u>ECON 5360</u>	Data Driven Strategic Insights	3

Energy Economics Emphasis

Junior and Senior Years		
<u>ECON 4440</u>	Environmental And Natural Resource Economics	3
<u>ECON 4540</u>	Energy Economics	3

Choose one of the following courses:		
<u>ECON 3512</u>	Mining Industry Economics	3
<u>ECON 5532</u>	Advanced Mining Economics	3
Choose one of the following courses:		
<u>ENG MGT 5513</u>	Energy and Sustainability Management Engineering	3
<u>CIV ENG 5642</u>	Sustainability, Population, Energy, Water, and Materials	3

Justification for request	Per the Provost's office request, we edit the leading sentence of this degree program to align with the new Gen Ed requirements recently passed by the faculty senate.
Attach Budget	
System Approval Letter	
MDHE Approval	
Supporting Documents	
Reviewer Comments	

Program Change Request

Date Submitted: 02/20/25 10:16 am

Viewing: **EDUC-BS : Education BS**

Last approved: 02/04/25 11:12 am

Last edit: 04/22/25 8:28 am

Changes proposed by: Beth Kania-Gosche (bakm75)

Catalog Pages Using
this Program
[Education](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	EDUC-BS
Department	Education
Discipline	Education
Title	

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

Approval Path

1. 02/20/25 10:17 am
Beth Kania-Gosche (bakm75):
Approved for
REDUCATION Chair
2. 02/20/25 11:13 am
Jade McCain (jm558v): Approved
for CCC Secretary
3. 02/20/25 12:35 pm
Cecil Eng Huang Chua (cchua):
Approved for Social
Sciences DSCC Chair
4. 03/21/25 2:28 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

5. 04/01/25 10:32 am
Jade McCain
(jm558v): Approved
for CCC Meeting
Agenda
6. 04/01/25 10:49 am
Petra Dewitt
(dewittp): Approved
for Campus
Curricula
Committee Chair
7. 04/07/25 3:49 pm
Jade McCain
(jm558v): Rollback
to REDUCATION
Chair for FS Meeting
Agenda
8. 04/11/25 1:43 pm
Beth Kania-Gosche
(bakm75):
Approved for
REDUCATION Chair
9. 04/23/25 8:12 am
Jade McCain
(jm558v): Approved
for CCC Secretary
10. 04/23/25 8:33 am
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
11. 04/28/25 2:20 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Jun 10, 2021 by
Beth Kania-Gosche

(bakm75)

2. Aug 3, 2021 by
Crystal Wilson
(wilsoncry)
3. Apr 7, 2022 by Beth
Kania-Gosche
(bakm75)
4. Jun 14, 2022 by
Beth Kania-Gosche
(bakm75)
5. Jun 24, 2022 by
Crystal Wilson
(wilsoncry)
6. Jun 24, 2022 by
Crystal Wilson
(wilsoncry)
7. May 19, 2023 by
Jennifer Pohlsander
(jpnfd)
8. May 19, 2023 by
Jennifer Pohlsander
(jpnfd)
9. May 19, 2023 by
Jennifer Pohlsander
(jpnfd)
10. Oct 31, 2024 by
Beth Kania-Gosche
(bakm75)
11. Feb 4, 2025 by Beth
Kania-Gosche
(bakm75)

Education BS

CIP Code

Program Requirements and Description

Bachelor of Science in Education

Overview

The Department of Education offers a degree in education with options for emphases in early childhood (birth-grade 3), elementary (grades 1-6), middle school language arts, middle school mathematics, middle school science, or middle school social science. The educational studies emphasis area offers an option for students working in informal contexts outside of public schools.

Students must complete a minimum of 120 hours for a Bachelor of Science in Education.

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 certification programs ~~the program~~ is student teaching when students are immersed full time in a school setting for 16 weeks, except for the educational studies emphasis area.

The Missouri Department of Elementary and Secondary Education approves the curricula of certification programs. Any substitutions for content or education coursework must be approved by the Department of Education. Students intended to earn a teaching certificate must also pass the appropriate Praxis exam ~~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 Emphasis Area: Educational Studies This emphasis is for students who want to work in educational settings outside of K-12 public schools. Potential career settings include nonprofit organizations, state agencies, childcare, museums, youth development, and more. This flexible emphasis area is designed to combine educational theories with applications in informal educational environments and does not result in teacher certification. Students must complete the general education requirements and the education core curriculum (35 credit hours) with the exception of student teaching, which should be substituted with additional education courses aligned to the student's career goals. Each student will elect sufficient additional courses to complete a minimum of 120 credit hours; these may be in other disciplines. As this degree does not result in certification, students are not required to meet Missouri Department of Elementary and Secondary Education requirements.~~ Core Curriculum

<u>EDUC 1104</u>	Teacher Field Experience I	1
<u>EDUC 1074</u>	Foundations of Education in a Diverse Society	3
<u>EDUC 1164</u>	Teacher Field Experience II	2

<u>EDUC 2102</u>	Educational Psychology	3
or <u>PSYCH 2300</u>	Educational Psychology	
<u>EDUC 2310</u>	Education Of The Exceptional Child	3
or <u>PSYCH 4310</u>	Psychology Of The Exceptional Child	
<u>EDUC 3216</u>	Instructional Literacy in the Content Area	3
<u>EDUC 3340</u>	Assessment of Student Learning	3
<u>PSYCH 3310</u>	Developmental Psychology	3
<u>EDUC 4298</u>	Student Teaching Seminar	1
<u>EDUC 4299</u>	Student Teaching	12
EDUC 3298	Teacher Field Experience III	1
Total Credits		34
<u>Students must complete the General Education Requirements as stated in following general education requirements. Substitutions are allowable but must be approved by the catalog, as applicable to the student's catalog year. department chair.</u>		
<u>ENGLISH 1120</u>	<u>Exposition And Argumentation</u>	<u>3</u>
<u>ENGLISH 1160</u>	<u>Writing And Research</u>	<u>3</u>
or <u>SP&M S 1185</u>	<u>Principles Of Speech</u>	
<u>Math General Education Course</u>		<u>3</u>
<u>Natural Science Courses in Two Disciplines</u>		<u>7</u>
<u>Humanities, Arts, and Social Science Courses</u>		<u>12</u>
<u>HISTORY 1200</u>	<u>Modern Western Civilization</u>	<u>3</u>
or <u>POL SCI 1200</u>	<u>American Government</u>	
Total Credits		31
Students must take the following nine hours of coursework: 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 mathcourse.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. Emphasis Area: Early Childhood~~
~~An early childhood certificate allows students to teach children from birth through third grade in the state of Missouri. Students must take the following general education courses. Substitutions must be approved by the department chair. Students must also take a literature course.~~ **Emphasis Area: Educational Studies**

ENGLISH 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
SP&M S 1185	Principles Of Speech	3
PHILOS 1105	Self and World: Introduction To Philosophy	3
PSYCH 1101	General Psychology	3
MATH 1120	College Algebra	5
or MATH 1140	College Algebra	
POL SCI 1200	American Government	3
HISTORY 2110	World Regional Geography	3
HISTORY 1300	American History To 1877	3
or HISTORY 1310	American History Since 1877	
BIO SCI 1113	General Biology	3
BIO SCI 1219	General Biology Lab	1
PHYSICS 1145	College Physics I	3-4
or PHYSICS 1505	Introductory Astronomy	
GEOLOGY 1110	Physical and Environmental Geology	3
or GEOLOGY 1120	Evolution Of The Earth	
CHEM 1100	Introduction To Laboratory Safety & Hazardous Materials	1
Total Credits		0
EDUC 1055	Introduction to Early Childhood Education	3
EDUC 1221	Health, Nutrition, and Safety in Early Childhood Education	3
EDUC 1820	Early Childhood Program Management	3
EDUC 2401	School, Family, and Community Partnerships	3
EDUC 2440	Observation and Assessment of Young Children	3
EDUC 3203	Introduction to STEM Education	3
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 3430	Diverse Literature for Children	3
EDUC 3530	Teaching Integrated Social Studies and Humanities	3
EDUC 3211	Child Development	3
Total Credits		0
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 1120	Exposition And Argumentation	3
ENGLISH 1160	Writing And Research	3
SP&MS 1185	Principles Of Speech	3
<p><u>This emphasis is for students who want to work in educational settings outside of K-12 public schools. Potential career settings include nonprofit organizations, state agencies, childcare, museums, youth development, and more. This flexible emphasis area is designed to combine educational theories with applications in informal educational environments and does not result in teacher certification.</u></p> <p><u>Students must complete the general education requirements and the education core curriculum (35 credit hours) with the exception of student teaching, which should be substituted with additional education courses aligned to the student's career goals. Each student will elect sufficient additional courses to complete a minimum of 120 credit hours; these may be in other disciplines. As this degree does not result in certification, students are not required to meet Missouri Department of Elementary and Secondary Education requirements.</u></p> <h2><u>Emphasis Area: Early Childhood</u></h2>		
<p><u>An early childhood certificate allows students to teach children from birth through third grade in the state of Missouri.</u></p>		
<u>EDUC 1055</u>	<u>Introduction to Early Childhood Education</u>	<u>3</u>
<u>EDUC 1221</u>	<u>Health, Nutrition, and Safety in Early Childhood Education</u>	<u>3</u>
<u>EDUC 1820</u>	<u>Early Childhood Program Management</u>	<u>3</u>
<u>EDUC 2401</u>	<u>School, Family, and Community Partnerships</u>	<u>3</u>
<u>EDUC 2440</u>	<u>Observation and Assessment of Young Children</u>	<u>3</u>
<u>EDUC 3203</u>	<u>Introduction to STEM Education</u>	<u>3</u>

<u>EDUC 3211</u>	<u>Child Development</u>	<u>3</u>
<u>EDUC 3215</u>	<u>Teaching Reading in Elementary and Early Childhood Settings</u>	<u>3</u>
<u>EDUC 3217</u>	<u>Analysis and Correction of Reading Difficulties</u>	<u>3</u>
<u>EDUC 3218</u>	<u>Language Arts for Elementary and Early Childhood Teachers</u>	<u>3</u>
<u>EDUC 3220</u>	<u>Teaching Science in the Elementary and Early Childhood Classroom</u>	<u>3</u>
<u>EDUC 3221</u>	<u>Methods of Teaching Math</u>	<u>3</u>
<u>EDUC 3430</u>	<u>Diverse Literature for Children</u>	<u>3</u>
<u>EDUC 3530</u>	<u>Teaching Integrated Social Studies and Humanities</u>	<u>3</u>

Emphasis Area: Elementary

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

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 Appreciation: Music of Latin America	
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
GEOLOGY 1110	Physical and Environmental Geology	3
or CHEM 1310 & CHEM 1319	General Chemistry I and General Chemistry Laboratory	
Total Credits		0
<u>EDUC 3215</u>	Teaching Reading in Elementary and Early Childhood Settings	3
<u>EDUC 3217</u>	Analysis and Correction of Reading Difficulties	3
<u>EDUC 3218</u>	Language Arts for Elementary and Early Childhood Teachers	3
<u>EDUC 3220</u>	Teaching Science in the Elementary and Early Childhood Classroom	3
<u>EDUC 3221</u>	Methods of Teaching Math	3
<u>EDUC 3222</u>	Geometric Concepts for Teachers	3
<u>EDUC 3203</u>	Introduction to STEM Education	3
<u>EDUC 3430</u>	Diverse Literature for Children	3
<u>EDUC 3530</u>	Teaching Integrated Social Studies and Humanities	3
Total Credits		27
<p>Students must take the following general education courses. Substitutions must be approved by the department chair. Emphasis Area: Middle School Language Arts</p>		
<p><u>A middle school certificate allows graduates to teach grades 5-9 in the designated subject area. area. <u>Students must have a 2.5 GPA in their content area coursework.</u></u></p>		
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 Appreciation: Music of Latin America	
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		0
<u>EDUC 3215</u>	Teaching Reading in Elementary and Early Childhood Settings	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3
<u>EDUC 3335</u>	Curriculum And Instruction Of The Middle School	3
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
<u>ENGLISH 2171</u>	Fiction Writing	3

or <u>ENGLISH 2172</u>	Creative Nonfiction Writing	
<u>EDUC 3298</u>	<u>Teacher Field Experience III</u>	<u>1</u>
<u>ENGLISH 3302</u>	History And Structure Of The English Language	3
<u>ENGLISH 3303</u>	The Grammatical Structure of English	3
or <u>ENGLISH 3301</u>	A Linguistic Study Of Modern English	
<u>ENGLISH 1170</u>	Creative Writing	3
EDUC 3298	Teacher Field Experience III	1
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>4 Literature Electives at 200 level or above</u>		<u>12</u>
Total Credits		37

Emphasis Area: ~~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. Students must also take an additional humanity elective and three free elective hours.~~ Emphasis Area: Middle School Mathematics

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 Appreciation: Music of Latin America	
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		0
<u>A</u> An middle school certificate allows graduates to teach grades 5-9 in the designated subject <u>area.</u> area. <u>Students</u> must have a 2.5 in <u>take the designated coursework. following general education courses.</u>		
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 3170	Teaching And Supervising Reading and Writing	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3298</u>	<u>Teacher Field Experience III</u>	<u>1</u>

<u>EDUC 3335</u>	Curriculum And Instruction Of The Middle School	3
EDUC 3298	Teacher Field Experience III	1
<u>EDUC 3203</u>	Introduction to STEM Education	3
<u>EDUC 3222</u>	Geometric Concepts for Teachers	3
<u>MATH 1103</u>	Fundamentals Of Algebra	3
<u>MATH 1120</u>	College Algebra	3-5
or <u>MATH 1140</u>	College Algebra	
<u>MATH 1208</u>	Calculus With Analytic Geometry I	4-5
or <u>MATH 1214</u>	Calculus I	
or <u>MATH 1210</u>	Calculus I-A	
<u>EDUC 3221</u>	Methods of Teaching Math	3
<u>MATH 1215</u>	Calculus II	4-5
or <u>MATH 1221</u>	Calculus With Analytic Geometry II	
or <u>MATH 1211</u>	Calculus I-B	
or <u>MATH 1212</u>	Survey of Calculus	
<u>COMP SCI 1500</u>	Computational Problem Solving	3
or <u>IS&T 1551</u>	Implementing Information Systems: User Perspective	
<u>STAT 1115</u>	Statistics For The Social Sciences I	3
or <u>STAT 3113</u>	Applied Engineering Statistics	
or <u>STAT 3115</u>	Engineering Statistics	
Total Credits		39-43
<u>Emphasis Area:</u> Students must take the following general education courses. <u>Emphasis Area:</u> Middle School Science		
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 Appreciation: Music of Latin America	
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		0
<p><u>A</u> An middle school certificate allows graduates to teach grades 5-9 in the designated subject area. <u>Students must have a 2.5 GPA in the designated coursework.</u></p>		
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3335</u>	Curriculum And Instruction Of The Middle School	3
<u>EDUC 3203</u>	Introduction to STEM Education	3
<u>EDUC 3220</u>	Teaching Science in the Elementary and Early Childhood Classroom	3

EDUC 3298	Teacher Field Experience III	1
<u>BIO SCI 1113</u>	General Biology	3
or <u>BIO SCI 1213</u>	Principles of Biology	
<u>EDUC 3298</u>	<u>Teacher Field Experience III</u>	<u>1</u>
<u>BIO SCI 1219</u>	General Biology Lab	1
<u>BIO SCI 1173</u>	Introduction to Environmental Sciences	3
<u>PHYSICS 1505</u>	Introductory Astronomy	3-4
or <u>PHYSICS 1145</u>	College Physics I	
<u>GEOLOGY 1110</u>	Physical and Environmental Geology	3
<u>GEOLOGY 1120</u>	Evolution Of The Earth	3
<u>HISTORY 3530</u>	History of Science	3
or <u>PHILOS 4345</u>	Philosophy Of Science	
<u>CHEM 1310</u>	General Chemistry I	4
<u>CHEM 1319</u>	General Chemistry Laboratory	1
<u>BIO SCI 2223</u>	General Genetics	3
Total Credits		43-44

Emphasis Area: ~~Students must also take the following general education courses. Students will also take three hours of humanities elective and three hours of free electives.~~ **Emphasis Area: Middle School Social Science**

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 Appreciation: Music of Latin America	
or THEATRE 1190	Theatre via Video	
<u>ENGLISH 1221</u>	<u>American Literature: 1600 To 1865</u>	<u>3</u>

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		0
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
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3335</u>	Curriculum And Instruction Of The Middle School	3
<u>EDUC 3530</u>	Teaching Integrated Social Studies and Humanities	3
<u>EDUC 3350</u>	Social Studies In The Elementary School	3
EDUC 3298	Teacher Field Experience III	1
<u>HISTORY 1100</u>	Early Western Civilization	3
or <u>HISTORY 1200</u>	Modern Western Civilization	
<u>EDUC 3298</u>	<u>Teacher Field Experience III</u>	<u>1</u>
<u>HISTORY 1300</u>	American History To 1877	3

or <u>HISTORY 1310</u>	American History Since 1877	
<u>PSYCH 4600</u>	Social Psychology	3
<u>DESE Approved American History elective</u>		<u>3</u>
<u>DESE Approved World History Electives</u>		<u>6</u>
<u>History Elective</u>		<u>3</u>
Total Credits		37
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. Students will also take three hours of humanities elective and three hours of free electives.		
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 Appreciation: Music of Latin America	
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		0

Justification for
request

ENGL 3170 was taught out of the English and Technical Communications department when Education was not a separate department and had only two faculty. This class has consistently been taught by education faculty, but it creates issues when we have to work through another department for scheduling, textbooks, etc. The education prefix is a more accurate representation of the department teaching and using the class for degree requirements.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Crystal Wilson (wilsoncry) (03/21/25 7:18 am): Updated credit hour range for 'or' classes where the 'or' classes were not all the same credit hours.

Jade McCain (jm558v) (04/07/25 3:49 pm): Rollback: Rollback per department request.

Jade McCain (jm558v) (04/16/25 1:47 pm): Added Gen. Ed. Statement.

Jade McCain (jm558v) (04/22/25 8:28 am): Removed EDUC 3298 from the core course list per department approval via email on 4/22.

Program Change Request

Date Submitted: 04/07/25 9:19 am

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

Last approved: 04/30/24 10:17 am

Last edit: 04/07/25 9:19 am

Changes proposed by: Kelvin Erickson (kte)

Catalog Pages Using
this Program

[Electrical Engineering](#)

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

Approval Path

1. 01/29/25 3:24 pm
Jonathan Kimball
(kimballjw):
Approved for
RELECENG Chair
2. 01/29/25 3:59 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 03/19/25 10:43 am
Jade McCain
(jm558v): Rollback
to Initiator
4. 04/07/25 11:19 am
Jonathan Kimball
(kimballjw):
Approved for
RELECENG Chair
5. 04/15/25 9:11 am
Jade McCain
(jm558v): Approved

- for CCC Secretary
6. 04/24/25 8:28 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
7. 04/28/25 2:20 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Aug 6, 2014 by
watkins
2. Aug 13, 2014 by
pantaleoa
3. Apr 25, 2016 by
watkins
4. Jun 18, 2018 by
watkins
5. May 15, 2019 by
Mehdi Ferdowsi
(ferdowsi)
6. Mar 3, 2020 by
ershenb
7. Oct 28, 2020 by
Marita Raper
(tibbettsmg)
8. Oct 1, 2021 by
Crystal Wilson
(wilsoncry)
9. May 2, 2022 by
R.Joe Stanley
(stanleyj)
10. Sep 26, 2022 by
Kelvin Erickson (kte)
11. Apr 30, 2024 by
Kelvin Erickson (kte)

Supporting Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Bachelor of Science</u>
CIM Prospectus	
Academic Level	<u>Undergraduate</u>
Program Code	EL ENG-BS
Department	Electrical & Computer Engr
Discipline	Electrical Engineering
Offered by	
Title	Electrical Engineering BS
CIP Code	<u>14.1001 - Electrical and Electronics Engineering.</u>

Purpose

Intended Audience

Program-Specific Admission

Program Requirements and Description

Bachelor of Science

Electrical Engineering¹

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

~~Electrical and Computer Engineering degree programs will require a minimum of 21 credit hours of humanities/ social sciences as specified below: ENGLISH 1120 HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200 ECON 1100 or ECON 1200 Technical Communication Elective: ENGLISH 1160 or ENGLISH 3560 SP&M S 1185 The remaining minimum of 6 additional credit hours must be three credit hour lecture courses offered in disciplines in the humanities and social sciences. Humanities courses are defined as those in: Art, English and Technical Communication, Etymology, Foreign Languages, Music, Philosophy, Speech and Media Studies, and Theatre. Social Sciences courses are defined as those in: Economics, History, Political Science, and Psychology. Study abroad courses may count as H/SS courses. H/SS courses numbered 2001, 3001, and 4001 (experimental courses) may also be used to complete these elective requirements. Courses in business, education, information science and technology, or any other discipline not listed above will not satisfy the humanities/social sciences elective requirement, although such courses may count toward general education requirements. Transfer credits from other universities in sociology and general humanities may count as humanities or social science electives.~~ The

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

Free Electives Footnote:

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

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u> ²	1	<u>MECH ENG 1720</u>	3
<u>CHEM 1310</u>	4	<u>MATH 1215</u> ³	4
<u>CHEM 1319</u>	1	<u>PHYSICS 1135</u> ^{3,4}	4
<u>MATH 1214</u> or <u>1211</u> ^{3, 20}	4	<u>ECON 1100 or 1200</u>	3
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3	<u>Elective-Hum or Soc Sci (any level)</u> ⁵	3
<u>ENGLISH 1120</u>	3	<u>Gen Ed Elective</u> ⁵	<u>6</u>
	16		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
ELEC ENG 2100 ^{3,6,7}	3	ELEC ENG 2120 ^{3,7,9}	3
ELEC ENG 2101 ^{3,6}	1	ELEC ENG 2410 ^{3, 6, 7}	3
MATH 3304	3	ELEC ENG 2411 ^{3, 6, 7}	1
COMP ENG 2210 ^{3,6,8}	3	MATH 2222	4
COMP ENG 2211 ^{3,6}	1	Engineering Science Elective ¹⁰	3
PHYSICS 2135 ^{3,4}	4	COMP SCI 1500	3
	15		17

Junior Year

First Semester	Credits	Second Semester	Credits
ELEC ENG 3100 ^{3,6,9}	3	ELEC ENG 3600 ^{3,9}	4
ELEC ENG 3101 ^{3,6,9}	1	El Eng Elective A ^{13,18}	3
ELEC ENG 3320	3	ELEC ENG 3430	3
ELEC ENG 3321	1	ELEC ENG 3431	1
SP&M S 1185 ¹²	3	STAT 3117 ¹¹	3
MATH 3108	3	Communication Elective ¹²	3
		ENGLISH 3560 or 1160	3
	14		17

Senior Year

First Semester	Credits	Second Semester	Credits
El Eng Power Elective ^{3,6,9,14}	3	El Eng Elective C ¹³	3
El Eng Power Elective Lab ^{3,6,9,14}	1	El Eng Elective E ^{16,18}	3
El Eng Elective B ¹³	3	ELEC ENG 4097	3
El Eng Elective D ^{15,19}	3	Professional Development Elective ¹⁹	3
ELEC ENG 4096 ³	1	Free Elective ¹⁷	3
Free Elective ¹⁷	3		
Gen Ed Elective ⁵	3		
	17		15

Total Credits: 128

1

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

2

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

3

A minimum grade of "C" must be attained in [MATH 1214](#), [MATH 1215](#), [MATH 2222](#), and [MATH 3304](#), [PHYSICS 1135](#) and [PHYSICS 2135](#) (or their equivalents), [ELEC ENG 2100](#), [ELEC ENG 2101](#), [ELEC ENG 2120](#), [ELEC ENG 2410](#), [ELEC ENG 2411](#), [ELEC ENG 3320](#), [ELEC ENG 3321](#), [ELEC ENG 3430](#), [ELEC ENG 3431](#), [ELEC ENG 3100](#), [ELEC ENG 3101](#), and [ELEC ENG 3600](#), the ELEC ENG power elective ([ELEC ENG 3500](#) and [ELEC ENG 3501](#) or [ELEC ENG 3540](#) and [ELEC ENG 3541](#)), [ELEC ENG 4096](#) and [COMP ENG 2210](#) and [COMP ENG 2211](#). Also, students may not enroll in other courses that use these courses as prerequisites until the minimum grade of "C" is attained.

4

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

5

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

6

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

7

Students must earn a passing grade on the ELEC ENG Advancement Exam I (associated with [ELEC ENG 2100](#)) before they enroll in [ELEC ENG 2120](#) or [ELEC ENG 2410](#) and [ELEC ENG 2411](#).

8

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

9

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

10

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

11

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

12

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

13

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

14

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

15

ELEC ENG Elective D must be a 4XXX-level or above ELEC ENG or COMP ENG course with at least a 3-hour lecture component. [ELEC ENG 4000](#), [ELEC ENG 5000](#), [COMP ENG 4000](#), [COMP ENG 5000](#), [ELEC ENG 4099](#), [COMP ENG 4099](#), [ELEC ENG 4096](#), [COMP ENG 4096](#), [ELEC ENG 4097](#), [COMP ENG 4097](#), [ELEC ENG 5070](#), [COMP ENG 5070](#), ELEC ENG 58XX, and COMP ENG 58XX may not be used for Elective D.

16

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

[COMP ENG 4096](#), [COMP ENG 4097](#), and [COMP ENG 5070](#).

17

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

18

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

19

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

20

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

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

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

Emphasis Areas for Electrical Engineering

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

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

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

For students who seek an Electrical Engineering degree with a declared emphasis, courses in the declared emphasis area will be applied to ELEC ENG Electives A, D, and E in the degree requirements. For students who choose to have multiple emphasis areas, the additional courses will apply to ELEC ENG Elective B or C and free elective requirements. Students should seek guidance from their advisors on emphasis areas and on courses that are relevant to more than one emphasis area. Students may have an emphasis area or emphasis areas listed on their transcript by completing three three-credit-hour courses in electrical and computer engineering from the designated lists with at least one of the courses being at the 4XXX-level or above. This requirement will be satisfied

by completing the relevant ABC Elective course, a 4XXX-level or above course for Elective D, and another 3XXX-level or above course for Elective E from the designated listing. The required ELEC ENG courses [ELEC ENG 3320](#), [ELEC ENG 3430](#), [ELEC ENG 3100](#), and [ELEC ENG 3600](#) and the course used to satisfy the power requirement ([ELEC ENG 3500](#) or [ELEC ENG 3540](#)) may not be used to meet the three course requirement. Transfer courses do not apply to emphasis areas. A co-listed course may count toward both areas. Experimental courses [ELEC ENG 3001](#), [ELEC ENG 4001](#), [ELEC ENG 5001](#), [COMP ENG 3001](#), [COMP ENG 4001](#), or [COMP ENG 5001](#) require departmental approval to apply toward an emphasis area.

Circuits and Electronics

ELEC ENG 3120	Electronics II	3
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ELEC ENG 41XX and ELEC ENG 51XX Courses

Communications and Signal Processing

ELEC ENG 3410	Digital Signal Processing	3
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ELEC ENG 3440	Digital Communications II	3
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ELEC ENG 44XX and ELEC ENG 54XX Courses

Computer Engineering

ELEC ENG 3410, COMP ENG 3XXX-level or above Courses (Excluding COMP ENG 3000, COMP ENG 4000, COMP ENG 5000, COMP ENG 3002, COMP ENG 4096, COMP ENG 4097, and COMP ENG 5070) See the COMP ENG degree program for details on COMP ENG areas.

Controls and Systems

ELEC ENG 3340	Basic Programmable Logic Controllers	3
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ELEC ENG 43XX and ELEC ENG 53XX Courses

Electromagnetics

ELEC ENG 46XX and ELEC ENG 56XX Courses

Optics and Devices

ELEC ENG 3250	Electronic And Photonic Devices	3
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ELEC ENG 42XX and ELEC ENG 52XX Courses

Power and Energy

ELEC ENG 3500	Electromechanics	3
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ELEC ENG 3540	Power System Design And Analysis	3
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ELEC ENG 5150	Photovoltaic Systems Engineering	3
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ELEC ENG 5520	Power Electronics	3
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ELEC ENG 45XX and ELEC ENG 55XX Courses

Justification for
request

Changed the required Econ 1100 or Econ 1200 to a Gen Ed elective (Freshman 2nd semester).

Approved at the Dec 12, 2024 ECE Faculty meeting.

All Hum or Soc electives changed to Gen Ed electives (Freshman 2nd semester and Senior 2nd semester).

Attach Budget

System Approval

Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Jade McCain (jm558v) (03/19/25 10:43 am): Rollback: Rollback per department request.

Program Change Request

Date Submitted: 04/07/25 3:50 pm

Viewing: **ENG MG-BS : Engineering Management BS**

Last approved: 01/06/25 3:29 pm

Last edit: 04/25/25 11:34 am

Changes proposed by: Joan Schuman (schumanj)

Catalog Pages Using
this Program

[Engineering Management](#)

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

Approval Path

1. 04/07/25 3:55 pm
Amaury Lendasse
(altmg): Approved
for RENG MNGT
Chair
2. 04/14/25 1:41 pm
Crystal Wilson
(wilsoncry):
Approved for CCC
Secretary
3. 04/24/25 8:29 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:20 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Sep 24, 2013 by
Lahne Black (lahne)
2. Apr 28, 2014 by
Stephen Raper
(sraper)
3. Jun 12, 2014 by
pantaleoa
4. Nov 18, 2014 by
kleb6b
5. Jan 30, 2015 by
Stephen Raper
(sraper)
6. Jul 20, 2015 by
pantaleoa
7. Jun 27, 2016 by
Stephen Raper
(sraper)
8. Jun 18, 2018 by
Stephen Raper
(sraper)
9. Mar 3, 2020 by
ershenb
10. Apr 6, 2022 by
Stephen Raper
(sraper)
11. Jun 14, 2022 by
Jennifer Pohlsander
(jpnfd)
12. Jun 7, 2023 by Joan
Schuman
(schumanj)
13. Jun 14, 2024 by
David Enke (enke)
14. Jan 6, 2025 by
Crystal Wilson
(wilsoncry)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Bachelor of Science</u>
CIM Prospectus	
Academic Level	<u>Undergraduate</u>
Program Code	ENG MG-BS
Department	Engineering Mgt & Sys Engr
Discipline	Engineering Management
Offered by	
Title	Engineering Management BS
CIP Code	

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Science

Engineering Management

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

The bachelor of science degree in engineering management requires a minimum of 121 credit hours. These requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. At least two grade points per credit hour must also be attained in all courses taken in engineering management.

Freshman Year

First Semester	Credits	Second Semester	Credits
FR ENG 1100	1	MECH ENG 1720	3
CHEM 1310 ¹	4	MATH 1215 or 1221 ¹	4
CHEM 1319	1	PHYSICS 1135 ¹	4
CHEM 1100	1	ECON 1100 or 1200	3
MATH 1214 or 1211 ¹	4	Programming Elective ³	3
ENGLISH 1120	3	General Education Elective ²	3
HISTORY 1200 , or 1300 , or 1310 , or POL SCI 1200 ⁴	3		
	17		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
MATH 2222 ¹	4	MATH 3304 ¹	3
PHYSICS 2135 ¹	4	STAT 3115 or 3117 ¹	3
CIV ENG 2200 ¹	3	ENG MGT 2110 ¹	3
ENG MGT 1210 ¹	2	ENG MGT 2211 ¹	3
ENG MGT 2310 ¹	3	PSYCH 1101 ⁴	3
	16		15

Junior Year

First Semester	Credits	Second Semester	Credits
ENG MGT 3310 ¹	3	ENG MGT 4710 ¹	3
CIV ENG 2210	3	MECH ENG 2527	3
ENG MGT 3510 ¹	3	ENGLISH 3560 or 1160	3
SP&M S 1185 ⁴	3	ENG MGT 3320 ¹	3
General Education Elective ²	3	MECH ENG 2350	2
	15		14

Senior Year

First Semester	Credits	Second Semester	Credits
Emphasis Area Required Course	3	ENG MGT Technical Elective	3

Emphasis Area Required Course	3	Emphasis Area Required Course	3
Emphasis Area Required Course	3	<u>ENG MGT 4907</u> ¹	3
<u>ENG MGT 4110</u> ¹	3	General Education Elective ²	3
<u>ELEC ENG 2800</u>	3		
	15		12

Total Credits: 121

~~Each student's program of study must contain a minimum of 21 credit hours of course work in general education and must be chosen according to the following rules: All students are required to take one American history course, one economics course, and ENGLISH 1120. The history course is to be selected from HISTORY 1200, HISTORY 1300, HISTORY 1310, or POL SCI 1200. The economics course may be either ECON 1100 or ECON 1200. All students must choose one additional humanities or social science course that meets requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog. Depth requirement. Three credit hours must be taken in humanities or social sciences at the 2000-level or above and meets 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 or above. All courses taken to satisfy the depth requirement must be taken after graduating from high school. The remaining two courses are to be chosen and meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog and include ENGLISH 3560 (or ENGLISH 1160) and SP&M S 1185 in addition to ENGLISH 1120. Any specific departmental requirements in the general studies area must be satisfied. Special topics, special problems and honors seminars are allowed only by petition to and approval by the student's department chair.~~

Example Emphasis Area Programs for Engineering Management Students

One unique aspect of the engineering management degree is the student's ability to select an established emphasis area or create a specialized emphasis. Two examples of established emphasis areas are shown below.

Management of Technology

<u>ENG MGT 5511</u>	Technical Entrepreneurship	3
<u>ENG MGT 5512</u>	Legal Environment	3
<u>ENG MGT 5410</u>	Industrial System Simulation	3
<u>ENG MGT 5614</u>	Supply Chain Management Systems	3
ENG MGT Technical Elective (in consultation with your advisor)		3

Industrial Engineering

<u>ENG MGT 4310</u>	Materials Handling and Plant Layout	3
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ENG MGT 4330	Human Factors	3
ENG MGT 5410	Industrial System Simulation	3
ENG MGT 5414	Introduction To Operations Research	3
ENG MGT Technical Elective (in consultation with your advisor)		3

General

Engineering Area Courses (Engineering Discipline)	12
ENG MGT-Technical Elective (in consultation with your advisor)	3

Note: All electives must be chosen in consultation with the student's advisor. Students must satisfy the common freshman year academic requirements in addition to the sophomore, junior, and senior year requirements listed above with a minimum of 121 hours.

1

Must have a grade of "C" or better in these courses for graduation. [MATH 1208](#) and [MATH 1221](#) may be substituted for [MATH 1214](#) and [MATH 1215](#), respectively.

2

General Education Elective must fulfill the Missouri S&T general education requirements applicable to the students catalog year.

3

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

4

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[General Education discipline specific required course.](#)

Accelerated BS/MS Program Option for Engineering Management

Undergraduates currently majoring in Engineering Management at Missouri S&T may opt to apply for a Graduate Track Pathway, which allows students to transfer nine credit hours from their Missouri S&T Engineering Management bachelor's degree to their Engineering Management or Systems Engineering master's degree. In this pathway, a student can achieve both degrees faster than if pursuing the degrees separately. The benefits of the pathway for admitted students include:

1. Nine hours of 5000 graduate-level or above EMSE courses may be transferred from their Missouri S&T bachelor's degree to their EMSE master's degree,
2. The classes taken for shared BS/MS credit may be taken at the lower undergraduate tuition rate,
3. The GRE is not required for admission into the master's degree, and
4. Work on a thesis project may begin before the bachelor's degree requirements are completed (if thesis option is chosen)

No M.S. degree requirements are changed. The MS degree may be either a thesis or non-thesis option. To be admitted, the student must complete the Grad Track Pathway Admission and Course Approval Form. To be admitted to the student must have approval of their EMSE academic advisor. The program may be combined with existing

honors research and emphasis area options. Admitted students will only have an undergraduate record in the Registrar's Office. Once they complete the bachelor's degree, and apply and are admitted into the master's degree then they will have a graduate record in the Registrar's Office. The Grad Track Pathway Admission and Course Approval Form must be completed when the student has one year left in the bachelor's program. Courses to be transferred will be identified on this form, and on Graduate Form 1, which is submitted after the student has been accepted to the master's program. Students must apply for admission to the master's program but will not be fully accepted until meeting all undergraduate degree requirements and earning their bachelor's degree. The nine hours of transferred coursework that will be taken as undergraduate credit must be approved by the student's academic advisor, and may not be undergraduate research, special problems, or courses transferred to the bachelor's degree. To be eligible for the Grad Track Pathway, an EMSE undergraduate student must be:

- One year from graduation of their bachelor's degree (excluding the semester they are currently enrolled)
- Have at least a 3.50 GPA in all EMSE courses taken at Missouri S&T,
- Have a 3.0 cumulative GPA.

Students will be admitted into the master's degree, so long as they meet EMSE graduate student academic performance requirements: To remain in the pathway, the student must maintain good standing within the undergraduate EMSE program, and must maintain continuous enrollment at Missouri S&T. Students must maintain a cumulative GPA of at least 3.00 until they receive their bachelor's degree. Students must receive grades of B or better in the graduate courses they enroll in as part of the pathway course sequence. The semester admit term for the master's degree immediately follows the semester that the bachelor's degree is awarded. If the student exits the pathway before completion of the MS degree requirements, or fails to maintain continuous enrollment at Missouri S&T, the courses taken as part of the pathway may not apply toward graduate requirements in the event of future readmission. Credits earned in graduate-level courses will be posted according to established registrar procedures to the undergraduate transcript and will apply toward the student's undergraduate degree hours as needed to obtain the undergraduate degree and thus ensure all stated degree requirements are met. Once the bachelor's degree is awarded, the student is fully admitted to the master's program, Form 1 is approved, the courses from the pathway will be included on the student's graduate degree audit.

The student applicant is responsible for checking on how graduate coursework will affect scholarships and other financial aid. Once a student becomes a graduate student, they are not eligible for Federal Pell Grants, though are still eligible for Federal Financial Aid, and will be eligible for fellowships and teaching/research assistantships.

International students should check with international affairs during completion of a Grad Track Pathway, to ensure immigration status will be maintained throughout the program.

Justification for
request

HLC requirement changes

Attach Budget

System Approval
Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Jade McCain (jm558v) (04/25/25 11:34 am): Added footnote #4 to History 1200.

Program Change Request

Date Submitted: 04/10/25 8:35 am

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

Last approved: 02/15/25 7:38 am

Last edit: 04/15/25 9:31 am

Changes proposed by: Kristine Swenson (kswenson)

Catalog Pages Using
this Program

[English and Technical Communication](#)

In Workflow

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	ENGL TC-BS
Department	English & Tech Communication
Discipline	Technical Communication
Title	

Approval Path

1. 04/10/25 8:35 am
Kristine Swenson
(kswenson):
Approved for
RENGLISH Chair
2. 04/15/25 11:48 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/15/25 12:02 pm
Petra Dewitt
(dewittp): Approved
for Arts &
Humanities DSCC
Chair
4. 04/28/25 2:20 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Mar 4, 2021 by
Kristine Swenson
(kswenson)
2. Jun 10, 2021 by
Kristine Swenson
(kswenson)
3. Jun 14, 2022 by
Daniel Reardon
(reardond)
4. Apr 14, 2023 by
Kristine Swenson
(kswenson)
5. Jul 8, 2024 by
Crystal Wilson
(wilsoncry)

6. Oct 25, 2024 by
Kathryn Dolan
(dolankc)
7. Feb 15, 2025 by
Crystal Wilson
(wilsoncry)

English & Technical Communication BS

CIP Code 23.1303 - Professional, Technical, Business,
and Scientific Writing.

Program Requirements and Description

Bachelor of Science

English & Technical Communication

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

<u>ENGLISH 1120</u>	Exposition And Argumentation	3
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<u>ENGLISH 2003</u>	Introduction to English and Technical Communication	3
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One writing intensive course out of major OR two writing emphasized courses out of major	3
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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.

Choose from MATH 1120, MATH 1140, and MATH 1210 or higher course number. In addition to these requirements, students may count up to 3 hours from psychology classes, and STAT 1115, up ~~to 3 hours from psychology classes, and up~~ to 3 hours from ~~from~~ history of science and ~~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

<u>HISTORY 1200</u>	Modern Western Civilization	3
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<u>HISTORY 1300</u>	American History To 1877	3
<u>HISTORY 1310</u>	American History Since 1877	3
<u>POL SCI 1200</u>	American Government	3
<p>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.</p> <p>All students must take the following 9 hours for the major:</p>		
<u>ENGLISH 2410</u>	Theory Of Written Communication	3
<u>TCH COM 5620</u>	Research Methods in Technical Communication	3
<u>TCH COM 4410</u>	Theory and Practice of Technical Communication	3
<p>Each student chooses <i>at least</i> one of the following CORE MODULES, which helps define each student's focus for the degree and provides foundational skills within that focus:</p>		
I. Technical Communication (12 hours):		
<u>TCH COM 1600</u>	Introduction to Technical Communication	3
<u>TCH COM 2540</u>	Layout and Design	3
<u>TCH COM 5510</u>	Technical Editing	3
One of the following:		
<u>TCH COM 3550</u>	Writing for Social Media	3
<u>TCH COM 3580</u>	Business Communication	3
<u>TCH COM 3570</u>	Writing in the Sciences	3
<u>TCH COM 5560</u>	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):		
<u>ENGLISH 3301</u>	A Linguistic Study Of Modern English	3
<u>ENGLISH 3302</u>	History And Structure Of The English Language	3
<u>ENGLISH 3303</u>	The Grammatical Structure of English	3
<u>ENGLISH 3304</u>	Language in Society	3
<p>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</p>		

refer to E&TC website and/or consult your advisor for a full list of current modules and certificates. Some of these include: Creative Writing, Professional Writing, Game Studies, English Education, Digital Presence Management.

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

English Education Certification:

The student will fulfill the general requirements for the bachelor of science degree, the requirements for the ETC major, and the requirements for Missouri certification in the teaching of English including a 3.0 in all content courses, a 2.75 cumulative GPA, and passage of the Missouri Content exam. This program is approved by the Missouri Department of Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at <https://teaching.missouri.edu/student/state-authorization/mst/licensure>. 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:

[ENGLISH 1211](#), [ENGLISH 1212](#), [ENGLISH 1221](#), [ENGLISH 1222](#).

[ENGLISH 2003](#) Introduction to English and Technical Communication.

Capstone course for major: [TCH COM 4410](#).

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.

Six hours of linguistics.

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.

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, 2003, 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

Changes to align with new Gen Ed requirements.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting Documents [English & Technical Communication Proposal \(short\) copy.pdf](#)
[ETC Capstone 4410.pdf](#)
[RE Memo to correct MDHE doc from TCH COM 4420 to 4410.pdf](#)

Reviewer

Comments

Jade McCain (jm558v) (04/15/25 9:31 am): Hyperlinked courses in description.

Program Change Request

Date Submitted: 04/16/25 2:57 pm

Viewing: **ENTPRNS-MI : Entrepreneurship Minor**

Last approved: 04/30/24 10:17 am

Last edit: 04/21/25 1:20 pm

Changes proposed by: Cecil Eng Huang Chua (cecq8z)

Catalog Pages Using
this Program

- [Business and Management Systems](#)
- [Information Science and Technology](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Minor
Academic Level	Undergraduate
Program Code	ENTPRNS-MI
Department	Business Administration
Discipline	Business
Title	

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

Approval Path

1. 04/19/25 10:24 pm
Cassie Elrod (cassa):
Approved for
RBUSADMN Chair
2. 04/21/25 12:08 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/21/25 12:27 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
4. 04/28/25 2:20 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

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 Raper (tibbettsmg)
- 6. Jun 10, 2021 by Cecil Eng Huang Chua (cchua)
- 7. Apr 30, 2024 by Cecil Eng Huang Chua (cchua)

Entrepreneurship Minor

CIP Code

Program Requirements and Description

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 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	

<u>IS&T 5251</u>	Management and Leadership of Technological Innovation
<u>ENG MGT 5511</u>	Technical Entrepreneurship
<u>ENG MGT 5411</u>	Engineering Design Optimization

Justification for
request
Inactivating IST 4641

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (04/21/25 1:20 pm): Changed start term to Fall 2025.

Program Change Request

Date Submitted: 03/21/25 7:59 pm

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

Last approved: 03/17/25 9:05 am

Last edit: 04/25/25 9:12 am

Changes proposed by: Crystal Wilson (wilsoncry)

Catalog Pages Using
this Program

[Environmental Science](#)

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

Approval Path

1. 03/23/25 9:41 am
David Duvernell
(duvernell):
Approved for
RBIOLSCI Chair
2. 03/26/25 4:17 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 03/30/25 5:17 pm
Katie Shannon
(shannonk):
Approved for
Sciences DSCC Chair
4. 04/11/25 1:58 pm
Jade McCain
(jm558v): Rollback
to Sciences DSCC
Chair for Pending
CCC Agenda post
5. 04/25/25 9:12 am

Katie Shannon
(shannonk):
Approved for
Sciences DSCC Chair
6. 04/28/25 2:20 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

- 1. Jan 24, 2022 by
Nancy Winterburg
(nancym)
- 2. Jan 24, 2022 by Evie
Sherlock (esdk3)
- 3. Jan 24, 2022 by Evie
Sherlock (esdk3)
- 4. May 2, 2022 by
Katie Shannon
(shannonk)
- 5. Feb 17, 2023 by
Robin Verble
(verbler)
- 6. Jun 6, 2023 by
Nancy Winterburg
(nancym)
- 7. Jul 14, 2023 by
Jennifer Pohlsander
(jpnfd)
- 8. Apr 30, 2024 by Dev
Niyogi (niyogid)
- 9. Jul 5, 2024 by
Crystal Wilson
(wilsoncry)
- 10. Mar 17, 2025 by
Joel Burken
(burken)

Supporting

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	
Academic Level	Undergraduate
Program Code	ENV SCI-BS
Department	Biological Sciences
Discipline	Biological Sciences
Offered by	
Title	Environmental Science BS
CIP Code	03.0104 - Environmental Science.

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Science in Environmental Science

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

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

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

Students should choose free electives that, along with required courses, fulfill the general education requirements applicable to the student's catalog year. ~~foundation.~~

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>BIO SCI 1173</u>	3	<u>ENGLISH 1160</u>	3
<u>ENV SCI 1110</u>	1	<u>CHEM 1320</u> or <u>GEOLOGY 3410</u>	3
<u>CHEM 1310</u>	4	<u>BIO SCI 1223</u>	3
<u>CHEM 1100</u>	1	<u>BIO SCI 1229</u>	1
<u>CHEM 1319</u>	1	<u>MATH 1212</u> , or <u>1208</u> , or <u>1211</u> , or <u>1214</u>	4
<u>ECON 1100</u>	3		
<u>ENGLISH 1120</u>	3		
	16		14

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>GEOLOGY 1110</u>	3	<u>BIO SCI 2263</u>	3
<u>ECON 4440</u> or <u>MIN ENG 4523</u>	3	<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u>	3
<u>ENV ENG 2601</u> or <u>CIV ENG 2601</u>	3	<u>ENV ENG 2602</u> or <u>CIV ENG 2602</u>	3
<u>PHYSICS 1145</u> or <u>1135</u>	4	<u>GEO ENG 3148</u>	3
<u>POL SCI 1200</u>	3	<u>CIV ENG 5640</u> or <u>ENV ENG 5640</u>	3
	16		15

Junior Year

First Semester	Credits	Second Semester	Credits
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PHILOS 1130	3	HISTORY 4470 , or 2510 , or 3530 , or 3510	3
GEO ENG 5331	3	GEOLOGY 2611	3
ENV ENG 5642 or CIV ENG 5642	3	PHILOS 4350	3
ECON 4540 or MIN ENG 4524	3	STAT 3425 , or 3115 , or GEO ENG 4115	3-4
BIO SCI 4313	3	BIO SCI 2223	3
	15		15-16
Senior Year			
First Semester	Credits	Second Semester	Credits
GEOLOGY 4310 , or GEO ENG 2536 , or GEO ENG 5144	3	FREE ELECTIVES	3
FREE ELECTIVES	2	ENV SCI 4028	3
UPPER DIVISION ELECTIVES ¹	9	UPPER DIVISION ELECTIVES ¹	9
	14		15

Total Credits: 120-121

1

See Upper Division Elective Course List

Upper Division Elective Course List

BIO SCI 2242	Cave Biology	2
BIO SCI 2252	Vegetation of the Ozarks	2
BIO SCI 2264	Field Ecology	2
BIO SCI 2372	Issues in Public Health	3
BIO SCI 2383	Plant Biology	3
BIO SCI 2389	Plant Biology Laboratory	1
BIO SCI 3353	Comparative Vertebrate Anatomy	4
BIO SCI 3363	Ecophysiology	3
BIO SCI 4099	Undergraduate Research	1-3
BIO SCI 4316	Introduction to Geomicrobiology	3
BIO SCI 4363	Freshwater Ecology	3
BIO SCI 4369	Freshwater Ecology Laboratory	1
BIO SCI 4383	Toxicology	3
BIO SCI 4423	Introduction to Astrobiology	3
BIO SCI 4563	Global Ecology	3
BIO SCI 4663	Animal Behavior	3
BIO SCI 5423	Advanced Biodiversity	3

<u>BIO SCI 5443</u>	Population and Conservation Genetics	3
<u>CHEM 4710</u>	Principles Of Environmental Monitoring	3
<u>CIV ENG 5605</u>	Environmental Systems Modeling	3
<u>CIV ENG 5630</u>	Remediation of Contaminated Groundwater and Soil	3
<u>CIV ENG 5635</u>	Phytoremediation and Natural Treatment Systems: Science and Design	3
<u>CIV ENG 5650</u>	Public Health Engineering	3
<u>CIV ENG 5660</u>	Introduction To Air Pollution	3
<u>CIV ENG 5662</u>	Air Pollution Control Methods	3
<u>CIV ENG 5665</u>	Indoor Air Pollution	3
<u>ECON 4085</u>	Internship	0-6
<u>ECON 4641</u>	Foundations of Sustainability	3
<u>ECON 4642</u>	Introduction to Global Eco- and Social-preneurship and Innovation	3
<u>ECON 4643</u>	Ethical Problems in a Global Environment	3
<u>ECON 5644</u>	Creativity, Innovation, and Sustainability	3
<u>ENV ENG 3615</u>	Water And Wastewater Engineering	3
<u>ENV ENG 4010</u>	Senior Seminar: Engineering In A Global Society	1
<u>ENV ENG 4099</u>	Undergraduate Research	0-6
<u>ENV ENG 4609</u>	Research in Environmental Engineering	1
<u>ENV ENG 5605</u>	Environmental Systems Modeling	3
<u>ENV ENG 5630</u>	Remediation of Contaminated Groundwater And Soil	3
<u>ENV ENG 5635</u>	Phytoremediation and Natural Treatment Systems: Science and Design	3
<u>ENV ENG 5650</u>	Public Health Engineering	3
<u>ENV ENG 5660</u>	Introduction To Air Pollution	3
<u>ENV ENG 5662</u>	Air Pollution Control Methods	3
<u>ENV ENG 5665</u>	Indoor Air Pollution	3
<u>GEO ENG 4099</u>	Undergraduate Research	0-6
<u>GEO ENG 4115</u>	Statistical Methods in Geology and Engineering	3
<u>GEO ENG 4276</u>	Environmental Aspects Of Mining	3
<u>GEO ENG 5085</u>	Internship	0-15

<u>GEO ENG 5146</u>	Applications Of Geographic Information Systems	3
<u>GEO ENG 5174</u>	Geological Engineering Field Methods	3
<u>GEO ENG 5233</u>	Risk Assessment In Environmental Studies	3
<u>GEO ENG 5239</u>	Groundwater Remediation	3
<u>GEO ENG 5276</u>	Environmental Aspects of Mining	3
<u>GEO ENG 5320</u>	Groundwater Modeling	3
<u>GEO ENG 5332</u>	Fundamentals of Groundwater Hydrology	3
<u>GEO ENG 5556</u>	Renewable Energy Systems	3
<u>GEOLOGY 2096</u>	Field Geology	3
<u>GEOLOGY 2731</u>	Introduction to Planetary Science	3
<u>GEOLOGY 4085</u>	Internship	3
<u>GEOLOGY 4099</u>	Undergraduate Research	0-6
<u>GEOLOGY 4310</u>	Remote Sensing Technology	3
<u>GEOLOGY 4411</u>	Hydrogeology	3
<u>GEOLOGY 4431</u>	Methods Of Karst Hydrogeology	3
<u>GEOLOGY 4711</u>	Paleoclimatology and Paleoecology	3
<u>GEOLOGY 4721</u>	Climate Change and Society	3
<u>GEOLOGY 4841</u>	Geological Field Studies	3
<u>GEOLOGY 5681</u>	Lidar Principles and Application	3
<u>GEOLOGY 5741</u>	Micropaleontology	3
<u>MIN ENG 5742</u>	Environmental Aspects of Mining	3
<u>POL SCI 3300</u>	Principles Of Public Policy	3
<u>POL SCI 4085</u>	Political Science Internship	0-6
<u>POL SCI 4320</u>	The Politics of Innovation	3

Secondary Education Emphasis Area

You may earn a BS degree in environmental science from Missouri S&T and certification to teach at the secondary level in the schools of Missouri with this emphasis area. This program is approved by the Missouri Department of Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at <https://teaching.missouri.edu/student/state-authorization/mst/licensure>. This program can be completed in four academic years, and student teaching is arranged with public schools anywhere in the state. Students interested in this emphasis area should consult with the advisor for environmental science.

In order to successfully complete the emphasis area, students must attain at least a 3.0 GPA ~~average~~ for all environmental science courses and professional education courses required by the Missouri Department of Elementary and Secondary Education for teacher certification. Courses must fulfill the Missouri S&T general education requirements applicable to the student's catalog year. ~~certification.~~

Students must also meet all requirements listed under the teacher education website including passing the state-required assessments.

A degree in the emphasis area requires a minimum of 127 ~~128~~ credit hours. The required courses are provided below.

Humanities: 12 semester hours

<u>ENGLISH 1120</u>	Exposition And Argumentation	3
<u>ENGLISH 1160</u>	Writing And Research	3
or <u>ENGLISH 3560</u>	Technical Writing	
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
<u>PHILOS 1130</u>	How Should I Live? An Introduction to Ethics	3
<u>PHILOS 4350</u>	Environmental Ethics and Justice	3

Social Sciences: 18 semester hours

<u>HISTORY 1310</u>	American History Since 1877	3
<u>PSYCH 1101</u>	General Psychology	3
<u>PSYCH 3310</u>	Developmental Psychology	3
<u>ECON 1100</u>	Principles Of Microeconomics	3
<u>ECON 4440</u>	Environmental And Natural Resource Economics	3
<u>HISTORY 2510</u>	History of Technology	3
or <u>HISTORY 3510</u>	Twentieth Century Technology And Society	
or <u>HISTORY 3530</u>	History of Science	

Mathematics/Physical Science: 12 semester hours

<u>MATH 1208</u>	Calculus With Analytic Geometry I	4-9
or <u>MATH 1214</u>	Calculus I	
or <u>MATH 1210</u> & <u>MATH 1211</u>	Calculus I-A and Calculus I-B	
<u>PHYSICS 1505</u> & <u>PHYSICS 1509</u>	Introductory Astronomy and Astronomy Laboratory	4
<u>PHYSICS 1145</u>	College Physics I	4

or PHYSICS 1135	Engineering Physics I	
Statistics: 3 semester hours		
STAT 3425	Introduction to Biostatistics	3-4
or STAT 3113	Applied Engineering Statistics	
or STAT 3115	Engineering Statistics	
Biological Sciences: 13 semester hours		
BIO SCI 1223 & BIO SCI 1229	Biodiversity and Biodiversity Lab	4
BIO SCI 1173	Introduction to Environmental Sciences	3
BIO SCI 2223	General Genetics	3
BIO SCI 2263	Ecology	3
Chemistry: 9 semester hours		
CHEM 1100	Introduction To Laboratory Safety & Hazardous Materials	1
CHEM 1310	General Chemistry I	4
CHEM 1319	General Chemistry Laboratory	1
CHEM 1320	General Chemistry II	3
Civil, Architectural and Environmental Engineering: 9 semester hours		
ENV ENG 2601	Fundamentals of Environmental Engineering and Science	3
ENV ENG 2602	Biological Fundamentals Of Environmental Engineering	3
ENV ENG 5640	Environmental Law And Regulations	3
or ENV ENG 5642	Sustainability, Population, Energy, Water, and Materials	
Environmental Science: 1 semester hour		
ENV SCI 1110	Environmental Science Freshman Seminar	1
Geological Sciences/Geological and Petroleum Engineering: 12 semester hours		
GEO ENG 2536	Basic Weather	3
GEOLOGY 1110	Physical and Environmental Geology	3
GEOLOGY 2611	Physical Mineralogy And Petrology	3
GEO ENG 3148	Fundamentals Of Geographic Information Systems	3
Education: 38 semester hours		

EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
<u>EDUC 1074</u>	<u>Foundations of Education in a Diverse Society</u>	<u>3</u>
<u>EDUC 1104</u>	Teacher Field Experience I	1
<u>EDUC 1164</u>	Teacher Field Experience II	2
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3216</u>	Instructional Literacy in the Content Area	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3
<u>EDUC 3298</u>	Teacher Field Experience III	1
<u>EDUC 3340</u>	Assessment of Student Learning	3
<u>EDUC 4298</u>	Student Teaching Seminar	1
<u>EDUC 4299</u>	Student Teaching	12
<u>PSYCH 2300</u>	Educational Psychology	3
or <u>EDUC 2102</u>	Educational Psychology	
<u>PSYCH 4310</u>	Psychology Of The Exceptional Child	3
or <u>EDUC 2310</u>	Education Of The Exceptional Child	

Justification for
request

Updated Education course requirements to match previous CCC changes. Added Gen Ed
requirement wording

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (04/11/25 1:58 pm): Rollback: Rollback per department request.

Program Change Request

Date Submitted: 04/11/25 1:01 pm

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

Last approved: 03/17/25 9:05 am

Last edit: 04/25/25 11:45 am

Changes proposed by: Joel Burken (burken)

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

In Workflow

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

Approval Path

1. 04/18/25 9:40 am
Mohamed Elgawady
(elgawady):
Approved for
RCIVILEN Chair
2. 04/18/25 11:33 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 9:29 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:20 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

- 1. Aug 30, 2013 by pantaleoa
- 2. Sep 3, 2013 by pantaleoa
- 3. Sep 27, 2013 by Lahne Black (lahne)
- 4. Mar 18, 2014 by Lahne Black (lahne)
- 5. Jul 20, 2015 by pantaleoa
- 6. Sep 15, 2016 by Crystal Wilson (wilsoncry)
- 7. Sep 22, 2017 by Crystal Wilson (wilsoncry)
- 8. Apr 19, 2019 by ershenb
- 9. Mar 3, 2020 by Mark Fitch (mfitch)
- 10. Jul 23, 2020 by kristyg
- 11. Oct 28, 2021 by Mark Fitch (mfitch)
- 12. May 2, 2022 by Mark Fitch (mfitch)
- 13. Mar 17, 2025 by Jody Seely (seelyj)

Rationale for
Inactivation
Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	

Academic Level	Undergraduate
Program Code	EV ENG-BS
Department	Civil Engineering
Discipline	Environmental Engineering
Offered by	
Title	Environmental Engineering BS
CIP Code	

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Environmental Engineering Bachelor of Science

The environmental engineering program at Missouri S&T is characterized by its focus on the scientific basics of engineering and its innovative application; indeed, the underlying theme of this educational program is the application of the scientific basics to engineering practice through attention to problems and needs of the public. The necessary interrelations among the various topics, the engineering disciplines, and the other professions as they naturally come together in the solution of real world problems are emphasized as research, analysis, synthesis, and design are presented and discussed through classroom and laboratory instruction. For the bachelor of science degree in environmental engineering a minimum of 129 credit hours is required. These

requirements are in addition to credit received for algebra, trigonometry, and basic ROTC courses. An average of at least two grade points per credit hour must be attained. At least two grade points per credit hour must also be attained in all courses taken in environmental engineering.

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u> ²	1	<u>MECH ENG 1720</u>	3
<u>CHEM 1310</u>	5	<u>MATH 1215</u>	4
& <u>CHEM 1319</u>			
<u>MATH 1214</u> or <u>1211</u>	4	<u>PHYSICS 1135</u>	4
<u>ENGLISH 1120</u>	3	General Education Elective ¹	3
General Education Elective ¹	3	<u>HISTORY 1200, or 1300, or 1310</u> ¹	3
	16		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CIV ENG 2200</u>	3	<u>CIV ENG 2210</u>	3
<u>MATH 2222</u>	4	<u>CIV ENG 2211</u>	1
<u>ENV ENG 2601</u> ³	3	<u>MECH ENG 2350</u>	2
<u>CHEM 1320</u> or <u>GEOLOGY 3410</u>	3	<u>CHEM ENG 2100</u>	4
<u>BIO SCI 1113</u>	3	<u>ENV ENG 2602</u>	3
		<u>ENV ENG 3603</u>	3
	16		16

Junior Year

First Semester	Credits	Second Semester	Credits
<u>ENV ENG 3615</u> ³	3	<u>ENV ENG 5619</u>	3
<u>CIV ENG 3330</u> ²	3	<u>STAT 3113</u>	3
<u>MATH 3304</u>	3	<u>CHEM ENG 2110</u>	3
<u>GEO ENG 1150</u>	3	ENV ENG Technical Elective ^{5,6}	3
<u>PHYSICS 2135</u>	4	Communications Elective⁷	3
		<u>English 1160, 3560, or SpMS 1185</u> ¹³	
	16		15

Senior Year

First Semester	Credits	Second Semester	Credits
<u>CIV ENG 4448</u>	3	<u>ENV ENG 4097</u> ³	3
<u>ENV ENG 4010</u> ³	1	ENV ENG Depth Elective ^{5,6}	3
<u>CIV ENG 3334</u>	4	ENV ENG Depth Elective ^{5,6}	3
ENV ENG Air Pollution Elective ^{4,5}	3	ENV ENG Technical Elective ^{5,6}	3
<u>HISTORY 2510</u> or <u>3530</u> ¹	3	<u>ENV ENG 4609</u>	1
ENV ENG Depth Elective ^{5,6}	3	General Education Elective ¹	3
	17		16

Total Credits: 129

¹

General education electives must fulfill the Missouri S&T general education requirements applicable to the student's

catalog year.

2

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

3

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

4

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

5

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

6

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

7

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

~~Each student's program of study must contain a minimum of 21 credit hours of course work in humanities and social sciences, and must be chosen according to the following rules: All students are required to take one American history course, one economics course, one humanities course, and ENGLISH 1120. The history course is to be selected from HISTORY 1200, HISTORY 1300, HISTORY 1310, or POL SCI 1200. The economics course may be either ECON 1100 or ECON 1200. The humanities course must be a class in art, English, foreign languages, music, philosophy, speech and media studies, or theater. HISTORY 2510 or HISTORY 3530 is required. The remaining two courses are to be chosen from humanities (art, English, foreign languages, music, philosophy, speech and media studies, or theater) or social sciences (economics, history, political science, psychology, or sociology) and may include one communications course in addition to ENGLISH 1120. Special topics and special problems and honors seminars are allowed only by petition to and approval by the student's department chair.~~ **Note:** All environmental engineering students must take the Fundamentals of Engineering examination prior to graduation. A passing grade on this examination is not required to earn a B.S. degree, however, it is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process as described in assessment requirements found elsewhere in this catalog. Students must sign a release form giving the university access to their Fundamentals of Engineering Examination score.

Environmental Engineering Depth Electives

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

ENV ENG 5640	Environmental Law And Regulations	3
ENV ENG 5630	Remediation of Contaminated Groundwater And Soil	3
ENV ENG 5650	Public Health Engineering	3

<u>ENV ENG 5670</u>	Solid Waste Management	3
<u>ENV ENG 5605</u>	Environmental Systems Modeling	3
<u>ENV ENG 5642</u>	Sustainability, Population, Energy, Water, and Materials	3
<u>ENV ENG 5665</u>	Indoor Air Pollution	3
<u>ENV ENG 5660</u>	Introduction To Air Pollution	3
<u>ENV ENG 5662</u>	Air Pollution Control Methods	3
<u>GEO ENG 5331</u>	Subsurface Hydrology	3
<u>ENV ENG 5360</u>	Water Resources And Wastewater Engineering	3
<u>ENV ENG 5635</u>	Phytoremediation and Natural Treatment Systems: Science and Design	3

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

Environmental Engineering Technical Electives

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

<u>CIV ENG 5331</u>	Hydraulics Of Open Channels	3
<u>CIV ENG 5335</u>	Water Infrastructure Engineering	3
<u>CIV ENG 5446</u>	Management Of Construction Costs	3
<u>CIV ENG 5360</u>	Water Resources And Wastewater Engineering	3
<u>CIV ENG 5448</u>	Green Engineering: Analysis of Constructed Facilities	3
<u>CHEM ENG 3101</u>	Fundamentals of Transport in Chemical and Biochemical Engineering	4
<u>CIV ENG 5744</u>	Geosynthetics in Engineering	3
<u>CHEM ENG 5340</u>	Principles of Environmental Monitoring	3
<u>GEO ENG 3148</u>	Fundamentals Of Geographic Information Systems	3
<u>GEO ENG 3175</u>	Geomorphology And Terrain Analysis	3
<u>GEO ENG 5233</u>	Risk Assessment In Environmental Studies	3
<u>GEO ENG 5235</u>	Environmental Geological Engineering	3
<u>GEO ENG 5239</u>	Groundwater Remediation	3
<u>GEO ENG 4276</u>	Environmental Aspects Of Mining	3
<u>GEOLOGY 3410</u>	Introduction To Geochemistry	3
<u>PET ENG 4210</u>	Drilling and Well Integrity	3

<u>GEOLOGY 4451</u>	Aqueous Geochemistry	3
<u>CIV ENG 5662/</u> <u>ENV ENG 5662</u>	Air Pollution Control Methods	3
<u>GEOLOGY 3811</u>	Fundamentals Of Geographic Information Systems	3
<u>CHEM 5510</u>	Introduction to Chemical Analysis	4
<u>CHEM 4510</u>	Instrumental Methods Of Chemical Analysis	4
<u>CHEM ENG 3120</u>	Chemical Engineering Thermodynamics II	3
<u>CHEM ENG 5130</u>	Risk Assessment and Reduction	3
<u>CHEM 2210</u>	Organic Chemistry I	3
<u>BIO SCI 2263</u>	Ecology	3
<u>BIO SCI 5313</u>	Pathogenic Microbiology	3
<u>BIO SCI 4323</u>	Molecular Biology	3
<u>GEO ENG 5237</u>	Geological Aspects Of Hazardous Waste Management	3
<u>GEO ENG 5276</u>	Environmental Aspects of Mining	3
<u>GEO ENG 5320</u>	Groundwater Modeling	3
<u>GEO ENG 5331</u>	Subsurface Hydrology	3
<u>GEO ENG 5332</u>	Fundamentals of Groundwater Hydrology	3
<u>GEO ENG 5381</u>	Intermediate Subsurface Hydrology And Contaminant Transport Mechs	3
<u>MIN ENG 5742</u>	Environmental Aspects of Mining	3
<u>BIO SCI 3313</u>	Microbiology	3
<u>BIO SCI 4313</u>	Introduction to Environmental Microbiology	3
<u>BIO SCI 4363</u>	Freshwater Ecology	3
<u>BIO SCI 4316</u>	Introduction to Geomicrobiology	3
<u>BIO SCI 4563</u>	Global Ecology	3
<u>BIO SCI 4329</u>	Molecular Genetics Laboratory	2
<u>BIO SCI 4383</u>	Toxicology	3
<u>CIV ENG 5330</u>	Unsteady Flow Hydraulics	3
<u>CIV ENG 5332</u>	Transport Processes in Environmental Flows	3
<u>CIV ENG 5333</u>	Intermediate Hydraulic Engineering	3
<u>CIV ENG 5337</u>	River Mechanics And Sediment Transport	3

Justification for
request

Following the updates to the S&T general education elective updates.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Jade McCain (jm558v) (04/25/25 11:45 am): Corrected History 1200 formatting in plan of study grid.

Program Change Request

Date Submitted: 04/02/25 11:49 am

Viewing: **EXP TC-CT : Explosives Technology CT**

Last approved: 06/12/19 1:30 pm

Last edit: 04/07/25 3:11 pm

Changes proposed by: Stephen Casey (caseysc)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Certificate
Academic Level	Graduate
Program Code	EXP TC-CT
Department	Mining & Nuclear Engineering
Discipline	Explosives Engineering
Title	

In Workflow

1. **RMINENG 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

Approval Path

1. 04/08/25 12:17 pm
Kwame Awuah-Offei (kabp3): Approved for RMINENG Chair
2. 04/08/25 3:01 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/24/25 8:31 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 04/28/25 2:20 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Jun 12, 2019 by
ershenb

Explosives Technology CT

CIP Code 46.0505 - Blasting/Blaster.

Intended Audience

Distance (online) Students

Main Campus Students

Program Requirements and Description

Explosives Technology Certificate

This certificate program is designed to provide formalized education in the area of explosives. Students will be exposed to the theoretical and practical approaches of explosives technology. Students will learn analysis and design of explosive-related systems and both natural and built structure effects.

The following courses constitute the graduate certificate in explosives technology:

Required-One of the following four courses:

EXP ENG 5612 Principles of Explosives Engineering

EXP ENG 5711 Explosives in Industry

EXP ENG 5721 Specialty Uses of Energetic Materials

EXP ENG 5914 Explosives Manufacturing

Choose any three courses from the list below:

EXP ENG 5112 Explosives Handling and Safety

EXP ENG 5512 Commercial Pyrotechnics Operations

EXP ENG 5513 Stage Pyrotechnics and Special Effects

EXP ENG 5514 Display Fireworks Manufacturing

EXP ENG 5555 Computer Fired Pyrotechnic Show Design and Firing System Operation

EXP ENG 5622 Blasting Design And Technology

EXP ENG 5713 Demolition of Buildings and Structures

~~MIN ENG 5922 Tunneling & Underground Construction Techniques~~

EXP ENG 5922

Tunneling & Underground Construction Techniques

3

EXP ENG 6112

Explosives Regulations

Other courses approved by the explosives engineering faculty may be substituted for any of the above listed courses on a case-by-case basis.

Justification for
request

Replaced MIN ENG 5922 with EXP ENG 5922. We are deactivating MIN ENG 5922. see attached
minor revision of certificate forms.

Attach Budget

System Approval
Letter

[Explosives Technology Revised Graduate Certificate.pdf](#)

MDHE Approval

Supporting
Documents

Reviewer

Comments

Jade McCain (jm558v) (04/07/25 3:11 pm): Added approval documents.

Program Change Request

Date Submitted: 04/16/25 2:56 pm

Viewing: **FIN TCH-MI : Minor in Financial Technology, Analytics and Transformation**

Last approved: 04/30/24 10:18 am

Last edit: 04/21/25 1:21 pm

Changes proposed by: Cecil Eng Huang Chua (cecq8z)

Catalog Pages Using
this Program

- [Business and Management Systems](#)
- [Information Science and Technology](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Minor
Academic Level	Undergraduate
Program Code	FIN TCH-MI
Department	Business Administration
Discipline	Finance
Title	

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

Approval Path

- 04/17/25 9:05 am
Cassie Elrod (cassa):
Approved for
RBUSADMN Chair
- 04/17/25 12:06 pm
Jade McCain (jm558v): Approved
for CCC Secretary
- 04/17/25 1:30 pm
Cecil Eng Huang Chua (cchua):
Approved for Social
Sciences DSCC Chair
- 04/28/25 2:20 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

History

- 1. Mar 21, 2018 by
barryf
- 2. Apr 19, 2018 by
ershenb
- 3. Apr 19, 2019 by
cladmin-bdietzler
- 4. Jun 10, 2021 by
Cecil Eng Huang
Chua (cchua)
- 5. Aug 19, 2021 by
Crystal Wilson
(wilsoncry)
- 6. Apr 30, 2024 by
Cecil Eng Huang
Chua (cchua)

Minor in Financial Technology, Analytics and Transformation

CIP Code

Program Requirements and Description

Minor in Financial Technology, Analytics and Transformation

The Minor requires 15 credit hours, as follows:

Required Courses:		6
FINANCE 2150	Corporate Finance I	
FINANCE 5310	Financial Technology and Analytics	
One or more of the following courses must be taken:		3
IS&T 3420	Introduction to Data Science and Management	
BUS 5230	Financial Data Analysis and Storytelling	
One or more of the following courses must be taken:		6
IS&T 4641	Digital Commerce and IoT Analytics	
IS&T 5780	Human and Organizational Factors in Cybersecurity	
IS&T 5520	Data Science and Machine Learning with Python	

<u>ERP 5210</u>	Performance Dashboard, Scorecard and Data Visualization
<u>ERP 5410</u>	Use of Business Intelligence
<u>FINANCE 5260</u>	Investments I

Justification for
request
Inactivating IST 4641

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (04/21/25 1:21 pm): Changed start term to Fall 2025.

Program Change Request

Date Submitted: 04/06/25 4:53 pm

Viewing: **GE ENG-BS : Geological Engineering BS**

Last approved: 03/17/25 9:05 am

Last edit: 04/07/25 10:25 am

Changes proposed by: Katherine Grote (grotekr)

Catalog Pages Using
this Program

[Geological Engineering](#)

In Workflow

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

Approval Path

1. 04/06/25 3:48 pm
Stephen Gao (sgao):
Rollback to Initiator
2. 04/06/25 6:31 pm
Stephen Gao (sgao):
Approved for
RGEOENG Chair
3. 04/15/25 9:59 am
Jade McCain
(jm558v): Approved
for CCC Secretary
4. 04/24/25 8:33 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
5. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC

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
ershenb
9. Jul 1, 2020 by Leslie
Gertsch (gertschl)
10. Jun 10, 2021 by
Sharon Lauck
(laucks)
11. Oct 28, 2021 by
Katherine Grote
(grotekr)
12. Jun 14, 2022 by
Katherine Grote
(grotekr)
13. Jun 14, 2024 by
Katherine Grote
(grotekr)
14. Mar 17, 2025 by
Katherine Grote
(grotekr)

Rationale for
Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	
Academic Level	Undergraduate
Program Code	GE ENG-BS
Department	Earth Sciences and Engineering
Discipline	Geological Engineering
Offered by	
Title	Geological Engineering BS
CIP Code	

Purpose

Intended Audience

Program-Specific
Admission

Program Requirements and Description

Bachelor of Science

Geological Engineering

For the bachelor of science degree in geological engineering a minimum of 125 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. ~~engineering. Their program of study must contain a minimum of 21 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.~~ 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
<u>MATH 1214</u> or <u>1211</u> ¹	4	<u>MATH 1215</u> ¹	4
<u>CHEM 1100</u>	1	<u>MECH ENG 1720</u>	3
<u>CHEM 1310</u>	4	<u>PHYSICS 1135</u>	4
<u>CHEM 1319</u>	1	<u>GEO ENG 1150</u> or <u>GEOLOGY 1110</u>	3
<u>ENGLISH 1120</u>	3	Humanities/Soc Sci Elective ³	3
<u>FR ENG 1100</u>	1	<u>General Education Elective</u> ²	<u>3</u>
History elective ²	3		
<u>History 1200 or 1300 or 1310 or Political Science 1200</u>	<u>3</u>		
	17		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>MATH 2222</u>	4	<u>MATH 3304</u>	3
<u>PHYSICS 2135</u>	4	<u>CIV ENG 2200</u>	3
<u>GEO ENG 3148</u>	3	<u>GEO ENG 2110</u>	1
<u>Programming Elective</u> ³	<u>3</u>	<u>GEOLOGY 2611</u>	3
		<u>GEO ENG 3175</u>	3
		Humanities/Soc Sci Elective ³	3
		<u>General Education Elective</u> ²	<u>3</u>

	14		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	Technical Elective ⁴	3
GEOLOGY 3319	1	Technical Elective ⁴	3
ECON 1100 or 1200	3		
General Education Elective²	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 5090	3
GEO ENG 5443	3	Geo Eng Elective ⁷	3
Geophysics Elective ⁵	3	Eng Econ Elective ⁸	3
Technical Elective ⁴	3	Humanities/Soc Sci Elective³	3
ENGLISH 3560⁶	3	Statistics Elective ⁹	3
		General Education Elective²	3
	15.5		15.5

Total Credits: 125

1

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

2

General Education Requirement: General education electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

3

Programming Elective: Select from [COMP SCI 1500](#), both [COMP SCI 1971](#) and [COMP SCI 1981](#), or both [COMP SCI 1972](#) and [COMP SCI 1982](#).

4

Technical Elective: Select from advanced courses in engineering as approved by advisor.

5

Geophysics Elective: Select from [GEO ENG 5736](#), [GEO ENG 5761](#), or [GEO ENG 5782](#).

6

General Education Requirement - discipline specific requirement

7

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](#).

8

Engineering Economics Elective: Select from [ENG MGT 5210](#), [MIN ENG 3512](#), or [PET ENG 4590](#) or both

ENG MGT 1100 and ENG MGT 1210.

9

Statistics Elective: Select one course from GEO ENG 4115, STAT 3113, or STAT 3115.

Geological Engineering Focus 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

<u>GEOLOGY 2096</u>	Field Geology	3
<u>GEOLOGY 3410</u>	Introduction To Geochemistry	3
<u>GEOLOGY 3620</u>	Stratigraphy And Sedimentation	3
<u>GEOLOGY 4097</u>	Advanced Field Geology	3
<u>GEOLOGY 4841</u>	Geological Field Studies	3
<u>GEO ENG 5144</u>	Remote Sensing Technology	3

Engineering Geology and Geotechnics

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

Environmental and Engineering Geophysics

<u>GEO ENG 5144</u>	Remote Sensing Technology	3
<u>GEO ENG 5736</u>	Geophysical Field Methods	3
<u>GEO ENG 5761</u>	Transportation Applications of Geophysics	3
<u>GEO ENG 5782</u>	Environmental and Engineering Geophysics	3
<u>GEOPHYS 4241</u>	Electrical Methods In Geophysics	3
<u>GEOPHYS 4261</u>	Geophysical Instrumentation	1
<u>GEOPHYS 5231</u>	Seismic Data Processing	3

Groundwater Hydrology and Environmental Protection

<u>GEO ENG 4276</u>	Environmental Aspects Of Mining	
<u>GEO ENG 5233</u>	Risk Assessment In Environmental Studies	3

<u>GEO ENG 5235</u>	Environmental Geological Engineering	3
<u>GEO ENG 5237</u>	Geological Aspects Of Hazardous Waste Management	3
<u>GEO ENG 5320</u>	Groundwater Modeling	3
<u>GEO ENG 5381</u>	Intermediate Subsurface Hydrology And Contaminant Transport Mechs	3
<u>CIV ENG 5640</u>	Environmental Law And Regulations	3
<u>PET ENG 3330</u>	Formation Evaluation	3
Quarry and Mine Engineering		
<u>GEO ENG 4276</u>	Environmental Aspects Of Mining	3
<u>GEO ENG 5471</u>	Rock Engineering	3
<u>GEO ENG 5575</u>	Aggregates And Quarrying	3
<u>CIV ENG 3116</u>	Construction Materials, Properties And Testing	3
<u>MIN ENG 3913</u>	Mineral Identification and Exploration	3
<u>MIN ENG 5612</u>	Principles of Explosives Engineering	3
<u>MIN ENG 5822</u>	Strata Control	3
<u>MIN ENG 5823</u>	Rock Mechanics	3
<u>MIN ENG 5912</u>	Mine Power and Drainage	3
Renewable and Conventional Energy Resources		
<u>GEO ENG 5146</u>	Applications Of Geographic Information Systems	3
<u>GEO ENG 5556</u>	Renewable Energy Systems	3
<u>GEOLOGY 5511</u>	Applied Petroleum Geology	3
<u>MIN ENG 5322</u>	Coal Mining Methods	3
<u>MIN ENG 5422</u>	Coal Preparation	3
<u>MIN ENG 5823</u>	Rock Mechanics	3
<u>PET ENG 2510</u>	Properties of Hydrocarbon Fluids	3
<u>PET ENG 3330</u>	Formation Evaluation	3
<u>PET ENG 3520</u>	Petroleum Reservoir Engineering	3
<u>PET ENG 4520</u>	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 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

Changes were made to comply with the General Education program decision.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Stephen Gao (sgao) (04/06/25 3:48 pm): Rollback: Rollback to add footnotes.

Jade McCain (jm558v) (04/07/25 10:25 am): Hyperlinked courses in footnotes.

Program Change Request

Date Submitted: 04/08/25 10:41 pm

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

Last approved: 03/26/25 9:26 am

Last edit: 04/23/25 3:07 pm

Changes proposed by: Kelly Liu (liukh)

Catalog Pages Using

this Program

[Geology and Geophysics](#)

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

Approval Path

1. 04/08/25 10:45 pm
Stephen Gao (sgao):
Approved for
RGEOSENG Chair
2. 04/15/25 10:10 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 8:46 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. May 6, 2014 by
Francisca Oboh-
Ikuenobe
(ikuenobe)

Final Catalog	FS2025-SP2026	<div> <div>2. Apr 24, 2015 by wronk</div> <div>3. Mar 27, 2017 by Kelly Liu (liukh)</div> <div>4. Jun 18, 2018 by Kelly Liu (liukh)</div> <div>5. Jun 14, 2019 by Sharon Lauck (laucks)</div> <div>6. Jul 1, 2020 by Sharon Lauck (laucks)</div> <div>7. Jun 10, 2021 by Sharon Lauck (laucks)</div> <div>8. Oct 28, 2021 by Katherine Grote (grotekr)</div> <div>9. Sep 16, 2024 by Crystal Wilson (wilsoncry)</div> <div>10. Mar 26, 2025 by Kelly Liu (liukh)</div> </div>
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Rationale for
Inactivation
Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	
Academic Level	Undergraduate
Program Code	GL&GPH-BS
Department	Earth Sciences and Engineering
Discipline	Geology
Offered by	
Title	Geology and Geophysics BS
CIP Code	40.0601 - Geology/Earth Science, General.

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Science Geology and Geophysics

A minimum of 122 credit hours is required for a Bachelor of Science degree in Geology and Geophysics. ~~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. 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.~~

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>GEOLOGY 1110</u> or <u>GEO ENG 1150</u>	3	<u>GEOLOGY 1120</u>	3
<u>ENGLISH 1120</u>	3	<u>GEOLOGY 1129</u>	1
<u>CHEM 1310</u>	4	Elective (Science & Eng) ²	3
<u>CHEM 1319</u>	1	Humanities/Social Science	3
		Elective	
<u>CHEM 1100</u>	1	<u>General Education Elective¹</u>	<u>3</u>
Humanities/Social Science	3	<u>MATH 1214</u> or <u>1211</u> ³	4
Elective			
<u>General Education Elective¹</u>	<u>3</u>		
	15		14

Sophomore Year

First Semester	Credits	Second Semester	Credits	Summer Semester	Credits
<u>GEOLOGY 2611</u>	<u>3</u>	<u>GEOLOGY 2611</u>	<u>3</u>	GEOLOGY 2096	3
<u>GEOPHYS 3210</u>	3	<u>GEOLOGY 3410</u>	3		

<u>MATH 1215</u> ³	4	<u>ENGLISH 1160</u> , or <u>3560</u> , or <u>SPM S</u> <u>1185</u>	3		
<u>COMP SCI 1500</u>	3	<u>ECON 1100</u> or <u>1200</u>	3		
<u>Elective (Geo & Geop)</u> ⁴	3	<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3		
<u>General Education Elective</u> ¹	3	Elective (Geo & Geop) ⁴	3		
		<u>General Education Elective</u> ¹	3		
	16		15		0
Junior Year					
First Semester	Credits	Second Semester	Credits	Summer Semester	Credits
<u>GEOLOGY 3310</u>	3	<u>GEOLOGY 3620</u>	3	<u>GEOLOGY 4097</u>	3
<u>GEOLOGY 3319</u>	1	<u>GEOLOGY 3629</u>	1		
<u>PHYSICS 1135</u> ⁵	4	<u>PHYSICS 2135</u> ⁵	4		
<u>STAT 3113</u> , or <u>3115</u> , or <u>3117</u> , or	3	<u>Elective (Geo & Geop)</u> ⁵	3		
<u>GEO ENG 4115</u>					
Elective (Geo & Geop) ⁵	3	<u>Humanities/Social Sciences</u> <u>Elective</u>	3		
		<u>GEOLOGY 2096</u>	3		
		<u>General Education Elective</u> ¹	3		
	14		14		3
Senior Year					
First Semester	Credits	Second Semester	Credits		
<u>GEOLOGY 4010</u>	0.5	<u>GEOPHYS 5096</u>	3		
Elective (Science & Eng) ²	6	Elective (Science & Eng) ²	9		
Elective (Geo & Geop) ⁴	9	Free Elective ⁶	3		
		<u>GEOLOGY 4010</u>	.5		
	15.5		15.5		

Total Credits: 122

1

General Education Requirement. General education electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

2

All Geology and Geophysics students must complete at least 18 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

MATH 1208 or MATH 1211 may be substituted for MATH 1214. MATH 1221 may be substituted for MATH 1215.

4

All Geology and Geophysics students must complete at least 18 hours of elective course work numbered 2000 or above in Geology/Geophysics, in addition to the required core curriculum.

5

Students may substitute PHYSICS 1111 and PHYSICS 1119 for PHYSICS 1135; PHYSICS 2111 and PHYSICS 2119 for PHYSICS 2135.

6

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.

~~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/socialsciences. Specific requirements for the bachelor degree program are outlined in the sample program below~~ Core Curriculum

Taken by all students in Geology & Geophysics.

<u>GEOLOGY 1110</u>	Physical and Environmental Geology	3
<u>GEOLOGY 1120</u>	Evolution Of The Earth	3
<u>GEOLOGY 1129</u>	Evolution of the Earth Laboratory ⁵	1
<u>GEOLOGY 2611</u>	Physical Mineralogy And Petrology	3
<u>GEOLOGY 3310</u>	Structural Geology	3
<u>GEOLOGY 3319</u>	Structural Geology Lab	1
<u>GEOLOGY 3410</u>	Introduction To Geochemistry	3
<u>GEOLOGY 3620</u>	Stratigraphy And Sedimentation	3
<u>GEOLOGY 3629</u>	Stratigraphy Lab	1
<u>GEOLOGY 4010</u>	Seminar	0.5
<u>GEOLOGY 2096</u>	Field Geology	3
<u>GEOLOGY 4097</u>	Advanced Field Geology	3
<u>GEOPHYS 3210</u>	Introduction to Geophysics	3
<u>GEOPHYS 5096</u>	Global Tectonics	3
Total Credits		33.5

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.

<u>GEOLOGY 3511</u>	Introduction to Mineral Deposits	3
<u>GEOLOGY 4451</u>	Aqueous Geochemistry	3

<u>GEOLOGY 4461</u>	Isotope Geochemistry	3
<u>GEOLOGY 4631</u>	Advanced Igneous and Metamorphic Petrology	4
<u>GEOLOGY 4841</u>	Geological Field Studies	3
<u>GEOLOGY 5611</u>	Granites And Rhyolites	4
<u>GEOLOGY 5671</u>	Clay Mineralogy	3
<u>CER ENG 2110</u>	Atomic Structure Of Crystalline Ceramics	3
<u>CER ENG 3220</u>	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.

<u>GEOLOGY 3511</u>	Introduction to Mineral Deposits	3
<u>GEOLOGY 4630</u>	Systematic Paleontology	3
<u>GEOLOGY 3811</u>	Fundamentals Of Geographic Information Systems	3
or <u>GEO ENG 3148</u>	Fundamentals Of Geographic Information Systems	
<u>GEOLOGY 4631</u>	Advanced Igneous and Metamorphic Petrology	4
<u>GEOLOGY 4711</u>	Paleoclimatology and Paleoecology	3
<u>GEOLOGY 4841</u>	Geological Field Studies	3
<u>GEOLOGY 5513</u>	Petroleum Geology	3
<u>GEOLOGY 5611</u>	Granites And Rhyolites	4
<u>GEOLOGY 5741</u>	Micropaleontology	3
<u>GEOLOGY 6311</u>	Advanced Structural Geology	3
<u>GEO ENG 3175</u>	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.

<u>MATH 2222</u>	Calculus III	4
<u>MATH 3304</u>	Elementary Differential Equations	3
<u>MATH 3108</u>	Linear Algebra I	3
<u>MATH 5325</u>	Partial Differential Equations	3
<u>GEOPHYS 4231</u>	Seismic Interpretation	3
<u>GEOPHYS 5202</u>	Exploration and Development Seismology	3

<u>GEOPHYS 5231</u>	Seismic Data Processing	3
<u>GEOPHYS 5261</u>	Computational Geophysics	3
<u>GEOPHYS 5736</u>	Geophysical Field Methods	3
or <u>GEO ENG 5736</u>	Geophysical Field Methods	
<u>GEOLOGY 4310</u>	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.		
<u>GEOLOGY 4431</u>	Methods Of Karst Hydrogeology	3
<u>GEOLOGY 4451</u>	Aqueous Geochemistry	3
<u>GEOLOGY 4711</u>	Paleoclimatology and Paleoecology	3
<u>GEOPHYS 5782</u>	Environmental and Engineering Geophysics	3
or <u>GEO ENG 5782</u>	Environmental and Engineering Geophysics	
<u>BIO SCI 1173</u>	Introduction to Environmental Sciences	3
<u>ENV ENG 2601</u>	Fundamentals of Environmental Engineering and Science	3
<u>ENV ENG 5640</u>	Environmental Law And Regulations	3
<u>GEO ENG 5237</u>	Geological Aspects Of Hazardous Waste Management	3
<u>GEO ENG 5331</u>	Subsurface Hydrology	3
<u>GEO ENG 5381</u>	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.		
<u>GEOLOGY 4630</u>	Systematic Paleontology	3
<u>GEOLOGY 5311</u>	Depositional Systems	3
<u>GEOLOGY 5513</u>	Petroleum Geology	3
<u>GEOLOGY 5661</u>	Advanced Stratigraphy and Basin Evolution	3
<u>GEOLOGY 5741</u>	Micropaleontology	3
<u>GEOPHYS 5202</u>	Exploration and Development Seismology	3
<u>PET ENG 3330</u>	Formation Evaluation	3
<u>GEOLOGY 4310</u>	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. ~~advisor. All other MS degree requirements remain the same.~~ All other MS degree requirements remain the same. The program may be combined with existing honors research, emphasis areas, and certificate options.

The Accelerated Program application must be completed within one semester after shared-credit courses are completed.

Courses taken for shared credit will be identified on the application form. These courses will also be listed on the student's Graduate Form 1 to be submitted after the student enters the graduate program. The nine hours of shared-credit coursework, to be taken as undergraduate credit, must be approved by the academic advisor, and may not be undergraduate research, special problems, or transfer courses. An additional six credit hours of coursework for graduate credit (beyond the shared BS/MS credits) can be taken while in the undergraduate program by applying for dual undergraduate/graduate enrollment. Taking additional courses for graduate credit as a dual enrolled student will require formal application to the graduate program. Upon application, acceptance to the 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

Update based on General Education requirements change.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting

Documents

Reviewer	Jade McCain (jm558v) (04/23/25 3:07 pm): Changed footnote #2 to 18 credit hours per
Comments	department approval via email on 4/23.

Program Change Request

Date Submitted: 03/21/25 11:42 am

Viewing: **HIST-BA : History BA**

Last approved: 12/20/24 2:51 pm

Last edit: 04/01/25 12:01 pm

Changes proposed by: Crystal Wilson (wilsoncry)

Catalog Pages Using
this Program

[History](#)

In Workflow

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

Approval Path

1. 03/21/25 12:05 pm
Shannon Fogg
(sfogg): Approved
for RHISTORY Chair
2. 03/26/25 4:01 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 03/27/25 8:17 am
Petra Dewitt
(dewittp): Approved
for Arts &
Humanities DSCC
Chair
4. 04/01/25 10:36 am
Jade McCain
(jm558v): Rollback
to Arts &
Humanities DSCC
Chair for Pending
CCC Agenda post
5. 04/01/25 10:47 am

Petra Dewitt
(dewittp): Rollback
to RHISTORY Chair
for Arts &
Humanities DSCC
Chair

6. 04/01/25 12:05 pm
Petra Dewitt
(dewittp): Approved
for dewittp

7. 04/01/25 12:11 pm
Shannon Fogg
(sfogg): Approved
for RHISTORY Chair

8. 04/02/25 1:42 pm
Jade McCain
(jm558v): Approved
for CCC Secretary

9. 04/02/25 1:43 pm
Petra Dewitt
(dewittp): Approved
for Arts &
Humanities DSCC
Chair

10. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Aug 6, 2014 by
Lahne Black (lahne)
2. Jul 21, 2015 by
pantaleoa
3. Jun 27, 2016 by
Petra Dewitt
(dewittp)
4. Mar 27, 2017 by
Petra Dewitt
(dewittp)
5. Jun 18, 2018 by
Shannon Fogg

Rationale for
Inactivation

- (sfogg)
- 6. Jan 30, 2020 by
Petra Dewitt
(dewittp)
- 7. May 5, 2021 by
Petra Dewitt
(dewittp)
- 8. Nov 15, 2021 by
Petra Dewitt
(dewittp)
- 9. Oct 31, 2023 by
Petra Dewitt
(dewittp)
- 10. Feb 23, 2024 by
Shannon Fogg
(sfogg)
- 11. Apr 30, 2024 by
Shannon Fogg
(sfogg)
- 12. Jul 5, 2024 by
Crystal Wilson
(wilsoncry)
- 13. Dec 20, 2024 by
Crystal Wilson
(wilsoncry)

Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Arts
CIM Prospectus	
Academic Level	Undergraduate
Program Code	HIST-BA
Department	History & Political Science
Discipline	History
Offered by	
Title	History BA

CIP Code 54.0101 - History, General.

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Arts History

In ~~(In~~ addition to general education requirements for Missouri S&T as stated in the catalog and the requirements for bachelor of arts degree. ~~degree.)~~

<u>HISTORY 1790</u>	Introduction to History	1
<u>HISTORY 1300</u>	American History To 1877	3
<u>HISTORY 1310</u>	American History Since 1877	3
<u>HISTORY 4790</u>	Historiography	3
<u>HISTORY 2791</u>	Historical Research Methods	3
2 American History Electives		6
2 European History Electives		6
2 History Electives		6
3 hours of Electives must come from a non-western, marginalized or minority focused course, such as		
<u>HISTORY 2430</u>	History of the American Pacific	

<u>HISTORY 3241</u>	World War I A Global Perspective
<u>HISTORY 3600</u>	World History
<u>HISTORY 3625</u>	Slavery and Abolition in Atlantic World
<u>HISTORY 3660</u>	Modern East Asia
<u>HISTORY 3665</u>	History of Japan
<u>HISTORY 4245</u>	Nazi Germany and the Holocaust
<u>HISTORY 4246</u>	War and Society in Twentieth-Century Europe
<u>HISTORY 4760</u>	China's Rise to Superpower (or)
<u>POL SCI 4760</u>	China's Rise to Superpower

Total Credits

31

Note: History majors are also required to complete [HISTORY 1100](#) and [HISTORY 1200](#) as part of the general education requirements for the B.A. In addition, 9 hours of the 31 major hours must be taken at the 3000 or 4000 level.

Note: History majors interested in graduate or professional school should take [HISTORY 4097](#) as independent research under the guidance of a faculty member in a short period (one semester).

Note: History majors must complete an experiential learning requirement. They can meet this requirement by taking [HISTORY 4085](#) or [HISTORY 4097](#) or study abroad, among other options, in consultation with their advisor.

Note: Entering students will normally take [ENGLISH 1120](#) either semester of the first year.

Secondary Education Emphasis Area

You may earn a B.A. degree in history from Missouri S&T and certification to teach in the schools of Missouri. This program is approved by the Missouri Department of Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at <https://teaching.missouri.edu/student/state-authorization/mst/licensure>. This program may be completed in four academic years and student teaching is arranged with public schools anywhere in the state.

Students interested in the certification program should consult with the advisor for history/education majors in the department of history and political science for requirements particular to those interested in this degree. Students should process a change of major form to designate history with an emphasis area of secondary education.

History students must complete [121](#) ~~[122](#)~~ credit hours, including requirements for teacher [education](#) ~~[education](#)~~ listed in this catalog. A minimum grade of "C" is required by the department in all history and political science courses counted towards this degree. Students must take the following courses:

Communication Skills: 6 hours

<u>ENGLISH 1120</u>	Exposition And Argumentation	3
<u>ENGLISH 1160</u>	Writing And Research	3

Humanities: 12 hours with at least one course from the first three areas

Art or Music or Theater Appreciation

Philosophy

Literature		
Foreign Language		
<u>ETYM 4306</u>	Introduction To Etymology	3
Social Sciences: 18 hours		
<u>POL SCI 1200</u>	American Government	3
Political Science Elective	Must be 2XXX or above	3
<u>ECON 1100</u>	Principles Of Microeconomics	3
or <u>ECON 1200</u>	Principles Of Macroeconomics	
<u>PSYCH 1101</u>	General Psychology	3
<u>PSYCH 4600</u>	Social Psychology	3
<u>HISTORY 2110</u>	World Regional Geography	3
Natural Sciences: 7 hours = 2 courses and 1 lab		
One course in Physics or Chemistry or Geology and one course in Biology		
One laboratory in any of the above science courses		
Mathematics: 3 hours		
<u>MATH 1120</u>	College Algebra (or higher)	3-5
or <u>MATH 1103</u>	Fundamentals Of Algebra	
or <u>MATH 1140</u>	College Algebra	
Clinical Experience: 16 hours		
<u>EDUC 1104</u>	Teacher Field Experience I	1
<u>EDUC 1164</u>	Teacher Field Experience II	2
<u>EDUC 3298</u>	Teacher Field Experience III	1
<u>EDUC 4299</u>	Student Teaching	12
Professional Requirements: 26 hours		
EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
<u>EDUC 1074</u>	<u>Foundations of Education in a Diverse Society</u>	<u>3</u>
<u>EDUC 2310</u>	Education Of The Exceptional Child	3
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3216</u>	Instructional Literacy in the Content Area	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3

EDUC 3340	Assessment of Student Learning	3
EDUC 4298	Student Teaching Seminar	1
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
PSYCH 2300/ EDUC 2102	Educational Psychology	3
PSYCH 3310	Developmental Psychology	3
History Requirements: 34 hours		
HISTORY 1100	Early Western Civilization	3
HISTORY 1200	Modern Western Civilization	3
HISTORY 1300	American History To 1877	3
HISTORY 1310	American History Since 1877	3
HISTORY 1790	Introduction to History	1
HISTORY 2791	Historical Research Methods	3
HISTORY 4790	Historiography	3
American History Electives		6
European History Electives		6
History Electives		3

National Security Emphasis Area (18 hours)

It is not required that students obtain an emphasis area in their major.

The following identifies courses from which a student may opt to develop a National Security Emphasis Area.

In addition to General Education Requirements for the BA and the core History Requirements (19 hours), students must select in consultation with their advisor at least 18 hours from the below with a minimum of 9 hours in history courses.

[POL SCI 4500](#) is strongly recommended.

Students may, but do not have to, focus their selection on American Security or Global Security.

At least 2 courses (6 hours) (or for a focus on American Security up to 12 hours) with grades of C or better from the following

HISTORY 3325	Revolutionary America, 1754-1789	3
HISTORY 3345	Civil War And Reconstruction	3
HISTORY 3440	Grunts: 20th Century Americans In Combat	3
HISTORY 3441	The United States In World War II	3
HISTORY 3442	The United States in Vietnam	3
HISTORY 3443	The American Military Experience	3

<u>HISTORY 3760</u>	The American Presidency (or)	3
<u>POL SCI 3760</u>	The American Presidency	
<u>HISTORY 3761</u>	U.S. Diplomatic History to World War II (or)	3
<u>POL SCI 3761</u>	U.S. Diplomatic History to World War II	
<u>HISTORY 3762</u>	American Foreign Policy Since 1945 (or)	3
<u>POL SCI 3762</u>	American Foreign Policy Since 1945	
<u>POL SCI 3300</u>	Principles Of Public Policy	3
<u>POL SCI 3310</u>	Public Policy Analysis	3
And at least 2 courses (6 hours) (or for a focus on Global Security up to 12 hours) with grades of C or better from the following		
<u>HISTORY 2224</u>	Making Of Modern Russia	3
<u>HISTORY 3241</u>	World War I A Global Perspective	3
<u>HISTORY 4760</u>	China's Rise to Superpower (or)	3
<u>POL SCI 4760</u>	China's Rise to Superpower	
<u>HISTORY 3235</u>	Foundations Of Contemporary Europe 1815-1914	3
<u>HISTORY 3240</u>	Contemporary Europe	3
<u>HISTORY 3600</u>	World History	3
<u>HISTORY 4245</u>	Nazi Germany and the Holocaust	3
<u>HISTORY 4246</u>	War and Society in Twentieth-Century Europe	3
<u>POL SCI 4500</u>	Geopolitics and International Security	3
<u>RUSSIAN 4360</u>	Russian Civilization	3
Students may also select from the following enough electives to reach 18 credit hours		
<u>BIO SCI 2372</u>	Issues in Public Health	3
<u>BUS 4675</u>	International Business	3
<u>GEO ENG 3148</u>	Fundamentals Of Geographic Information Systems (or)	3
<u>GEOLOGY 3811</u>	Fundamentals Of Geographic Information Systems	
<u>HISTORY 3530</u>	History of Science	3
<u>IS&T 1314</u>	Exposure to Cybersecurity Concepts	3
<u>IS&T 3333</u>	Data Networks and Information Security	3
<u>MIL AIR 4110</u>	National Security, Leadership Responsibilities & Commissioning Preparation I	2.5
<u>MIL AIR 4120</u>	National Security, Leadership Responsibilities & Commissioning Preparation II	2.5
<u>MIL ARMY 3500</u>	Leadership in Changing Environments	3

<u>MIL ARMY 4250</u>	Developing Adaptive Leaders	3
<u>MIL ARMY 4500</u>	Leadership in a Complex World	3
<u>PHYSICS 1605</u>	Environmental Physics I	3
<u>PSYCH 4610</u>	Psychology of Leadership in Organizations	3
<u>PSYCH 4992</u>	Cross-Cultural Psychology	3

Additional courses from the above may be used to reach 120 credit hours.

Justification for request Updated Education course requirements to match previous CCC changes. Updating language to reflect the new general education requirements.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting Documents [MDHE Approval Letter _S&T_ FEB 2024.pdf](#)
[PC Form-History BA-Emphasis Addition.pdf](#)

Reviewer Comments **Jade McCain (jm558v) (04/01/25 10:36 am):** Rollback: Rollback per department request on 4/1/2025.
Petra Dewitt (dewittp) (04/01/25 10:47 am): Rollback: Rolling back to History Department chair to update General Education requirements.

Program Change Request

Date Submitted: 04/01/25 2:13 pm

Viewing: **HISTORY-BS : Bachelor of Science in History**

Last approved: 12/20/24 3:05 pm

Last edit: 04/01/25 2:13 pm

Changes proposed by: Shannon Fogg (sfogg)

Catalog Pages Using
this Program
[History](#)

Final Catalog
Rationale for
Supporting

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	
Academic Level	Undergraduate
Program Code	HISTORY-BS
Department	History & Political Science
Discipline	History
Offered by	
Title	

In Workflow

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

Approval Path

1. 04/01/25 2:14 pm
Shannon Fogg (sfogg): Approved for RHISTORY Chair
2. 04/02/25 1:44 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/02/25 1:46 pm
Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 04/28/25 2:22 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

- 1. Jun 27, 2016 by
Petra Dewitt
(dewittp)
- 2. Jul 27, 2016 by
Crystal Wilson
(wilsoncry)
- 3. Dec 1, 2016 by
Petra Dewitt
(dewittp)
- 4. Jan 30, 2020 by
Petra Dewitt
(dewittp)
- 5. Nov 15, 2021 by
Petra Dewitt
(dewittp)
- 6. May 10, 2022 by
Marita Raper
(tibbettsmg)
- 7. May 18, 2023 by
Jennifer Pohlsander
(jpnfd)
- 8. Oct 31, 2023 by
Petra Dewitt
(dewittp)
- 9. Apr 30, 2024 by
Shannon Fogg
(sfogg)
- 10. Dec 20, 2024 by
Crystal Wilson
(wilsoncry)

Bachelor of Science in History

CIP Code

Purpose

Intended Audience

Program-Specific

Program Requirements and Description

Bachelor of Science History

Students must take a minimum of 120 hours for a Bachelor of Science degree in history, and obtain a grade point average of 2.0. Students must complete the General Education Requirements as stated in the catalog, as applicable to the student's catalog year. These requirements for the B.S. are in addition to credit received for basic ROTC.

The B.S. in history requires the following:

1. English composition (6 hours)

<u>ENGLISH 1120</u>	Exposition And Argumentation ¹	3
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One other writing intensive course outside their major, such as	3
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<u>ENGLISH 1160</u>	Writing And Research
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<u>ENGLISH 1170</u>	Creative Writing
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<u>ENGLISH 3560</u>	Technical Writing
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2. Math and Sciences (18 hours).

The General Education requirements call for all degrees call for at least 10 ~~18~~ hours in the natural (biology, chemistry, ~~biological, physical (chemistry, geology, physics, 1 lab), physics), and mathematical sciences. (mathematics, statistics, computer science, and information science and technology) sciences.~~ To fulfill 18 hours
The general requirements for the a B.S. in History, students may take additional natural sciences, mathematical (statistics, computer science, and information science and technology) science courses or courses as outlined below.

1 Biological Science course

1 Physical Science course ²
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1 Laboratory course

1 Math course ³		
In addition to these General Education requirements, students may also count toward 18 hours		
<u>STAT 1115</u>	Statistics For The Social Sciences I	
Up to 3 hours from		
<u>HISTORY 2510</u>	History of Technology	
<u>HISTORY 3510</u>	Twentieth Century Technology And Society	
<u>HISTORY 3530</u>	History of Science	
<u>HISTORY 3534</u>	History of Medieval and Early Modern Science	
3 hours of Psych courses not listed elsewhere, such as		
<u>PSYCH 2200</u>	Research Methods & Statistics 1	
call for at least 18 hours in biological, physical (chemistry, geology, physics), and mathematical (mathematics, statistics, computer science, and information science and technology) sciences.		
3. Humanities (12 hours).		
Students must take 12 hours in humanities other than history with at least ⁸		
1 Literature course		
1 Philosophy course		
1 Fine Arts course ⁴		
Students may take language course or humanities course other than history to meet 12 hours requirement.		
4. Social Sciences (12 hours).		
<u>POL SCI 1200</u>	American Government	3
At least one course in two from three areas:		
<u>At least one course in two of the three areas: ⁸</u>		
Economics		
Political Science		
Psychology		
Students may transfer up to 3 hours of Sociology to meet 12 hours requirement ⁵		
5. History (37 hours)		
Students must take 37 hours in required history courses, including ⁷		
<u>HISTORY 1790</u>	Introduction to History	1
<u>HISTORY 1100</u>	Early Western Civilization	3

<u>HISTORY 1200</u>	Modern Western Civilization	3
<u>HISTORY 1300</u>	American History To 1877	3
<u>HISTORY 1310</u>	American History Since 1877	3
<u>HISTORY 2791</u>	Historical Research Methods	3
<u>HISTORY 4790</u>	Historiography	3
At least 18 hours of Electives, consisting of ⁶		
2 American History Electives		6
2 European History Electives		6
1 Elective must come from a non-western, marginalized or minority focused course, such as		3
<u>HISTORY 2430</u>	History of the American Pacific	
<u>HISTORY 3241</u>	World War I A Global Perspective	
<u>HISTORY 3600</u>	World History	
<u>HISTORY 3625</u>	Slavery and Abolition in Atlantic World	
<u>HISTORY 3660</u>	Modern East Asia	
<u>HISTORY 3665</u>	History of Japan	
<u>HISTORY 4245</u>	Nazi Germany and the Holocaust	
<u>HISTORY 4246</u>	War and Society in Twentieth-Century Europe	
<u>HISTORY 4760</u>	China's Rise to Superpower (or)	
<u>POL SCI 4760</u>	China's Rise to Superpower	

6. Electives Credit. Each student will elect sufficient additional courses to complete a minimum of 120 credit hours, which may include up to 12 hours in engineering courses at the discretion of the major adviser. 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.

National Security Emphasis Area (18 hours)

It is not required that students obtain an emphasis area in their major.

The following identifies courses from which a student may opt to develop a National Security Emphasis Area.

In addition to General Education Requirements for the BS and the core History Requirements (19 hours), students must select in consultation with their advisor at least 18 hours from the below with a minimum of 9 hours in history courses. [POL SCI 4500](#) is strongly recommended.

Students may, but do not have to, focus their selection on American Security or Global Security.

At least 2 courses (6 hours) (or for a focus on American Security up to 12 hours) with grades of C or better from

the following

<u>HISTORY 3325</u>	Revolutionary America, 1754-1789	3
<u>HISTORY 3345</u>	Civil War And Reconstruction	3
<u>HISTORY 3440</u>	Grunts: 20th Century Americans In Combat	3
<u>HISTORY 3441</u>	The United States In World War II	3
<u>HISTORY 3442</u>	The United States in Vietnam	3
<u>HISTORY 3443</u>	The American Military Experience	3
<u>HISTORY 3760</u>	The American Presidency (or)	3
<u>POL SCI 3760</u>	The American Presidency	
<u>HISTORY 3761</u>	U.S. Diplomatic History to World War II (or)	3
<u>POL SCI 3761</u>	U.S. Diplomatic History to World War II	
<u>HISTORY 3762</u>	American Foreign Policy Since 1945 (or)	3
<u>POL SCI 3762</u>	American Foreign Policy Since 1945	
<u>POL SCI 3300</u>	Principles Of Public Policy	3
<u>POL SCI 3310</u>	Public Policy Analysis	3

And at least 2 courses (6 hours) (or for a focus on Global Security up to 12 hours) with grades of C or better from the following

<u>HISTORY 2224</u>	Making Of Modern Russia	3
<u>HISTORY 3241</u>	World War I A Global Perspective	3
<u>HISTORY 4760</u>	China's Rise to Superpower (or)	3
<u>POL SCI 4760</u>	China's Rise to Superpower	
<u>HISTORY 3235</u>	Foundations Of Contemporary Europe 1815-1914	3
<u>HISTORY 3240</u>	Contemporary Europe	3
<u>HISTORY 3600</u>	World History	3
<u>HISTORY 4245</u>	Nazi Germany and the Holocaust	3
<u>HISTORY 4246</u>	War and Society in Twentieth-Century Europe	3
<u>POL SCI 4500</u>	Geopolitics and International Security	3
<u>RUSSIAN 4360</u>	Russian Civilization	3

Students may also select from the following enough electives to reach 18 hours.

<u>BIO SCI 2372</u>	Issues in Public Health	3
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<u>BUS 4675</u>	International Business	3
<u>GEO ENG 3148</u>	Fundamentals Of Geographic Information Systems (or)	3
<u>GEOLOGY 3811</u>	Fundamentals Of Geographic Information Systems	3
<u>HISTORY 3530</u>	History of Science	3
<u>IS&T 1314</u>	Exposure to Cybersecurity Concepts	3
<u>IS&T 3333</u>	Data Networks and Information Security	3
<u>MIL AIR 4110</u>	National Security, Leadership Responsibilities & Commissioning Preparation I	2.5
<u>MIL AIR 4120</u>	National Security, Leadership Responsibilities & Commissioning Preparation II	2.5
<u>MIL ARMY 3500</u>	Leadership in Changing Environments	3
<u>MIL ARMY 4250</u>	Developing Adaptive Leaders	3
<u>MIL ARMY 4500</u>	Leadership in a Complex World	3
<u>PHYSICS 1605</u>	Environmental Physics I	3
<u>PSYCH 4610</u>	Psychology of Leadership in Organizations	3
<u>PSYCH 4992</u>	Cross-Cultural Psychology	3

Additional courses from the above may be used to reach 120 credit hours.

1

Entering students will normally take [ENGLISH 1120](#) within their first year of study. Also fulfills a General Education requirement.

2

Chemistry, Physics, Geology, in accordance with General Education requirements.

3

College Algebra or higher in accordance with General Education requirements.

4

Art, Music, or Theater Appreciation, in accordance with General Education requirements.

5

With major advisor approval

6

9 of these 18 hours of history electives must be at or above the 3000 level.

7

The student must earn a grade of C or better in these required courses.

8

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[Select from General Education requirements.](#)

Justification for
request

Updating to reflect new General Education Requirements language

Attach Budget

System Approval
Letter

MDHE Approval

Supporting Documents [MDHE Approval Letter_S&T_FEB 2024.pdf](#)
 [PC Form-History BS-Emphasis Addition.pdf](#)

Reviewer
Comments

Program Change Request

A deleted record cannot be edited

Program Inactivation Proposal

Date Submitted: 04/16/25 1:09 pm

Viewing: **IA&SOES-CT : Info Assurance & Sec Essn**
CT

Last approved: 06/12/19 3:48 pm

Last edit: 04/16/25 1:09 pm

Changes proposed by: Jade McCain (jm558v)

Catalog Pages Using
this Program
[Computer Science](#)

Final Catalog FS2025-SP2026

Rationale for
Inactivation

In Workflow

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

Approval Path

1. 04/16/25 1:47 pm
Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
2. 04/19/25 3:14 pm
Jonathan Kimball (kimballjw): Approved for RELECENG Chair
3. 04/21/25 12:08 pm
Jade McCain (jm558v): Approved for CCC Secretary
4. 04/24/25 9:24 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair

5. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Jun 12, 2019 by
ershenb

Inactivating due to Provost's office recommendation.

Supporting [InfoAssurSecAssengradcert.docx](#)
Documents [MDHE Approval Letter ST September 2024 GradCertsDeletions or Inactivations.pdf](#)

Effective Catalog FS2025-SP2026
Edition
Start Term
Program Type
Academic Level
Program Code IA&SOES-CT
Department Computer Science
Discipline Computer Science
Title
Info Assurance & Sec Essn CT
CIP Code

Program Requirements and Description

Information Assurance and Security Officer Essentials

Protecting information systems is key to protecting the nation's critical infrastructures. Only through diligence and a well-trained workforce will we be able to adequately defend the nation's vital information resources. Missouri S&T's certificate is Certified by the National Security Agency (NSA) Committee on National Security Systems (CNSS) for National Standards 4011 (National Training Standard for Information Systems Security (INFOSEC) Professionals) and 4014E (Information Assurance Training Standard for Information Systems Security Officers

(ISSO)).

Justification for
request

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 03/27/25 10:28 am

Viewing: **INTRCU-CTU : Intercultural Studies CTU**

Last approved: 03/26/25 9:26 am

Last edit: 03/27/25 10:28 am

Changes proposed by: Irina Ivliyeva (ivliyeva)

Catalog Pages Using
this Program
[Multidisciplinary Studies](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Certificate
Academic Level	Undergraduate
Program Code	INTRCU-CTU
Department	Arts, Languages & Philosophy
Discipline	Arts, Languages and Philosophy
Title	

In Workflow

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

Approval Path

1. 03/27/25 10:30 am
Irina Ivliyeva (ivliyeva): Approved for RPHILOSO Chair
2. 03/28/25 8:19 am
Jade McCain (jm558v): Approved for CCC Secretary
3. 03/28/25 9:42 am
Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 04/28/25 2:22 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. May 2, 2022 by Monica Kasza (msp7h)
2. Jun 17, 2022 by Crystal Wilson (wilsoncry)
3. Aug 4, 2022 by Evie Sherlock (esdk3)
4. Mar 26, 2025 by Irina Ivliyeva (ivliyeva)

Intercultural Studies CTU

CIP Code

Intended Audience

Main Campus Students

Program Requirements and Description

Intercultural Studies Certificate

This certificate program is for students from any major who wish to expand their knowledge of intercultural issues from a multidisciplinary perspective, and develop the knowledge, skills and aptitudes necessary to work successfully in today's global and interconnected world. Students select four courses from an approved list in consultation with their certificate advisor. Many of the courses also fulfill requirements for degree programs. Students must meet regular Missouri S&T undergraduate admission requirements.

Certificate Requirements

Choose one:

<u>HISTORY 1200</u>	Modern Western Civilization	3
<u>ENGLISH 1212</u>	British Literature II 1800 To Present	3

Choose three additional courses:

<u>SP&M S 3235</u>	Intercultural Communication	3
<u>PSYCH 4992</u>	Cross-Cultural Psychology	3
<u>HISTORY 2110</u>	World Regional Geography	3

<u>HISTORY 2220</u>	Making Of Modern Britain	3
<u>HISTORY 2221</u>	Making of Modern Germany	3
<u>HISTORY 2222</u>	The Making Of Modern France	3
<u>HISTORY 2224</u>	Making Of Modern Russia	3
<u>HISTORY 3240</u>	Contemporary Europe	3
<u>HISTORY 3600</u>	<u>World History</u>	<u>3</u>
<u>HISTORY 3660</u>	Modern East Asia	3
<u>POL SCI 2500</u>	International Relations	3
<u>POL SCI 4500</u>	Geopolitics and International Security	3
<u>POL SCI 4510</u>	The Politics of the Global South	3
<u>ENGLISH 2002</u>	Critical Approaches To Literature	3
<u>ENGLISH 3219</u>	The British Novel II	3
<u>ENGLISH 3233</u>	Contemporary British Literature	3
<u>ENGLISH 3304</u>	Language in Society	3
<u>TCH COM 4450</u>	International Dimensions of Technical Communication	3
<u>ECON 4642</u>	Introduction to Global Eco- and Social-preneurship and Innovation	3
<u>ECON 4643</u>	Ethical Problems in a Global Environment	3
<u>RUSSIAN 4360</u>	Russian Civilization	3
<u>MUSIC 1150</u>	Music Appreciation: Music of Latin America	3

Justification for
request

Expand and diversify curricular options in the Additional Courses section.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Key: 388

Program Change Request

A deleted record cannot be edited

Program Inactivation Proposal

Date Submitted: 03/28/25 2:33 pm

Viewing: **IRON-CT : Iron and Steel Metallurgy
Certificate**

Last approved: 08/27/20 2:57 pm

Last edit: 04/07/25 3:06 pm

Changes proposed by: David Lipke (lipked)

Catalog Pages Using
this Program

[Metallurgical Engineering](#)

Final Catalog

FS2025-SP2026

Rationale for
Inactivation

In Workflow

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

Approval Path

1. 03/28/25 2:47 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
2. 04/07/25 3:07 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 8:48 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Jul 1, 2020 by F.
Scott Miller (smiller)
2. Aug 27, 2020 by
Crystal Wilson
(wilsoncry)

Insufficient interest to justify continued offering.

Supporting Documents [Iron and Steel Metallurgy Cert Deactivate.docx](#)
[MDHE Approval Letter ST September 2024 GradCertsDeletions or](#)
[Inactivations.pdf](#)

Effective Catalog FS2025-SP2026

Edition

Start Term

Program Type

Academic Level	
Program Code	IRON-CT
Department	Materials Science & Engineering
Discipline	Metallurgical Engineering
Title	
	Iron and Steel Metallurgy Certificate
CIP Code	

Program Requirements and Description

Missouri University of Science and Technology offers a graduate certificate in Iron and Steel Metallurgy for working professionals. The graduate certificate program consists of four courses from existing graduate-level courses. While the students admitted to the certificate program will have non-matriculated status, if they complete the four course sequence with a grade of B or better in each of the courses taken, they will be admitted to the master's degree program, if they so choose. The certificate credits taken by students admitted to the master's program will count toward their master's degrees.

The Iron and Steel Metallurgy Certificate Program is open to all persons holding a bachelor's, master's, or doctorate degree in engineering, science, and/or mathematics and who have a minimum of one year of professional employment experience, or are currently accepted into a graduate degree program at Missouri S&T. Once admitted to the program, the student must take the four designated courses. In order to receive a graduate certificate, the student must have an average cumulative grade point of 3.0 or better in the certificate courses. Once admitted to the program, a student will be given three years to complete the program.

A student admitted to the Iron and Steel Metallurgy Certificate Program will have non-degree graduate status; however, they will earn graduate credit for the courses they complete. If the four-course sequence is completed with a grade of B or better in each of the courses taken, the student, upon application, will be admitted to the master's degree program sponsoring the graduate certificate, provided that all other program prerequisites and admission requirements are met. The certificate credits taken by the student admitted to the master's degree program will count toward their master's degree. Students who do not have all of the prerequisite courses necessary to begin the courses in the Iron and Steel Metallurgy Certificate Program will be allowed to take "bridge" courses at either the graduate or undergraduate level to prepare for the formal certificate courses. Students enrolled in this certificate will take one required course and three elective courses.

Choose one required course from the following:

<u>MET ENG 5450</u>	Advanced Steelmaking	3
<u>MET ENG 6320</u>	Advanced Steels and Their Treatment	3

Choose three courses from the following:

<u>MET ENG 5310</u>	Corrosion and Its Prevention	3
<u>MET ENG 5440</u>	Metal Deformation Processes	3

<u>MET ENG 5450</u>	Advanced Steelmaking	3
<u>MET ENG 5470</u>	Ferrous Metals Casting	3
<u>MET ENG 6320</u>	Advanced Steels and Their Treatment	3
<u>MS&E 6130</u>	Kinetic Theory for Materials	3

Note: MET ENG 5450 and MET ENG 6320 can be taken as the required course or as an elective, but not both.

Justification for
request

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (04/07/25 3:06 pm): Added MDHE approval letter.

Program Change Request

Date Submitted: 04/10/25 1:12 pm

Viewing: **IST-BS : Information Science and Tch BS**

Last approved: 06/14/24 1:14 pm

Last edit: 04/15/25 10:21 am

Changes proposed by: Cecil Eng Huang Chua (cecq8z)

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

Final Catalog
Rationale for
Supporting

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	
Academic Level	Undergraduate
Program Code	IST-BS
Department	Information Science & Tech
Discipline	Info Science & Technology

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

Approval Path

1. 04/10/25 3:49 pm
Cassie Elrod (cassa):
Approved for
RINFSCTE Chair
2. 04/15/25 12:02 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/15/25 1:51 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
4. 04/28/25 2:23 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

Offered by

Title

History

- 1. Apr 28, 2014 by
barryf
- 2. Jan 30, 2015 by
barryf
- 3. Jul 21, 2015 by
pantaleoa
- 4. Jul 21, 2015 by
pantaleoa
- 5. Jul 28, 2015 by
kleb6b
- 6. Mar 7, 2016 by
barryf
- 7. Apr 21, 2017 by
Crystal Wilson
(wilsoncry)
- 8. Jun 18, 2018 by
barryf
- 9. Jun 10, 2021 by
Cecil Eng Huang
Chua (cchua)
- 10. Jun 14, 2024 by
Cassie Elrod (cassa)

Information Science and Tch BS

CIP Code

Purpose

Intended Audience

Program-Specific
Admission

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 Information Science and Technology 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 Business and Information Technology helps provide students with skills to succeed in a fast-changing and globalized environment. Information Science and Technology (IS&T) Core courses and IS&T 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, networks and communications, and cybersecurity. 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 courses designated accordingly.

Students have 9 credit hours for free electives.

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>BUS 1810</u>	1	<u>BUS 1110</u>	3
<u>IS&T 1551</u>	3	<u>BUS 1210</u>	3
<u>IS&T 1750</u>	3	<u>IS&T 1552</u>	3
<u>ENGLISH 1120</u> ³	3	<u>MATH 1212</u>	4
Mathematical Science or Science Elective ¹	4	<u>MATH 1210</u> ³	5
<u>Science Elective</u> ^{1,3}	3	<u>PSYCH 1101</u> ³	3
<u>Science Lab</u> ³	1		
	14		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>ERP 2110</u>	3	<u>IS&T 3420</u>	3
<u>SP&M S 1185</u> ³	3	<u>ECON 1100</u> ³	3
<u>ECON 1200</u> ³	3	<u>ENGLISH 2560</u> (or TECHCOM 2560) ³	3
Mathematical Science or Science Elective ¹	3	<u>STAT 3111</u> or <u>1115</u>	3
Fine Art, Social Science, or Humanities Elective ³	3	Science Elective ^{1,3}	3
<u>FINANCE 2150</u>	3		
<u>Fine Art, or Humanities Elective</u> ^{2,3}	3		
	15		15

Junior Year

First Semester	Credits	Second Semester	Credits
FINANCE 2150	3	<u>IS&T 3343</u>	3
<u>IS&T 3333</u>	3	<u>IS&T 4444</u>	3
<u>IS&T 3423</u>	3	IS&T Elective	3
<u>IS&T 4654</u>	3	<u>MKT 3110</u>	3
IS&T Elective	3	<u>POL SCI 1200</u> ³	3
<u>Free Elective</u>	<u>3</u>		
	15		15

Senior Year

First Semester	Credits	Second Semester	Credits
<u>IS&T 5520</u>	3	<u>BUS 5980</u>	3
<u>IS&T 5725</u>	3	<u>IS&T 5420</u>	3
IS&T Electives	6	IS&T Elective	3
Free Elective	5	Free Electives	3
	17		12

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 1551, IS&T 1552, IS&T 1750, IS&T 3333, IS&T 3343, IS&T 3420, IS&T 3423, IS&T 4444, IS&T 4654, IS&T 5420, IS&T 5520, IS&T 5725, ~~IS&T 5725~~ and all IS&T Electives (can include BUS 5730, BUS 5910, COMP SCI 4700, COMP SCI 5601, or any IS&T or ERP designated course at the 3000-level or above).

1

Any course in two of the following areas: biology, chemistry, geology, or physics.

2

Any course in the following areas: art, history, music, or theater.

3

General education discipline required course. These fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

Justification for
request

Revision in GenEd requirements. Also, adjustment based on request by MATH dept.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Jade McCain (jm558v) (04/15/25 10:21 am): Hyperlinked courses in the footnotes.

Key: 75

Program Change Request

Date Submitted: 04/09/25 2:09 pm

Viewing: **MAT S E-MS : Materials Science and Engr MS**

Last approved: 07/23/15 3:10 pm

Last edit: 04/09/25 2:09 pm

Changes proposed by: Haiming Wen (wenha)

Catalog Pages Using
this Program
[Materials Science and Engineering](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Master of Science
Academic Level	Graduate
Program Code	MAT S E-MS
Department	Materials Science & Engineering
Discipline	Materials Science & Engineering
Title	

In Workflow

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

Approval Path

1. 04/09/25 2:12 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
2. 04/11/25 4:02 pm
Crystal Wilson
(wilsoncry):
Approved for CCC
Secretary
3. 04/24/25 8:51 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:23 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Apr 28, 2014 by F.
Scott Miller (smiller)
2. Jul 23, 2015 by
pantaleoa

Materials Science and Engr MS

CIP Code

Program Requirements and Description

~~Degree Requirements M.S. and Ph.D. degrees are offered in materials science and engineering. Students may apply for either degree and may be admitted directly to~~

~~the Ph.D. program upon approval (i.e., there is no M.S. requirement). Depending upon their intended career path, students may be encouraged to pursue one of the MSE graduate degrees or other degree programs noted above.~~ Degree Requirements

The total number of hours required for the M.S. in materials science and engineering is 30. The M.S. with thesis is oriented toward the completion of a research project and the degree requirements are 18 hours of course work and ~~6~~ 12 hours of research. It is recommended that the student complete the core courses offered by the department including MS&E 6110, MS&E 6120, ~~MS&E 6110, MS&E 6120~~, and MS&E 6130 ~~MS&E 6130~~ which are graduate level crystallography, thermodynamics and kinetics. At least 6 hours of course work must be 6000-level courses. ~~It is recommended that six additional hours be completed outside of the department.~~ The other courses are chosen with the approval of the advisor.

For the non-thesis M.S. degree in materials science and engineering, 30 hours of course work must be completed with a minimum of ~~9~~ 12 hours at the 6000-level.

~~The total number of hours required for the Ph.D. degree in materials science and engineering is 72. Ph.D. students are required to complete the three core courses, MS&E 6110, MS&E 6120, and MS&E 6130. To advance to Ph.D. candidacy, the student must take and pass a qualifying exam. This must be completed prior to the beginning of the fifth semester after entering the graduate program. Students must also take and pass the comprehensive exam in accordance with Missouri S&T rules.~~

Justification for
request

The current language is for the old catalog before 2021. Updates and corrections are requested so that the language is consistent with the campus requirements in the new catalog.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 04/09/25 2:10 pm

Viewing: **MAT SE-PHD : Materials Science and Engr PhD**

Last approved: 04/28/14 11:09 am

Last edit: 04/14/25 8:35 am

Changes proposed by: Haiming Wen (wenha)

In Workflow

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Doctor of Philosophy</u>
Academic Level	<u>Graduate</u>
Program Code	MAT SE-PHD
Department	Materials Science & Engineering
Discipline	<u>Materials Science & Engineering</u>
Title	

Approval Path

1. 04/09/25 2:12 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
2. 04/14/25 8:35 am
Crystal Wilson
(wilsoncry):
Approved for CCC
Secretary
3. 04/24/25 8:51 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:23 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Apr 28, 2014 by F.
Scott Miller (smiller)

Materials Science and Engr PhD

CIP Code

Program Requirements and Description

~~Degree Requirements M.S. and Ph.D. degrees are offered in Materials Science and Engineering. Students may apply for either degree and may be admitted directly to the Ph.D. program upon approval (i.e., there is~~

~~no M.S. requirement). Depending upon their intended career path, students may be encouraged to pursue one of the MSE graduate degrees or other degree programs noted above.~~ Degree Requirements

The total number of hours required for the Ph.D. degree in Materials Science and Engineering is 72. For students with a master's degree, a block of 30 credit hours can count toward the total 72-hour requirement; a minimum of 12 hours of coursework and a minimum of 24 hours of research are required. For students without a master's degree, a minimum of 30 hours of coursework and a minimum of 30 hours of research are required. ~~Ph.D.~~ All students are required to take complete the four three core graduate courses, including MSE 6110 (Bonding, Crystallography, MS&E 6110, MS&E 6120, and Structure-Property Relations), MSE 6120 (Thermodynamics and Phase Equilibria), MSE 6130 (Kinetic Theory for Materials), and MSE 6140 (Communication in Materials Science and Engineering). ~~MS&E 6130. To advance to Ph.D. candidacy, the student must take and pass a qualifying exam. This must be completed prior to the beginning of the fifth semester after entering the graduate program.~~ All students will ~~Students must~~ also be required to take and pass qualifying and the comprehensive exams, as well as successfully defend the dissertation, ~~exam~~ in accordance with Missouri S&T rules.

Justification for
request

The current language is for the old catalog before 2021. Updates and corrections are requested so that the language is consistent with the campus requirements in the new catalog.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

A deleted record cannot be edited

Program Inactivation Proposal

Date Submitted: 03/28/25 2:33 pm

Viewing: **MATEXTR-CT : Materials for Extreme Environments Certificate**

Last approved: 08/27/20 2:49 pm

Last edit: 04/07/25 1:45 pm

Changes proposed by: David Lipke (lipked)

Catalog Pages Using
this Program

[Materials Science and Engineering](#)

Final Catalog

FS2025-SP2026

Rationale for
Inactivation

In Workflow

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

Approval Path

- 1. 03/28/25 2:47 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
- 2. 04/07/25 3:07 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
- 3. 04/24/25 8:52 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
- 4. 04/28/25 2:23 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

- 1. Jul 1, 2020 by F.
Scott Miller (smiller)
- 2. Aug 27, 2020 by
Crystal Wilson
(wilsoncry)

Insufficient interest to justify continued offering

Supporting Documents Materials for Extreme Environments Cert Deactivate.docx
MDHE Approval Letter ST September 2024 GradCertsDeletions or
Inactivations.pdf

Effective Catalog Edition FS2025-SP2026

Start Term

Program Type

Academic Level	
Program Code	MATEXTR-CT
Department	Materials Science & Engineering
Discipline	Materials Science & Engineering
Title	
	Materials for Extreme Environments Certificate
CIP Code	

Program Requirements and Description

Missouri University of Science and Technology offers a graduate certificate Materials for Extreme Environments for working professionals. The graduate certificate program consists of four courses from existing graduate-level courses. While the students admitted to the certificate program will have non-matriculated status, if they complete the four course sequence with a grade of B or better in each of the courses taken, they will be admitted to the master's degree program, if they so choose. The certificate credits taken by students admitted to the master's program will count toward their master's degrees.

The Materials for Extreme Environments Certificate Program is open to all persons holding a B.S., M.S., or Ph.D. degree in Engineering, Science, and/or Mathematics and who have a minimum of one year of professional employment experience, or are currently accepted into a graduate degree program at Missouri S&T. Once admitted to the program, the student must take the four designated courses (provided in the curriculum section). In order to receive a Graduate Certificate, the student must have an average cumulative grade point of 3.0 or better in the certificate courses. Once admitted to the program, a student will be given three years to complete the program.

A student admitted to the Materials for Extreme Environments Certificate Program will have non-degree graduate status, however, they will earn graduate credit for the courses they complete. If the four-course sequence is completed with a grade of B or better in each of the courses taken, the student, upon application, will be admitted to the Master's degree program sponsoring the graduate certificate, provided that all other program prerequisites and admission requirements are met. The certificate credits taken by the students admitted to the M.S. degree program will count towards their master's degrees. Students who do not have all of the prerequisite courses necessary to begin the courses in the Materials for Extreme Environments Certificate Program will be allowed to take "bridge" courses at either the graduate or undergraduate level to prepare for the formal certificate courses.

Students enrolled in this certificate will take one required course and three elective courses.

Required Course:

<u>MET ENG 5810</u>	Principles Of Engineering Materials	3
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Any three of the following courses:

<u>CER ENG 5250</u>	Refractories	3
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<u>CER ENG 6230</u>	Composite Materials	3
<u>MS&E 5220</u>	Advanced Phase Equilibria	3
<u>MET ENG 5170</u>	Nuclear Materials I	3
<u>MET ENG 5310</u>	Corrosion and Its Prevention	3
<u>MECH ENG 5212</u>	Introduction to Finite Element Analysis	3

Justification for
request

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Jade McCain (jm558v) (04/07/25 1:45 pm): Added MDHE approval letter.

Program Change Request

Date Submitted: 04/09/25 2:40 pm

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

Last approved: 02/15/25 8:00 am

Last edit: 04/25/25 1:19 pm

Changes proposed by: Nishant Kumar (nkwtb)

Catalog Pages Using
this Program

[Mechanical Engineering](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	MC ENG-BS
Department	Mechanical & Aerospace Engineering
Discipline	Mechanical Engineering
Title	

In Workflow

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

Approval Path

1. 03/11/25 1:07 pm
David Bayless (djbkqf): Approved for RMECHENG Chair
2. 03/11/25 1:12 pm
Jade McCain (jm558v): Rollback to Initiator
3. 03/11/25 1:25 pm
David Bayless (djbkqf): Approved for RMECHENG Chair
4. 04/02/25 10:37 am
Jade McCain (jm558v): Rollback to Initiator
5. 04/09/25 2:42 pm
David Bayless

(djbkqf): Approved
for RMECHENG
Chair

6. 04/15/25 1:24 pm

Jade McCain

(jm558v): Approved
for CCC Secretary

7. 04/24/25 8:55 pm

Kelly Liu (liukh):

Approved for
Engineering DSCC
Chair

8. 04/28/25 2:23 pm

Jade McCain

(jm558v): Approved
for Pending CCC
Agenda post

History

1. Feb 24, 2014 by J.

Keith Nisbett
(nisbett)

2. Aug 6, 2014 by J.

Keith Nisbett
(nisbett)

3. Jul 21, 2015 by
pantaleoa

4. May 3, 2018 by J.

Keith Nisbett
(nisbett)

5. Jun 14, 2019 by J.

Keith Nisbett
(nisbett)

6. Mar 3, 2020 by
ershenb

7. Oct 8, 2020 by

Crystal Wilson
(wilsoncry)

8. May 5, 2021 by J.

Keith Nisbett

(nisbett)

9. Oct 28, 2021 by J.
Keith Nisbett

(nisbett)

10. May 2, 2022 by J.
Keith Nisbett

(nisbett)

11. Jun 7, 2023 by J.
Keith Nisbett

(nisbett)

12. Jun 14, 2024 by
Nishant Kumar

(nkwtb)

13. Nov 25, 2024 by
Nishant Kumar

(nkwtb)

14. Feb 15, 2025 by
Crystal Wilson

(wilsoncry)

Mechanical Engineering BS

CIP Code

Program Requirements and Description

Bachelor of Science Mechanical Engineering

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

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

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u>	1	ECON 1100 or 1200	3
CHEM 1310^a	4	<u>Gen. Ed. Elective^c</u>	<u>3</u>
<u>CHEM 1305^a</u>	<u>4</u>	<u>MECH ENG 1720</u>	3
<u>ENGLISH 1120</u>	<u>3</u>	<u>PHYSICS 1135^a</u>	4
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3	<u>MATH 1215^a</u>	4
<u>CHEM 1319</u>	1	Elective-Hum or Soc Sci^e	3
<u>MATH 1214</u> or <u>1211^a</u>	4	<u>Gen. Ed. Elective^c</u>	<u>3</u>
	16		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits
<u>MATH 2222^a</u>	4	<u>MECH ENG 2761</u>	2
<u>CIV ENG 2200^a</u>	3	<u>MECH ENG 2519^a</u>	3
<u>PHYSICS 2135^a</u>	4	<u>MECH ENG 2360^a</u>	3
<u>MECH ENG 2653</u>	3	<u>MATH 3304^a</u>	3
<u>MECH ENG 1761</u>	1	<u>MET ENG 2110^a</u>	3
		Programming Elective ^{a, b}	3
	15		17
Junior Year			
First Semester	Credits	Second Semester	Credits
<u>MECH ENG 3313</u>	3	<u>MECH ENG 3411^a</u>	3
<u>MECH ENG 3521</u>	3	<u>MECH ENG 3131</u>	3
<u>ELEC ENG 2800</u>	3	<u>MECH ENG 4840</u>	2
<u>CIV ENG 2210^a</u>	3	Elective-Communications^c	3
<u>CIV ENG 2211</u>	1	<u>ENGLISH 1160, OR 3560, OR SP&M 1185</u>	<u>3</u>
Elective-Advanced Math/Stat ^d	3	<u>MECH ENG 3708</u>	3
		<u>MECH ENG 3525</u>	3
	16		17
Senior Year			
First Semester	Credits	Second Semester	Credits
<u>MECH ENG 4842</u>	2	<u>ENG MGT 1100</u>	1
<u>MECH ENG 4479</u>	3	<u>ENG MGT 1210</u>	2
MECH ENG technical elective ^f	3	<u>MECH ENG 4761</u>	3
Literature elective^e	3	<u>MECH ENG 4480</u>	1
<u>Gen. Ed. Elective^c</u>	<u>3</u>	MECH ENG 5000-level technical elective ^f	3
Technical elective ^g	3	Breadth elective ^h	3
Elective-Advanced Hum or Soc Sci^e	3		
<u>Gen. Ed. Elective^c</u>	<u>3</u>		
	17		13
Total Credits: 128			

a

A grade of "C" or better is required in [CHEM 1305](#), [MATH 1214](#) (or [MATH 1211](#)), [MATH 1215](#), [MATH 2222](#), [MATH 3304](#), [PHYSICS 1135](#), [PHYSICS 2135](#), programming elective, [MET ENG 2110](#), [CIV ENG 2200](#), [CIV ENG 2210](#), [MECH ENG 2519](#), [MECH ENG 2360](#), and [MECH ENG 3411](#), both as prerequisite for follow-up courses in the curriculum and for graduation.

b

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

c

Gen. Ed. Elective must fulfill the Missouri S&T general education requirements applicable to the students catalog year.

d

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

e

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

f

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

g

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

h

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

i

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

~~Each student's program of study must contain a minimum of 21 credit hours of course work in general education as follows: 1. ENGLISH 11202. HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 12003. ECON 1100 or ECON 12004. ENGLISH 1160 or ENGLISH 3560 or SP&M S 11855. A literature elective6. A humanity or social science elective*7. A humanity or social science elective* that has, as a prerequisite, a humanity or social science course already taken.* Humanity and social science electives must be at least 3 credit hours of lecture designation, and also meet the requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog.~~

Energy Conversion Emphasis Area for Mechanical Engineering

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

a. Two courses from the following list:		6
<u>MECH ENG 5527</u>	Combustion Processes	3
or <u>AERO ENG 5527</u>	Combustion Processes	
<u>MECH ENG 5533</u>	Internal Combustion Engines	3

<u>MECH ENG 5566</u>	Solar Energy Technology	3
<u>MECH ENG 5567</u>	Heat Pump And Refrigeration Systems	3
<u>MECH ENG 5571</u>	Environmental Controls	3
<u>MECH ENG 5575</u>	Mechanical Systems For Environmental Control	3
<u>AERO ENG 5169</u>	Introduction to Hypersonic Flow	3
<u>AERO ENG 5535</u>	Aerospace Propulsion Systems	3
b. One course from the following list:		3
<u>MECH ENG 5519</u>	Advanced Thermodynamics	3
or <u>AERO ENG 5519</u>	Advanced Thermodynamics	
<u>MECH ENG 5525</u>	Intermediate Heat Transfer	3
or <u>AERO ENG 5525</u>	Intermediate Heat Transfer	
<u>MECH ENG 5131</u>	Intermediate Thermofluid Mechanics	3
or <u>AERO ENG 5131</u>	Intermediate Thermofluid Mechanics	
<u>MECH ENG 5139</u>	Computational Fluid Dynamics	3
or <u>AERO ENG 5139</u>	Computational Fluid Dynamics	
c. One additional course from either list “a” or list “b”, or from the following list:		3
<u>ECON 4540</u>	Energy Economics	3
<u>ELEC ENG 5150</u>	Photovoltaic Systems Engineering	3
<u>ENV ENG 5660</u>	Introduction To Air Pollution	3
<u>NUC ENG 5257</u>	Introduction to Nuclear Thermal Hydraulics	3
<p>Note: By using the breadth elective and technical electives to satisfy the above requirements, this emphasis area requires the same total number of credit hours as the BSME degree. A change of major form should be submitted to designate the energy conversion emphasis area.</p> <h2>Manufacturing Processes Emphasis Area for Mechanical Engineering</h2> <p>Students desiring to obtain a bachelor of science in mechanical engineering with an emphasis area in manufacturing processes must satisfy all requirements of the bachelor of science in mechanical engineering with the additional stipulation that four courses must be taken as follows:</p>		
a. The following course:		3

<u>MECH ENG 3653</u>	Manufacturing	3
b. Three of the following courses:		3
<u>MECH ENG 3001</u>	Special Topics	3
<u>MECH ENG 5282</u>	Introduction to Composite Materials & Structures	3
<u>MECH ENG 5449</u>	Robotic Manipulators and Mechanisms	3
<u>MECH ENG 5479</u>	Machine Learning for Manufacturing Automation	3
<u>MECH ENG 5653</u>	Computer Numerical Control of Manufacturing Processes	3
<u>MECH ENG 5655</u>	Manufacturing Equipment Automation	3
<u>MECH ENG 5656</u>	Design For Manufacture	3
<u>MECH ENG 5708</u>	Rapid Product Design And Optimization	3
<u>MECH ENG 5763</u>	Computer Aided Design: Theory and Practice	3
c. The Math/Stat elective must be one of the following:		3
<u>STAT 3113</u>	Applied Engineering Statistics	3
<u>STAT 3115</u>	Engineering Statistics	3
A suggested sequence for the junior and senior years is given below. Note that by using the breadth elective and technical electives to satisfy the above requirements, this emphasis area requires the same total number of credit hours as the BSME degree. A change of major form should be submitted to designate the manufacturing processes emphasis area.		
Junior Year		
First Semester	Credits	Second Semester Credits
<u>MECH ENG 3313</u>	3	<u>MECH ENG 3411</u> ^a 3
<u>ELEC ENG 2800</u>	3	<u>MECH ENG 3131</u> 3
<u>MECH ENG 3521</u>	3	<u>MECH ENG 3525</u> 3
<u>CIV ENG 2210</u> ^a	3	<u>MECH ENG 4840</u> 2
<u>CIV ENG 2211</u>	1	<u>MECH ENG 3653</u> 3
<u>STAT 3113</u> or <u>3115</u>	3	Elective-Communications ^c 3
	16	17
Senior Year		
First Semester	Credits	Second Semester Credits
<u>MECH ENG 4842</u>	2	<u>ENG MGT 1100</u> 1
<u>MECH ENG 4479</u>	3	<u>ENG MGT 1210</u> 2
<u>MECH ENG 3708</u>	3	<u>MECH ENG 4761</u> 3
Manufacturing Technical Elective	3	<u>MECH ENG 4480</u> 1
Manufacturing Technical Elective	3	Manufacturing Technical Elective 3
Elective Literature ^d	3	Electives-Hum or Soc Sci ^d 3

Total Credits: 63

a

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

b

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

c

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

d

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

e

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

f

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

Mechanical Design and Analysis Emphasis Area

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

a. One design course from the following list:		3
MECH ENG 5709	Machine Design II	3
MECH ENG 5702	Synthesis Of Mechanisms	3
MECH ENG 5704	Compliant Mechanism Design	3

<u>MECH ENG 5708</u>	Rapid Product Design And Optimization	3
<u>MECH ENG 5715</u>	Concurrent Engineering	3
<u>MECH ENG 5656</u>	Design For Manufacture	3
<u>MECH ENG 5757</u>	Integrated Product And Process Design	3
<u>MECH ENG 5760</u>	Probabilistic Engineering Design	3
<u>MECH ENG 5763</u>	Computer Aided Design: Theory and Practice	3
<u>MECH ENG 5761</u>	Engineering Design Methodology	3
b. One analysis course from the following list:		3
<u>MECH ENG 5307</u>	Vibrations I	3
<u>MECH ENG 5211</u>	Introduction To Continuum Mechanics	3
<u>MECH ENG 5212</u>	Introduction to Finite Element Analysis	3
<u>MECH ENG 5234</u>	Stability of Engineering Structures	3
<u>MECH ENG 5236</u>	Fracture Mechanics	3
<u>MECH ENG 5313</u>	Intermediate Dynamics Of Mechanical And Aerospace Systems	3
<u>MECH ENG 5222</u>	Introduction To Solid Mechanics	3
<u>MECH ENG 5238</u>	Fatigue Analysis	3
<u>MECH ENG 5449</u>	Robotic Manipulators and Mechanisms	3
<u>MECH ENG 5478</u>	Mechatronics	3
c. Two additional courses from either of the previous lists.		6
<p>Note that by using the breadth elective and technical electives to satisfy the above requirements, this emphasis area requires the same total number of credit hours as the BSME degree A change of major form should be submitted to designate the mechanical design and analysis emphasis area.</p>		
<h2>Systems Integration Emphasis Area</h2>		
<p>The Systems Integration emphasis area is required and available only for students pursuing a bachelor of science in mechanical engineering in the cooperative program delivered at Missouri State University. This emphasis area includes all requirements of the bachelor of science in mechanical engineering, except for the substitutions stipulated below.</p>		
<p>The following requirements in the mechanical engineering curriculum are removed (16 credit hours):</p>		
<u>ELEC ENG 2800</u>	Electrical Circuits	3

<u>ENG MGT 1100</u>	Practical Concepts for Technical Managers	1
Elective-Advanced Math/Stat		3
MECH ENG 5000-level technical elective		3
Technical elective		3
Breadth elective		3
The following requirements are added (16 credit hours):		
<u>ELEC ENG 2100</u>	Circuits I	3
<u>ELEC ENG 2101</u>	Circuit Analysis Laboratory I	1
<u>ELEC ENG 2120</u>	Circuits II	3
Systems Management elective. One of the following:		
<u>MECH ENG 5715</u>	Concurrent Engineering	3
<u>MECH ENG 5757</u>	Integrated Product And Process Design	3
<u>MECH ENG 5758</u>	Integrated Product Development	3
<u>ENG MGT 3320</u>	Introduction to Project Management	3
<u>ENG MGT 4710</u>	Quality	3
Systems Integration technical elective. One of the following:		3
<u>MECH ENG 5307</u>	Vibrations I	3
<u>MECH ENG 5478</u>	Mechatronics	3
<u>MECH ENG 5481</u>	Mechanical And Aerospace Control Systems	3
<u>MECH ENG 5533</u>	Internal Combustion Engines	3
<u>MECH ENG 5571</u>	Environmental Controls	3
<u>MECH ENG 5575</u>	Mechanical Systems For Environmental Control	3
<u>MECH ENG 5656</u>	Design For Manufacture	3
<u>MECH ENG 5704</u>	Compliant Mechanism Design	3
<u>MECH ENG 5708</u>	Rapid Product Design And Optimization	3
<u>MECH ENG 5709</u>	Machine Design II	3
<u>MECH ENG 5715</u>	Concurrent Engineering	3
<u>MECH ENG 5757</u>	Integrated Product And Process Design	3

<u>MECH ENG 5760</u>	Probabilistic Engineering Design	3
<u>MECH ENG 5763</u>	Computer Aided Design: Theory and Practice	3
One of the following:		
<u>STAT 3113</u>	Applied Engineering Statistics	3
<u>STAT 3115</u>	Engineering Statistics	3
<u>STAT 3117</u>	Introduction To Probability And Statistics	3
All of the substitutions for this emphasis area appear in the junior and senior years. A suggested sequence for the junior and senior years is given below.		
Junior Year		
First Semester	Credits	Second Semester Credits
<u>MECH ENG 3313</u>	3	<u>MECH ENG 3411</u> ^a 3
<u>MECH ENG 3521</u>	3	<u>MECH ENG 3131</u> 3
<u>ELEC ENG 2100</u>	3	<u>MECH ENG 3525</u> 3
<u>ELEC ENG 2101</u>	1	<u>MECH ENG 3708</u> 3
<u>CIV ENG 2210</u> ^a	3	<u>MECH ENG 4840</u> 2
<u>CIV ENG 2211</u>	1	<u>ELEC ENG 2120</u> 3
<u>STAT 3113</u> , or <u>3115</u> , or <u>3117</u>	3	
	17	17
Senior Year		
First Semester	Credits	Second Semester Credits
<u>MECH ENG 4842</u>	2	<u>MECH ENG 4761</u> 3
<u>MECH ENG 4479</u>	3	Systems Integration technical elective ^f 3
<u>MECH ENG 4480</u>	1	Systems Management elective ^g 3
MECH ENG technical elective ^e	3	Literature elective ^d 3
Elective - Communications ^c	3	Elective - Advanced Hum or Soc Sci ^d 3
<u>ENG MGT 1210</u>	2	
	14	15
Total Credits: 63		
a		
A grade of "C" or better is required in <u>CHEM 1310</u> , <u>MATH 1214</u> (or <u>MATH 1211</u>), <u>MATH 1215</u> , <u>MATH 2222</u> , <u>MATH 3304</u> , <u>PHYSICS 1135</u> , <u>PHYSICS 2135</u> , programming elective, <u>MET ENG 2110</u> , <u>CIV ENG 2200</u> , <u>CIV ENG 2210</u> , <u>MECH ENG 2519</u> , <u>MECH ENG 2360</u> and <u>MECH ENG 3411</u> , both as prerequisite for follow-up courses in the curriculum and for graduation.		
b		
The programming elective consists of a lecture and lab combination, and may be selected from <u>COMP SCI 1970</u> / <u>COMP SCI 1980</u> , <u>COMP SCI 1971</u> / <u>COMP SCI 1981</u> , or <u>COMP SCI 1972</u> / <u>COMP SCI 1982</u> , or <u>COMP SCI 1570</u> / <u>COMP SCI 1580</u> . Note that <u>COMP SCI 1570</u> / <u>COMP SCI 1580</u> requires one more credit hour than the other options.		
c		

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

d

All electives must be approved by the student's advisor.

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

e

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

f

The systems integration technical elective must be selected from the following list: [MECH ENG 5307](#), [MECH ENG 5478](#), [MECH ENG 5481](#), [MECH ENG 5533](#), [MECH ENG 5571](#), [MECH ENG 5575](#), [MECH ENG 5656](#), [MECH ENG 5704](#), [MECH ENG 5708](#), [MECH ENG 5709](#), [MECH ENG 5715](#), [MECH ENG 5757](#), [MECH ENG 5760](#), [MECH ENG 5763](#).

g

The systems management elective must be selected from the following list: [MECH ENG 5715](#), [MECH ENG 5757](#), [MECH ENG 5758](#), [ENG MGT 3320](#), [ENG MGT 4710](#).

h

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

Justification for
request

Updating ME curriculum to remove/delete any language that references old engineering requirements. The DC form reflects the adoption and implementation of the new General Education program.

The B.S. ME Manufacturing emphasis required one footnote to be deleted as it was causing unnecessary confusion among our students.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Jade McCain (jm558v) (03/11/25 1:12 pm): Rollback: Rollback per department request.

Jade McCain (jm558v) (04/02/25 10:29 am): Corrected CHEM 1305 in plan of study grid and removed CHEM 1310 from the footnotes.

Jade McCain (jm558v) (04/02/25 10:37 am): Rollback: Rollback per department request.

Jade McCain (jm558v) (04/15/25 1:23 pm): Corrected electives in plan of study grid.

Jade McCain (jm558v) (04/25/25 1:19 pm): Added footnote "a" to Chem 1305 and hyperlinked Chem 1305 in the footnotes.

Program Change Request

Date Submitted: 03/03/25 4:13 pm

Viewing: **MED LAB : Biological Sciences BS with
Emphasis area in Medical Laboratory Scientist**

Last approved: 10/25/24 3:24 pm

Last edit: 04/11/25 3:34 pm

Changes proposed by: Katie Shannon (shannonk)

Catalog Pages Using
this Program
[Biological Sciences](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	MED LAB
Department	Biological Sciences
Discipline	Biological Sciences
Title	

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

Approval Path

1. 02/20/25 1:06 pm
David Duvernell (duvernell):
Approved for
RBIOLSCI Chair
2. 02/20/25 2:45 pm
Jade McCain (jm558v): Approved
for CCC Secretary
3. 03/03/25 1:25 pm
Crystal Wilson (wilsoncry):
Rollback to
RBIOLSCI Chair for
Sciences DSCC Chair
4. 03/03/25 1:29 pm
David Duvernell (duvernell):
Rollback to Initiator
5. 03/03/25 2:18 pm
David Duvernell

(duvernell):

Rollback to Initiator

6. 03/03/25 2:21 pm

David Duvernell

(duvernell):

Rollback to Initiator

7. 03/03/25 4:17 pm

David Duvernell

(duvernell):

Approved for

RBIOLSCI Chair

8. 03/04/25 8:26 am

Jade McCain

(jm558v): Approved

for CCC Secretary

9. 03/18/25 1:17 pm

Katie Shannon

(shannonk):

Approved for

Sciences DSCC Chair

10. 03/21/25 2:28 pm

Jade McCain

(jm558v): Approved

for Pending CCC

Agenda post

11. 04/01/25 10:32 am

Jade McCain

(jm558v): Approved

for CCC Meeting

Agenda

12. 04/01/25 10:50 am

Petra Dewitt

(dewittp): Approved

for Campus

Curricula

Committee Chair

13. 04/11/25 3:13 pm

Jade McCain

(jm558v): Rollback

to Sciences DSCC

Chair for FS Meeting

Agenda

14. 04/25/25 9:15 am
Katie Shannon
(shannonk):
Approved for
Sciences DSCC Chair
15. 04/28/25 2:23 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Apr 13, 2021 by
Katie Shannon
(shannonk)
2. Apr 14, 2021 by
Crystal Wilson
(wilsoncry)
3. Apr 15, 2021 by
Crystal Wilson
(wilsoncry)
4. Jun 14, 2022 by
Katie Shannon
(shannonk)
5. Mar 22, 2024 by
Evie Sherlock
(esdk3)
6. Mar 22, 2024 by
Evie Sherlock
(esdk3)
7. Oct 25, 2024 by
Katie Shannon
(shannonk)

Biological Sciences BS with Emphasis area in Medical Laboratory Scientist

CIP Code

Program Requirements and Description

Bachelor of Science

Biological Sciences

Medical Laboratory Scientist Emphasis Area

Degree Requirements

The Medical Laboratory Scientist 3+1 emphasis area is designed for students who wish to earn a B.S. degree in Biological Sciences, and become board certified by the American Society of Clinical Pathologists as a Medical Laboratory Scientist. Students who pursue this emphasis area complete three years of course work at Missouri S&T. The fourth year of clinical/professional study takes place at an affiliated accredited school of medical technology. Students who wish to complete this emphasis area will apply to University affiliated clinical programs in their third year, and must be accepted into a clinical program in order to complete this emphasis area. Students who are interested in the MLS 3+1 emphasis area should seek advisement early in their degree program from the Biological Sciences MLS 3+1 emphasis area advisor in order to insure adherence to special program requirements. The Biological Science B.S. degree in the MLS 3+1 emphasis area must include a minimum of 38 semester hours of biological sciences course work plus an additional minimum of 32 hours of clinical program [coursework](#). [Humanities and Social Science courses must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.](#) ~~coursework.~~

Required biological sciences courses:

<u>BIO SCI 1201</u>	Biological Sciences Freshman Seminar	1
<u>BIO SCI 1113</u>	General Biology	3
or <u>BIO SCI 1213</u>	Principles of Biology	
<u>BIO SCI 1219</u>	General Biology Lab	1
<u>BIO SCI 1223</u> & <u>BIO SCI 1229</u>	Biodiversity and Biodiversity Lab	4
<u>BIO SCI 2213</u> & <u>BIO SCI 2219</u>	Cell Biology and Cell Biology Laboratory	4
<u>BIO SCI 2223</u>	General Genetics	3
<u>BIO SCI 3233</u>	Evolution	3
<u>BIO SCI 3313</u> & <u>BIO SCI 3319</u>	Microbiology and Microbiology Lab	5
<u>BIO SCI 4010</u>	Seminar	1

Selection of ten hours of additional advanced biological sciences courses should be informed by the recommendations of specific clinical affiliate programs. Suggested electives:

<u>BIO SCI 3393</u>	<u>Introductory Immunology for Medical Laboratory Science</u>	<u>3</u>
<u>BIO SCI 1212</u>	<u>Orientation to Medical Laboratory Science</u>	<u>1</u>
<u>BIO SCI 5313</u>	Pathogenic Microbiology	3
BIO SCI 5393	Immunology	3
<u>BIO SCI 3359</u>	Physiology Lab	1
<u>BIO SCI 5493</u>	General Virology	3

Clinical program coursework typically includes a total of 32 credit hours, but may include more, depending on clinical affiliate program. Courses are enrolled at Missouri S&T from the following options in consultation with the MLS 3+1 emphasis area advisor:

<u>BIO SCI 4900</u>	Clinical Chemistry	5-10
<u>BIO SCI 4901</u>	Clinical Microscopy	1-3
<u>BIO SCI 4902</u>	Hematology and Coagulation	5-8
<u>BIO SCI 4903</u>	Serology Immunology	2-4
<u>BIO SCI 4904</u>	Clinical Microbiology	5-9
<u>BIO SCI 4905</u>	Blood Bank Immunohematology	2-4
<u>BIO SCI 4906</u>	Topics in Medical Technology	1-8

20 semester hours of chemistry to include:

<u>CHEM 1100</u>	Introduction To Laboratory Safety & Hazardous Materials	1
CHEM 1301 & CHEM 1319	'Fundamentals of General Chemistry' and General Chemistry Laboratory	4
<u>CHEM 1310</u> & <u>CHEM 1319</u>	<u>General Chemistry I</u> <u>and General Chemistry Laboratory</u>	<u>5</u>
<u>CHEM 1320</u>	General Chemistry II	3
<u>CHEM 2210</u> & <u>CHEM 2219</u>	Organic Chemistry I and Organic Chemistry I Lab	4
<u>CHEM 2220</u> & <u>CHEM 2229</u>	Organic Chemistry II and Organic Chemistry II Lab	4
<u>CHEM 4610</u>	General Biochemistry	3

2 semesters of College (Engineering) Physics and labs		
<u>PHYSICS 1145</u>	College Physics I	4
or <u>PHYSICS 1135</u>	Engineering Physics I	
<u>PHYSICS 2145</u>	College Physics II	4
or <u>PHYSICS 2135</u>	Engineering Physics II	
Math and Statistics		
<u>MATH 1120</u>	College Algebra	5
<u>STAT 3425</u>	Introduction to Biostatistics	4
12 semester hours of humanities, excluding foreign language, and to include:		
<u>ENGLISH 1120</u>	Exposition And Argumentation	3
<u>ENGLISH 1160</u>	Writing And Research	3
9 hours of social sciences, to include:		
<u>HISTORY 1200</u>	Modern Western Civilization	3
or <u>HISTORY 1300</u>	American History To 1877	
or <u>HISTORY 1310</u>	American History Since 1877	
or <u>POL SCI 1200</u>	American Government	

Justification for
request

Removing BIO SCI 5393 and adding BIO SCI 3393 and BIO SCI 1212 as suggested electives

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Crystal Wilson (wilsoncry) (03/03/25 1:25 pm): Rollback: Rollback for the department to look

at CHEM 1301 requirement on form.

David Duvernell (duvernelld) (03/03/25 1:29 pm): Rollback: Hi Katie, there is a problem with the chem requirement in this course leaf change, and it is nothing we did this time. In the original creation of this emphasis area chem 1310 somehow got transposed into chem 1301. It needs to be changed to 1310. Can you please make this correction and resubmit? Thanks Dave

David Duvernell (duvernelld) (03/03/25 2:18 pm): Rollback: For some reason Chem 1319 got struck. It needs to include chem 1310 and chem 1319.

David Duvernell (duvernelld) (03/03/25 2:21 pm): Rollback: It has CHEM 1310 listed as 4 hours, but it is only 3 hrs.

Jade McCain (jm558v) (03/04/25 9:19 am): Changed formatting of CHEM 1310 and CHEM 1319 per department request via email on 3/4.

Jade McCain (jm558v) (04/11/25 3:13 pm): Rollback: Rollback per department needs to add general education requirements.

Program Change Request

Date Submitted: 04/01/25 4:00 pm

Viewing: **MI ENG-BS : Mining Engineering BS**

Last approved: 09/20/24 3:00 pm

Last edit: 04/01/25 4:00 pm

Changes proposed by: Stephen Casey (caseysc)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	MI ENG-BS
Department	Mining and Explosives Engineering
Discipline	Mining Engineering
Title	

In Workflow

1. **RMINENG 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

Approval Path

1. 04/08/25 12:17 pm
Kwame Awuah-Offei (kabp3): Approved for RMINENG Chair
2. 04/15/25 1:26 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/24/25 8:57 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 04/28/25 2:23 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Apr 28, 2014 by
Kwame Awuah-Offei
(kabp3)
2. Jan 30, 2015 by Tina
Alobaidan (cifarellit)
3. Jun 28, 2017 by Tina
Alobaidan (cifarellit)
4. Mar 21, 2018 by
Tina Alobaidan
(cifarellit)
5. Jul 6, 2020 by
ershenb
6. Nov 1, 2021 by
Stephen Casey
(caseysc)
7. Jun 14, 2022 by
Kwame Awuah-Offei
(kabp3)
8. Oct 5, 2023 by
Jennifer Pohlsander
(jpnfd)
9. Jan 29, 2024 by
Stephen Casey
(caseysc)
10. Sep 20, 2024 by
Stephen Casey
(caseysc)

Mining Engineering BS

CIP Code 14.2101 - Mining and Mineral Engineering.

Program Requirements and Description

Bachelor of Science

Mining Engineering

The Mining Engineering program at Missouri S&T is characterized by its focus on the scientific basics of engineering and its innovative application to the extraction of (critical) minerals to meet societal needs. Indeed, the underlying theme of this educational program is the application of basic science to engineering practice by solving engineering problems related to mineral extraction. These problems include the safe and sustainable extraction of minerals to power green energy. 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.

Incoming students who state the Mining Engineering preference are required to complete [MIN ENG 1912](#) during the first or second semester on campus.

For the Bachelor of Science degree in Mining 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 the student's major department, and an average of at least two grade points per credit hour must be maintained in Mining Engineering.

~~Each student's program of study must contain a minimum of 21 credit hours of course work in general education and must be chosen according to the following rules: All students are required to take one American History course, two economics courses, one humanities course, ENGLISH 1120 and either ENGLISH 1160, ENGLISH 3560 or TCH COM 1600. The history course is to be selected from HISTORY 1200, HISTORY 1300, HISTORY 1310, or POL SCI 1200. The economics courses must be either ECON 1100 or ECON 1200, and ECON 3512. The Mining Engineering program~~ The humanities course must meet [Missouri S&T general education](#) requirements as [stipulated](#) ~~specified under "Engineering Degree Requirements" published in the catalog.~~ [current undergraduate catalog.](#)

Freshman Year

First Semester	Credits	Second Semester	Credits
MATH 1214 or 1211	4	MATH 1215	4
CHEM 1310	4	PHYSICS 1135	4
CHEM 1319	1	MECH ENG 1720	3
CHEM 1100	1	GEO ENG 1150	3
MIN ENG 1912	2	HISTORY 1200 , or 1300 , or 1310 , or POL SCI 1200	3
FR ENG 1100	1		
ENGLISH 1120	3		
	16		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
MIN ENG 2925	2	MIN ENG 2412	3
MIN ENG 3912	2	MATH 3304	3
MATH 2222	4	MECH ENG 2527	3
MIN ENG 3913	3	MECH ENG 2350	2
CIV ENG 2200	3	PHYSICS 2135	4
ECON 1100 or 1200	3		

<u>General Education Elective¹</u>	<u>3</u>		
	17		15
Junior Year			
First Semester	Credits	Second Semester	Credits
<u>STAT 3113</u> or <u>3115</u>	3	<u>MIN ENG 4512</u>	3
<u>NUC ENG 3221</u> or <u>CIV ENG 3330</u>	3	<u>MIN ENG 5522</u>	3
<u>MIN ENG 5932</u>	3	<u>MIN ENG 5823</u>	3
<u>CIV ENG 2210</u>	3	<u>MIN ENG 5933</u>	3
<u>ECON 3512²</u>	3	ENGLISH 1600, or 1160, or 3560	3
<u>GEOLOGY 3310</u>	3	<u>ENGLISH 1160, or 3560, or SPM S 1185</u>	<u>3</u>
	18		15
Senior Year			
First Semester	Credits	Second Semester	Credits
<u>MIN ENG 5612</u> or <u>EXP ENG 5612</u>	3	<u>MIN ENG 5742</u>	3
<u>MIN ENG 5912</u>	3	<u>MIN ENG 4097</u>	3
<u>MIN ENG 4096</u>	3	Technical Elective ^{3,4,5,6,7,8}	3
H/SS Elective	3	H/SS Elective	3
<u>General Education Elective¹</u>	<u>3</u>	<u>General Education Elective¹</u>	<u>3</u>
<u>MIN ENG 5113</u>	3	Technical Elective ^{3,4,5,6,7,8}	3
	15		15

Total Credits: 128

1

General Education Elective must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

2

General Education Elective, Mining Engineering program requirement.

3

Explosives Engineering Emphasis: EXP ENG 5622 (Blasting Tech) and MIN ENG 5823 (Rock Mechanics) or EXP ENG 5922 (Tunneling/Construction) have to be taken as Technical Electives.

4

Quarrying Emphasis: Two of CIV ENG 3116 (Construction Materials); MIN ENG 5212 (Aggregate and Quarrying); and MIN ENG 5412 (Aggregate Materials) have to be taken as Technical Electives.

5

Coal Emphasis: Two of MIN ENG 5322 (Coal Mine Development and Production), MIN ENG 4414 (Mine Plant Management) or an approved substitute course must be taken as Technical Electives.

6

Mining and the Environment Emphasis: GEO ENG 5235 (Environmental Geological Engineering) and GEO ENG 5233 (Risk Assessment in Environmental Studies), or approved substitute courses have to be taken as Technical Electives.

7
=

Mining Health and Safety Emphasis: MIN ENG 3002 (Mine Rescue), ENG MGT 4330 (Human Factors), or other

approved substitute courses must be taken as Technical Electives.

8
=

Sustainable Development Emphasis: POL SCI 3310 (Public Policy Analysis), ECON 4440 (Environmental and Natural Resource Economics), or other approved substitute courses must be taken as Technical Electives.

~~The remaining three credit hours must meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog. Foreign language courses 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 or 5000 level.) Special topics, special problems courses and honors seminars are allowed only by petition to and approval by the student's department chairman.~~ **Graduating Mining Engineers**

Examination

Mining engineering students must complete the Fundamentals of Engineering Examination prior to graduation as a senior assessment requirement. A passing grade is not required to earn a B.S. degree in mining engineering; however it is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process.

Mining Health and Safety Emphasis

Junior and Senior Years

<u>MIN ENG 3002</u>	Mine Rescue (or approved substitute course in lieu of Technical Elective.)	3
<u>ENG MGT 4330</u>	Human Factors (or approved substitute course in lieu of Technical Elective.)	3

Sustainable Development Emphasis

Junior and Senior Years

<u>POL SCI 3300</u>	Principles Of Public Policy (or approved substitute course in lieu of Technical Elective.)	3
<u>ECON 4440</u>	Environmental And Natural Resource Economics (or approved substitute course in lieu of Technical Elective.)	3

Quarrying Engineering Emphasis

Senior Year		
<u>CIV ENG 3116</u>	Construction Materials, Properties And Testing (in lieu of Technical Elective.)	3
<u>MIN ENG 5212</u>	Aggregates and Quarrying	3
Explosives Engineering Emphasis		
Junior and Senior Years		
Choose one of the following courses in lieu of Technical Elective in Junior Year:		
A three-credit hour explosives engineering (EXP ENG) course		
<u>EXP ENG 5922</u>	Tunneling & Underground Construction Techniques	3
<u>GEO ENG 5471</u>	Rock Engineering	
In lieu of Technical Elective in Senior Year:		
<u>EXP ENG 5622</u>	Blasting Design And Technology	
Coal Emphasis		
Junior and Senior Years		
<u>MIN ENG 5322</u>	Coal Mining Methods	3
<u>MIN ENG 4414</u>	Mine Plant Management (or approved substitute course in lieu of Technical Elective.)	2
Mining and the Environment Emphasis		
Junior and Senior Years		
<u>ENV ENG 5640</u>	Environmental Law And Regulations	3
<u>GEO ENG 5233</u>	Risk Assessment In Environmental Studies (or approved substitute course in lieu of Technical Elective.)	3

Justification for
request

Update curriculum to Missouri S&T Gen Ed requirements

Attach Budget

System Approval
Letter

MDHE Approval

Supporting

Documents

[FS 2024 Course Change Requests.pdf](#)

Reviewer

Comments

Program Change Request

Date Submitted: 04/02/25 2:49 pm

Viewing: **MT ENG-BS : Metallurgical Engineering
BS**

Last approved: 12/20/24 3:18 pm

Last edit: 04/07/25 3:34 pm

Changes proposed by: David Lipke (lipked)

Catalog Pages Using
this Program

[Metallurgical Engineering](#)

In Workflow

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

Approval Path

1. 04/02/25 3:05 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
2. 04/15/25 1:55 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/24/25 9:00 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:23 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Oct 8, 2013 by
Lahne Black (lahne)
2. Apr 28, 2014 by
Lahne Black (lahne)
3. Aug 14, 2014 by
Lahne Black (lahne)
4. Aug 20, 2014 by
pantaleoa
5. Aug 20, 2014 by
pantaleoa
6. Aug 20, 2014 by
pantaleoa
7. Jul 21, 2015 by
pantaleoa
8. Mar 7, 2016 by F.
Scott Miller (smiller)
9. Mar 27, 2017 by F.
Scott Miller (smiller)
10. Jun 28, 2017 by F.
Scott Miller (smiller)
11. Mar 3, 2020 by
ershenb
12. Sep 15, 2020 by
Crystal Wilson
(wilsoncry)
13. Apr 6, 2022 by F.
Scott Miller (smiller)
14. Jun 14, 2024 by
David Lipke (lipke)
15. Dec 20, 2024 by
Jade McCain
(jm558v)

Rationale for
Inactivation
Supporting
Documents

Edition

Start Term Fall 2025

Program Type Bachelor of Science

CIM Prospectus

Academic Level Undergraduate

Program Code MT ENG-BS

Department Materials Science & Engineering

Discipline Metallurgical Engineering

Offered by

Title

Metallurgical Engineering BS

CIP Code

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Science

Metallurgical Engineering

For the Bachelor ~~bachelor~~ of Science ~~science~~ degree in Metallurgical Engineering ~~metallurgical 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 per credit hour in metallurgical engineering. Each student's program of study must contain a minimum of 18 credit hours of course work from the humanities and the social sciences areas and should be chosen according to the following rules: 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. Of the remaining hours, six credit hours must be taken in humanities or social sciences. A cumulative grade point average of at least 2.0 is required. Students may receive humanities credit for all foreign language courses applied toward in their native tongue only if the degree, as well as for all required courses in course is at the major field of study. 4000 level.~~

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u>	1	<u>CHEM 1320</u> ¹	3
<u>CHEM 1310</u> ¹	4	<u>MATH 1215</u> or <u>1221</u> ¹	4
<u>CHEM 1319</u>	1	<u>MECH ENG 1720</u>	3
<u>MATH 1214</u> or <u>1211</u>	4	<u>MET ENG 2110</u> ¹	3
<u>ENGLISH 1120</u>	3	<u>PHYSICS 1135</u>	4
Hum/Soc Sci Elective ¹	3		
<u>HISTORY 1200, or 1300, or 1310, or POL SCI 1200</u>	<u>3</u>		
	16		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>MET ENG 3130</u> ¹	3	<u>MET ENG 3420</u> or <u>MECH ENG 2653</u> ¹	3
<u>MET ENG 2125</u> ¹	2	<u>MET ENG 3425</u>	1
CER ENG 3230	3	<u>PHYSICS 2135</u>	4
<u>MET ENG 3230</u> ¹	<u>3</u>	<u>CIV ENG 2210</u> ¹	3
<u>CIV ENG 2200</u> ¹	3	Hum/Soc Sci Elective ¹	3
<u>MATH 2222</u>	4	Communication Elective ¹	3
		<u>ENGLISH 1160, or 3560, or SPM S 1185</u> ⁷	<u>3</u>
		<u>General Education Elective</u> ²	<u>3</u>
	15		17

Junior Year

First Semester	Credits	Second Semester	Credits
MET ENG 3320	3	<u>MET ENG 3220</u>	3
<u>MET ENG 3120</u>	3	<u>MET ENG 3225</u>	1
<u>MET ENG 3125</u> ¹	2	<u>MET ENG 3320</u>	<u>3</u>
<u>MATH 3304</u> ²	3	<u>CER ENG 3410</u>	3
<u>Out of Program Technical Elective</u> ³	3	Out of Department Technical Elective ³	3
Hum/Soc Sci Elective ¹	3	<u>STAT 3113 or 3115</u>	<u>3</u>

<u>General Education Elective²</u>	<u>3</u>	General Education Elective ²	3
<u>Free Elective</u>	<u>3</u>	Hum/Soc Sci Elective¹	3
	17		16
Senior Year			
First Semester	Credits	Second Semester	Credits
<u>MET ENG 4096¹</u>	3	<u>MET ENG 4097</u>	3
<u>MET ENG 4350</u>	3	<u>MET ENG 4637</u>	<u>3</u>
<u>MET ENG 4420</u>	3	Out of Department Technical Elective ⁵	3
MET ENG 4637	3	Met Technical Elective ⁶	3
Steel Elective ⁴	3	Met Technical Elective ⁶	3
<u>General Education Elective²</u>	<u>3</u>	Hum/Soc Sci Elective¹	3
	15		15

Total Credits: 128

1

A grade of "C" or better is required in the following courses to satisfy prerequisite requirements for subsequent coursework and to meet graduation criteria: CHEM 1310, CHEM 1320, CIV ENG 2200, CIV ENG 2210, MATH 1215, MET ENG 2110, MET ENG 2125, MET ENG 3125, MET ENG 3130, MET ENG 3230, MET ENG 3420 or MECH ENG 2653, MET ENG 4096.

2

Gen. Ed. electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

3

Any approved course listed under Out of Department Technical Elective (see footnote 5) **or** any CER ENG, MS&E, or SEMI ENG course at 2000-level with pre-requisite **or** at 3000-level or higher.

4

Steelmaking (MET ENG 4450) or Steels And Their Treatment (MET ENG 4320)

5

CHEM ENG 5320, CHEM 2210 or CHEM 3310 or CHEM 4810, ELEC ENG 2100 & ELEC ENG 2101 or ELEC ENG 2800, GEOLOGY 2610, MATH 5603 or MATH 5325, MECH ENG 5212 or MECH ENG 5220 or MECH ENG 5236 or MECH ENG 5238 or MECH ENG 5282, MIN ENG 2412, PHYSICS 2305 or PHYSICS 2311, STAT 5346 or STAT 5353.

6

Any other 3000-level or higher MET ENG course.

7
=

Students may replace SP&M S 1185 with the ROTC sequence of MIL ARMY 4250 and MIL ARMY 4500 or MIL AIR 4110 and MIL AIR 4120

~~Special topics, special problems courses and honors seminars are allowed only by petition to and approval by the student's department chair.~~

Justification for
request

Updated to meet new general education requirements and catalog formatting guidelines.

Revised course sequencing to match teaching plans.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Jade McCain (jm558v) (04/07/25 10:48 am): Corrected electives in the plan of study grid and hyperlinked courses in the footnotes.

Jade McCain (jm558v) (04/07/25 3:34 pm): Removed co-listed comment from MET ENG 3230, since students should sign up under the designation corresponding to their degree program of study, per department approval via email on 4/7/2025.

Program Change Request

Date Submitted: 04/09/25 2:00 pm

Viewing: **MT ENG-MS : Metallurgical Engineering MS**

Last approved: 07/23/15 4:09 pm

Last edit: 04/11/25 3:54 pm

Changes proposed by: Haiming Wen (wenha)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Master of Science
Academic Level	Graduate
Program Code	MT ENG-MS
Department	Materials Science & Engineering
Discipline	Metallurgical Engineering
Title	

In Workflow

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

Approval Path

1. 04/09/25 2:07 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
2. 04/11/25 3:55 pm
Crystal Wilson
(wilsoncry):
Approved for CCC
Secretary
3. 04/24/25 9:01 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:23 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Feb 19, 2014 by F.
Scott Miller (smiller)
2. Jul 23, 2015 by
pantaleoa

Metallurgical Engineering MS

CIP Code

Program Requirements and Description

~~Degree Requirements M.S. and Ph.D. degrees are offered in metallurgical engineering. Recognizing the educational value of research, most metallurgical engineering M.S. degree~~

~~candidates complete a thesis program. Non-thesis exceptions may be granted in special circumstances.~~ Degree Requirements

The total number of hours required for the M.S. in Metallurgical Engineering ~~metallurgical engineering~~ is 30. ~~The Degree Requirements~~ M.S. with thesis is oriented toward the completion ~~A minimum of a research project~~ 6 hours of 6000-level lectures and the degree requirements ~~a minimum of 11 hours graduate research on the Missouri S&T campus~~ are 18 hours of course work and 6 hours of research. ~~required.~~ It is recommended that the student complete the core courses offered by the department including MS&E 6110, MS&E 6120, and MS&E 6130 which are graduate level crystallography, thermodynamics and kinetics. ~~A maximum of 6 hours of 4000-level lectures may be accepted.~~ ~~The minimum number of hours (beyond the bachelor's degree) required for the Ph.D. in metallurgical engineering is 72.~~ At least 6 ~~12~~ hours of course work ~~outside metallurgy is recommended,~~ a minimum of 24 hours will be dissertation research, and a minimum of 24 hours must be 6000-level courses. ~~course work.~~ The other courses are chosen with ~~minimum number of hours (beyond~~ the approval of ~~bachelor's degree) required for~~ the advisor. ~~Ph.D.~~ ~~Students will also be required to take and pass qualifying and comprehensive exams in accordance with Missouri S&T rules.~~

Justification for
request

The current language is for the old catalog before 2021. Updates and corrections are requested so that the language is consistent with the campus requirements in the new catalog.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 04/09/25 2:03 pm

Viewing: **MT ENG-PHD : Metallurgical Engineering PhD**

Last approved: 07/23/15 4:10 pm

Last edit: 04/14/25 8:32 am

Changes proposed by: Haiming Wen (wenha)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Doctor of Philosophy
Academic Level	Graduate
Program Code	MT ENG-PHD
Department	Materials Science & Engineering
Discipline	Metallurgical Engineering
Title	

In Workflow

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

Approval Path

1. 04/09/25 2:08 pm
Michael Moats
(moatsm):
Approved for
RMATSENG Chair
2. 04/14/25 8:33 am
Crystal Wilson
(wilsoncry):
Approved for CCC
Secretary
3. 04/24/25 9:02 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:23 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Feb 19, 2014 by F.
Scott Miller (smiller)
2. Jul 23, 2015 by
pantaleoa

Metallurgical Engineering PhD

CIP Code

Program Requirements and Description

~~Degree Requirements M.S. and Ph.D. degrees are offered in metallurgical engineering.~~ Degree Requirements

The minimum number of hours (beyond the bachelor's degree) required for the Ph.D. in metallurgical engineering

is 72. For students with a master's degree, a block ~~At least 12 hours~~ of 30 credit hours can count toward the total
72-hour requirement; a ~~course work outside metallurgy is recommended, a~~ minimum of 12 ~~24~~ hours of
coursework ~~will be dissertation research,~~ and a ~~a~~ minimum of 24 ~~of 24~~ hours of research are required. ~~must be~~
~~course work.~~ For students without a master's degree, a minimum of 30 hours of coursework and a minimum of
30 hours of research are required. All students are required to take the four core graduate courses, including MSE
6110 (Bonding, Crystallography, and Structure-Property Relations), MSE 6120 (Thermodynamics and Phase
Equilibria), MSE 6130 (Kinetic Theory for Materials), and MSE 6140 (Communication in Materials Science and
Engineering). All students ~~Students~~ will also be required to take and pass qualifying and comprehensive exams, as
well as successfully defend the dissertation, ~~exams~~ in accordance with Missouri S&T rules.

Justification for
request

The current language is for the old catalog before 2021. Updates and corrections are requested
so that the language is consistent with the campus requirements in the new catalog.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 04/01/25 1:42 pm

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

Last approved: 05/18/23 2:35 pm

Last edit: 04/01/25 1:50 pm

Changes proposed by: Irina Ivliyeva (ivliyeva)

Catalog Pages Using
this Program
[Multidisciplinary Studies](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Arts
Academic Level	Undergraduate
Program Code	MULTI-BA
Department	Arts, Languages & Philosophy
Discipline	Arts, Languages and Philosophy
Title	

In Workflow

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

Approval Path

1. 04/01/25 1:52 pm
Irina Ivliyeva (ivliyeva): Approved for RPHILOSO Chair
2. 04/10/25 2:06 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/11/25 8:39 am
Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 04/28/25 2:23 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. May 7, 2014 by
Lahne Black (lahne)
2. Jun 11, 2014 by
pantaleoa
3. Jul 21, 2015 by
pantaleoa
4. May 2, 2022 by
Monica Kasza
(msp7h)
5. Nov 14, 2022 by
Lauren Perala
(peralal)
6. May 18, 2023 by
Jennifer Pohlsander
(jpnfd)

Multidisciplinary Studies BA

CIP Code

Program Requirements and Description

All students in the B.A. multidisciplinary studies program will complete the basics skills and concepts and general education requirements and generally comply with the requirements for the B.A. degree. [The General Education Electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.](#)

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

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

French Language and French-Speaking Cultures Emphasis

Area

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

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

<u>FRENCH 1180</u>	Intermediate French	4
<u>FRENCH 2110</u>	Basic French Conversation	3
<u>FRENCH 2180</u>	Basic French Composition	3
<u>FRENCH 2330</u>	Introduction to Professional French	3
<u>FRENCH 4311</u>	Advanced French Conversation	3
<u>FRENCH 4330</u>	Professional French	3
<u>FRENCH 4340</u>	French for Engineering	3

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

<u>FRENCH 2330</u>	Introduction to Professional French	3
<u>FRENCH 2170</u>	Masterpieces Of French Literature	3
<u>FRENCH 3010</u>	The Francophone World	3
<u>FRENCH 3020</u>	Contemporary French and Francophone Literature	3
<u>FRENCH 3370</u>	Survey Of French Literature I (Early Period)	3
<u>FRENCH 3375</u>	Survey Of French Literature II (Modern Period)	3
<u>FRENCH 4320</u>	French and Francophone Cinema	3
<u>FRENCH 4330</u>	Professional French	3
<u>FRENCH 4360</u>	French Culture And Civilization	3

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

<u>FRENCH 3000</u>	Special Problems	6
<u>FRENCH 3001</u>	Special Topics	6
<u>FRENCH 4000</u>	Special Problems	6
<u>FRENCH 4001</u>	Special Topics	6
<u>FRENCH 4010</u>	Seminar	6

Courses taken in French during study abroad

Spanish Language and Spanish-Speaking Cultures Emphasis Area

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

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

<u>SPANISH 1180</u>	Intermediate Spanish	4
<u>SPANISH 2110</u>	Basic Spanish Conversation	3
<u>SPANISH 2180</u>	Intermediate Spanish Composition	3
<u>SPANISH 2330</u>	Introduction to Professional Spanish	3
<u>SPANISH 3100</u>	Spanish Translation for Technical Applications	3
<u>SPANISH 4302</u>	Phonetics and Phonology of Spanish	3
<u>SPANISH 4311</u>	Advanced Spanish Conversation	3
<u>SPANISH 4330</u>	Professional Spanish	3

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

<u>SPANISH 2160</u>	Hispanic Culture	3
<u>SPANISH 2161</u>	Contemporary Latin America	3
<u>SPANISH 2170</u>	Masterpieces Of Hispanic Literature	3
<u>SPANISH 2330</u>	Introduction to Professional Spanish	3
<u>SPANISH 4330</u>	Professional Spanish	3
<u>SPANISH 4350</u>	Spanish Literature, Science, and Technology	3
<u>SPANISH 4370</u>	Survey Of Spanish Literature	3
<u>SPANISH 4377</u>	Spanish-American Novel And Short Story	3

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

<u>SPANISH 3000</u>	Special Problems	6
<u>SPANISH 3001</u>	Special Topics	6

<u>SPANISH 4000</u>	Special Problems	6
<u>SPANISH 4001</u>	Special Topics	6
<u>SPANISH 4010</u>	Seminar	1-3

Courses taken in Spanish during study abroad

Global Engineering Emphasis Area

This emphasis area is meant to distinguish the accomplishments of and provide further credentials for students who complete the entirety of Missouri S&T's Global Engineering Program. The requirements for the Global Engineering emphasis area are as follows:

Completion of one of the above emphasis areas, namely,

French Language and French-Speaking Cultures, or

Spanish Language and Spanish-Speaking Cultures

Completion of a B.S. in an engineering discipline

Completion of at least one semester abroad in an area where the target language (French or Spanish) is spoken

Completion of a one-semester professional internship or research assistantship abroad in an area where the target language is spoken

Justification for

request

Updating the Program Description with the approved language for the Gen. Ed. updates, effective Fall 2025.

Attach Budget

System Approval

Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Program Change Request

Date Submitted: 04/08/25 10:44 am

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

Last approved: 03/18/25 2:51 pm

Last edit: 04/15/25 1:56 pm

Changes proposed by: Joshua Schlegel (schlegelj)

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

Final Catalog
Rationale for
Supporting

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	
Academic Level	Undergraduate
Program Code	NU ENG-BS
Department	Nuclear Eng & Radiation Sci
Discipline	Nuclear Engineering
Offered by Title	

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

Approval Path

1. 04/11/25 4:16 pm
Joseph Newkirk (jnewkirk):
Approved for NUC ENG Chair
2. 04/15/25 1:57 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/24/25 9:03 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
4. 04/28/25 2:23 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Aug 6, 2014 by
Lahne Black (lahne)
2. Jul 21, 2015 by
pantaleoa
3. Mar 27, 2017 by
Hyoung-Koo Lee
(leehk)
4. Jul 6, 2020 by
ershenb
5. Jun 11, 2021 by
Joshua Schlegel
(schlegelj)
6. Nov 18, 2021 by
Joshua Schlegel
(schlegelj)
7. May 2, 2022 by
Joshua Schlegel
(schlegelj)
8. Feb 6, 2025 by
Joshua Schlegel
(schlegelj)
9. Mar 18, 2025 by
Jade McCain
(jm558v)

Nuclear Engineering BS

CIP Code

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Science Nuclear Engineering

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

For the bachelor of science degree in nuclear engineering a minimum of 129 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. All Nuclear Engineering students must meet the Missouri S&T general education requirements as stated in the catalog. engineering.

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>ENGLISH 1120</u>	3	<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3
<u>FR ENG 1100</u>	1	<u>MATH 1215</u>	4
<u>MATH 1214</u> or <u>1211</u>	4	<u>MECH ENG 1720</u>	3
<u>NUC ENG 1105</u> ²	1	<u>PHYSICS 1135</u>	4
<u>CHEM 1100</u>	1	Elective-Hum or Soc Sci ²	3
<u>CHEM 1310</u>	4	<u>General Education Elective</u> ¹	<u>3</u>
<u>CHEM 1319</u>	1		
	15		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>CIV ENG 2200</u>	3	<u>CIV ENG 2210</u>	3
<u>COMP SCI 1972</u> , or <u>1970</u> , or <u>1971</u>	2	<u>ECON 1100</u> or <u>1200</u>	3
<u>COMP SCI 1982</u> , or <u>1980</u> , or <u>1981</u>	1	<u>MATH 3304</u>	3
<u>MATH 2222</u>	4	<u>MECH ENG 2519</u>	3
<u>NUC ENG 2105</u>	2	<u>NUC ENG 2406</u>	1
<u>PHYSICS 2135</u>	4	<u>NUC ENG 3103</u> , or <u>PHYSICS 2305</u> , or <u>PHYSICS 2311</u>	3
	16		16

Junior Year

First Semester	Credits	Second Semester	Credits
<u>ELEC ENG 2800</u>	3	<u>ENGLISH 1160</u> , or <u>3560</u> , or <u>SPM S 1185</u>	3
<u>MET ENG 2110</u>	3	<u>NUC ENG 4312</u> or <u>5312</u>	3
<u>NUC ENG 3205</u>	3	<u>NUC ENG 3223</u>	3
<u>NUC ENG 3221</u>	3	<u>NUC ENG 4203</u> or <u>5203</u>	3
<u>COMP SCI 3200</u> (OR 3000 Level MATH, 5000 Level STAT)	3	<u>STAT 3115</u> , or <u>3111</u> , or <u>3113</u> , or <u>3117</u>	3
		<u>NUC ENG 5010</u>	0.5
	15		15.5

Senior Year

First Semester	Credits	Second Semester	Credits
<u>NUC ENG 4207</u> or <u>5207</u>	3	<u>NUC ENG 4438</u> or <u>5438</u>	2
<u>NUC ENG 4241</u> or <u>5241</u>	3	<u>NUC ENG 4497</u>	3
<u>NUC ENG 4428</u> or <u>5428</u>	3	Nuclear Engineering Elective ³	3
<u>NUC ENG 4496</u>	2	Technical Elective ⁴	3
Nuclear Engineering Elective	3	Technical Elective ⁴	3
Elective-Hum or Soc Sc	3	Elective-Hum or Soc Sc	3
<u>General Education Elective¹</u>	<u>3</u>	<u>General Education Elective¹</u>	<u>3</u>
<u>NUC ENG 5010</u>	0.5		
	17.5		17

Total Credits: 129

~~Each student's program of study must contain a minimum of 21 credit hours of course work from the humanities and the social sciences areas and should be chosen according to the following rules: 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. Students must take ENGLISH 1120. Students must also take one communications elective, selected from ENGLISH 1160, ENGLISH 3560, or SP&M S 1185. The remaining nine hours must be taken in humanities or social sciences at the 1000 level or above. Foreign language courses numbered 1180 can be considered to be one of these courses. (Students may receive humanities credit for foreign language courses in their native tongue only if the course is at the 4000 level.) 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. Special topics, special problems courses and honors seminars are allowed only by petition to and approval by the student's department chair.~~ **Note:** Minimum credit hours for graduation is 129.

1

General Education Electives must satisfy Missouri S&T's general education requirements in the catalog

2

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.

3

Any Nuclear Engineering course 4000 level or higher.

4

Technical Electives can be any Math, Science, or Engineering courses. One elective must be taken at the 3000 level or above. The other must be taken at the 4000 level or above.

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

To conform to the newly approved General Education policy.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 03/10/25 10:17 am

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

Last approved: 02/15/25 8:12 am

Last edit: 03/26/25 3:52 pm

Changes proposed by: Joshua Schlegel (schlegelj)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Master of Science
Academic Level	Graduate
Program Code	NU ENG-MS
Department	Nuclear Eng & Radiation Sci
Discipline	Nuclear Engineering
Title	

In Workflow

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

Approval Path

1. 03/04/25 9:59 am
Joseph Newkirk (jnewkirk):
Approved for NUC ENG Chair
2. 03/10/25 8:56 am
Jade McCain (jm558v): Rollback to Initiator
3. 03/19/25 3:33 pm
Joseph Newkirk (jnewkirk):
Approved for NUC ENG Chair
4. 03/26/25 3:53 pm
Jade McCain (jm558v): Approved for CCC Secretary
5. 04/02/25 3:17 pm

Jade McCain
(jm558v): Approved
for CCC Secretary

6. 04/24/25 9:05 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair

7. 04/28/25 2:24 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Apr 17, 2014 by
pantaleoa
2. Jun 13, 2014 by
pantaleoa
3. Jul 24, 2015 by
pantaleoa
4. Dec 4, 2023 by
Joshua Schlegel
(schlegelj)
5. Feb 4, 2025 by
Joshua Schlegel
(schlegelj)
6. Feb 15, 2025 by
Crystal Wilson
(wilsoncry)

Nuclear Engineering MS

CIP Code

Program Requirements and Description

~~Table 1: The Nuclear Engineering Program offers both a thesis-based and non-thesis MS degree program. AB.S. Course Requirements in a related field of engineering or suitable physical science is a prerequisite for a MS in admission in to the Nuclear Engineering (Thesis Option) graduate program. The M.S.~~

<u>NUC ENG 3205</u>	<u>Fundamentals of Nuclear Engineering</u> ¹	<u>3</u>
<u>NUC ENG 5203</u>	<u>Reactor Physics I</u> ¹	<u>3</u>
<u>NUC ENG 5241</u>	<u>Nuclear Materials I</u> ¹	<u>3</u>
<u>NUC ENG 5257</u>	<u>Introduction to Nuclear Thermal Hydraulics</u> ¹	<u>3</u>
<u>NUC ENG 5312</u>	<u>Nuclear Radiation Measurements and Spectroscopy</u> ¹	<u>3</u>
<u>NUC ENG 6010</u>	<u>Nuclear Engineering Seminar</u> ²	<u>1</u>
<u>5000 Engineering Elective</u> ^{3,4}		<u>3</u>
<u>6000 Engineering Elective</u> ³		<u>3</u>
<u>NUC ENG 6099</u>	<u>Research</u>	<u>6</u>
<p>¹ <u>Students with an undergraduate degree in Nuclear Engineering may have completed some or all of these requirements as part of their previous coursework. In that case, these Core Courses will be replaced by additional Engineering Electives at the 5000 level or above.</u></p> <p>degree program is designed to provide training and expertise in the design of nuclear energy systems, as well as the use of nuclear technology in medical and industrial applications. Some exposure to research is considered an essential component of the MS program, so the non-thesis option is intended for students with significant industrial experience (more than 3 years) and is not encouraged for other students. Students should plan to complete their MS program in two to four semesters.</p> <p>² <u>Students are expected to take two instances</u> A MS program requires a minimum of <u>NUC ENG 6010, with 0.5</u> 30 credit hours of research and coursework. A minimum of six credits per instance, over two <u>of 6000-level courses must be included (nine credits for a non-thesis option), and at most three credits of 3000-level courses. Students must register for at least two semesters during of</u> NUC ENG 6010, our graduate seminar. Students are encouraged to take at least six credits of courses outside of their MS plan of study. program.</p> <p>³ <u>Engineering electives can be from any department on campus. These are negotiated with the student's faculty advisor and should be focused on their area of concentration.</u></p> <p>⁴ <u>Up to 3 credits of 5000 level Engineering Electives can be replaced by additional credit in 6099: Graduate Research.</u></p> <p><u>Table 2: Course Requirements for</u> The Nuclear Engineering Program offers both a thesis-based and non-thesis MS in Nuclear Engineering (Non-Thesis Option) <u>degree program. A.B.S.</u></p>		
<u>NUC ENG 3205</u>	<u>Fundamentals of Nuclear Engineering</u> ¹	<u>3</u>
<u>NUC ENG 5203</u>	<u>Reactor Physics I</u> ¹	<u>3</u>
<u>NUC ENG 5241</u>	<u>Nuclear Materials I</u> ¹	<u>3</u>
<u>NUC ENG 5257</u>	<u>Introduction to Nuclear Thermal Hydraulics</u> ¹	<u>3</u>
<u>NUC ENG 5312</u>	<u>Nuclear Radiation Measurements and Spectroscopy</u> ¹	<u>3</u>
<u>NUC ENG 6010</u>	<u>Nuclear Engineering Seminar</u> ²	<u>1</u>
<u>5000 Engineering Elective</u> ³		<u>9</u>

6000 Engineering Elective ³

3

~~For a thesis option, at least 6 credits of graduate research and at least 18 credits of lecture courses are required as part of the 30 credit hours.~~¹

Students with an undergraduate degree in ~~The 'core'~~ Nuclear Engineering may have ~~courses are NUC ENG 5203 (Reactor Physics I), NUC ENG 5241 (Nuclear Materials I), NUC ENG 5257 (Introduction to Nuclear Thermal Hydraulics), and NUC ENG 5312 (Nuclear Radiation Measurements and Spectroscopy). These courses address key competencies that all Nuclear Engineers should possess. Students who~~ completed some ~~these courses or all their equivalent during an undergraduate Nuclear Engineering degree need not take the courses again, however students with undergraduate degrees from other disciplines should take NUC ENG 3205 (Fundamentals of~~ these courses as part Nuclear Engineering) ~~in addition to these core courses. Students are also encouraged to take at least 3 credits of~~ their previous coursework, graduate level mathematics or computer science. In that case, these Core Courses will instead be additional Engineering Electives at the 5000 level or above.

² Students are expected to take two instances of NUC ENG 6010, with 0.5 credits per instance, over two semesters during their MS plan of study.

³ Engineering electives can be from any department on campus. These are negotiated with the student's faculty advisor and should be focused on their area of concentration.

~~A maximum of nine credit hours of graduate level courses taken elsewhere as a graduate student can be transferred to the MS plan of study, provided that the courses correspond to at least a 5000 level course at MissouriS&T.~~

Justification for
request

To clarify existing degree requirements for prospective students.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (03/04/25 2:11 pm): Corrected Engineering Elective formatting.

Jade McCain (jm558v) (03/10/25 8:56 am): Rollback: Rollback per department needs to make changes to NUC ENG 6010 in the course list and footnotes for clarification.

Jade McCain (jm558v) (03/26/25 3:52 pm): Added hyperlinks to courses in footnotes.

Program Change Request

Date Submitted: 03/06/25 1:37 pm

Viewing: **NU ENG-PHD : Nuclear Engineering PhD**

Last approved: 02/15/25 8:14 am

Last edit: 03/26/25 3:56 pm

Changes proposed by: Joshua Schlegel (schlegelj)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Doctor of Philosophy
Academic Level	Graduate
Program Code	NU ENG-PHD
Department	Nuclear Eng & Radiation Sci
Discipline	Nuclear Engineering
Title	

In Workflow

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

Approval Path

1. 03/04/25 10:00 am
Joseph Newkirk (jnewkirk):
Approved for NUC ENG Chair
2. 03/06/25 9:39 am
Jade McCain (jm558v): Rollback to Initiator
3. 03/19/25 3:33 pm
Joseph Newkirk (jnewkirk):
Approved for NUC ENG Chair
4. 03/26/25 3:56 pm
Jade McCain (jm558v): Approved for CCC Secretary
5. 04/02/25 3:17 pm

Jade McCain
(jm558v): Approved
for CCC Secretary

6. 04/24/25 9:05 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair

7. 04/28/25 2:24 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Dec 4, 2023 by
Joshua Schlegel
(schlegelj)
2. Feb 4, 2025 by
Joshua Schlegel
(schlegelj)
3. Feb 15, 2025 by
Crystal Wilson
(wilsoncry)

Nuclear Engineering PhD

CIP Code

Program Requirements and Description

Recommended Plan of Study

<u>NUC ENG 3205</u>	<u>Fundamentals of Nuclear Engineering ¹</u>	<u>3</u>
<u>NUC ENG 5203</u>	<u>Reactor Physics I ¹</u>	<u>3</u>
<u>NUC ENG 5241</u>	<u>Nuclear Materials I ¹</u>	<u>3</u>
<u>NUC ENG 5257</u>	<u>Introduction to Nuclear Thermal Hydraulics ¹</u>	<u>3</u>
<u>NUC ENG 5312</u>	<u>Nuclear Radiation Measurements and Spectroscopy ¹</u>	<u>3</u>
<u>NUC ENG 6010</u>	<u>Nuclear Engineering Seminar ²</u>	<u>3</u>

Math Elective or Comp Sci Elective

6

5000 Engineering Elective ^{3,4}

15

6000 Engineering Elective

9

NUC ENG 6099

Research

24

¹ Students with an undergraduate degree in Nuclear Engineering may have completed some or all of these requirements as part of their previous coursework. In that case, these courses will be replaced by additional Engineering Electives at the 5000 level or above.

~~The Doctor of Philosophy (PhD) program is open to students who have successfully completed their MS program or have enrolled in a direct PhD program. It is designed to provide additional training and expertise in the design of nuclear energy systems and the use of nuclear technology in medical and industrial applications, with a strong focus on engineering research. Typically a minimum of 5 semesters (not including summer sessions) is required to complete the program for students arriving with a MS degree, and a minimum of 7 semesters for students starting a direct PhD program. The doctoral program will include at least 72 credit hours of total coursework.~~ Students who already hold a Master's

~~degree will receive a block of 30 credit hours that will apply toward that requirement. They must complete an additional 42 hours of graduate credit. A minimum of 12 credit hours must be lecture courses, and a minimum of 24 credit hours must be graduate research. It is recommended that nine of the 12 credit hours of lecture courses come from 6000-level lecture courses. A student who does not hold a Master's degree must complete a minimum of 30 credit hours of lecture courses and at least 24 credit hours of graduate research. At least 15 credit hours should be in 6000-level lecture courses. Students who already hold a MS degree must include at least two semesters of NUC ENG 6010, graduate seminar. Students pursuing a direct PhD must include at least four semesters of NUC ENG 6010. Students are expected to complete also encouraged to enroll in at least six semesters of seminar, at 0.5 credits per semester. Up to two instances, of advanced mathematics or one credit, can be included in the 30 credit block awarded to students who have already completed a MS. computer science courses.~~

³ Engineering electives can be from any department on campus. These are negotiated with the student's faculty advisor and should be focused on their area of concentration.

⁴ Up to 6 credits of 5000 level Engineering Electives can be replaced by additional credit in NUC ENG 6099: Graduate Research.

~~The doctoral program will include at least 72 credit hours of total coursework. Students who already hold a Master's degree will receive a block of 30 credit hours that will apply toward that requirement.~~

PhD candidates must also complete a qualifying examination within their first four semesters of study, a comprehensive examination when at least 50% of their coursework is completed, and a final examination where they will present and defend the research included in their dissertation.

There is a residency requirement for the PhD in Nuclear Engineering. Residency at Missouri S&T is defined as sustained intellectual interactions among the student and the academic community. ~~community. The candidate for a Ph.D. The candidate for a Ph.D.~~ degree will normally complete three years of residency, which is the equivalent of completing six academic semesters while enrolled as an on-campus student at Missouri S&T. S&T. ~~Students holding a master's degree are automatically credited with two semesters of residency. Students holding a master's degree are automatically credited with two semesters of residency.~~ Students unable to meet the residency requirement given above, such as distance students, can meet this requirement through an alternative route in consultation with their advisor.

Justification for
request

To clarify existing requirements for potential students.

Attach Budget

System Approval

Letter

MDHE Approval

Supporting

Documents

Reviewer

Comments

Jade McCain (jm558v) (03/04/25 3:06 pm): Corrected elective formatting.

Jade McCain (jm558v) (03/06/25 9:39 am): Rollback: Rollback per department needs to make changes to seminar formatting, footnotes, and header.

Jade McCain (jm558v) (03/26/25 3:56 pm): Added hyperlink to course in the footnotes.

Program Change Request

Date Submitted: 02/20/25 10:47 pm

Viewing: **NUNOPRO-CT : Nuclear
Nonproliferation CT**

Last approved: 02/05/20 8:45 am

Last edit: 03/10/25 8:58 am

Changes proposed by: Joshua Schlegel (schlegelj)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Certificate
Academic Level	Graduate
Program Code	NUNOPRO-CT
Department	Mining & Nuclear Engineering
Discipline	Nuclear Engineering
Title	

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

Approval Path

1. 03/04/25 10:00 am
Joseph Newkirk
(jnewkirk):
Approved for NUC
ENG Chair
2. 03/10/25 8:58 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 03/21/25 2:38 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
4. 04/28/25 2:24 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Oct 15, 2019 by
AYODEJI Alajo
(alajoa)
2. Feb 5, 2020 by
ershenb

Nuclear Nonproliferation [CT](#)

CIP Code

Intended Audience

[Distance \(online\) Students](#)

[Main Campus Students](#)

Program Requirements and Description

[The certificate program requires 4 courses equivalent to 12 credit hours.](#) ~~CurriculumThe certificate program~~

~~requires 4 courses equivalent to 12 credit hours. Nuclear Nonproliferation The nuclear engineering program offers a graduate certificate program to professionals and students who desire to undergo formal instruction in nuclear nonproliferation. The topics in comprising the certificate program are selected from courses available to graduate students in the nuclear engineering program at Missouri University of Science and Technology. All courses are available both in traditional on-campus delivery and online format. The certificate program deployment strategy allows all enrollees to pace their study in manner consistent with the individual's plans. The Graduate Certificate in Nuclear Nonproliferation is open to all persons holding a B.S., M.S., or Ph.D. degree in Engineering, Science, and/or Mathematics as well as related B.A. or M.A. degrees, or are currently accepted into a graduate degree program at Missouri S&T. There are 8 course available to the certificate program, 1 of which is required for the completion of the graduate certificate in nuclear nonproliferation. ~~nonproliferation. Program enrollees may select any 3 of the remaining 7 courses towards the completion of the graduate certificate. Enrollees may take 1 or 2 classes each semester so that the certificate program may be completed within 1 to 2 years.~~ Program enrollees may select any 3 of the remaining 7 courses towards the completion of the graduate certificate. Enrollees may take 1 or 2 classes each semester so that the certificate program may be completed within 1 to 2 years.~~

Required Course:

<u>NUC ENG 5509</u>	Nuclear Nonproliferation	3
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Elective Courses:

<u>NUC ENG 5207</u>	Nuclear Fuel Cycle	3
<u>NUC ENG 5281</u>	Introduction to Probabilistic Risk Assessment	3
<u>NUC ENG 5312</u>	Nuclear Radiation Measurements and Spectroscopy	3
<u>NUC ENG 5347</u>	Radiological Engineering	3
<u>NUC ENG 5577</u>	Advanced Nuclear Forensics and Radiochemistry	3
<u>NUC ENG 5507</u>	Nuclear Policy	3
<u>NUC ENG 6331</u>	Radiation Shielding	3

Justification for
request

Moving the general description of the certificate out of the degree requirements and to the degree description in the graduate catalog.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

[CIP number NUC ENG Nonproliferation CT MDHEWD approval.pdf](#)

Reviewer

Comments

Jade McCain (jm558v) (02/24/25 9:04 am): Added "CT" at the end of the title for consistency.

Program Change Request

Date Submitted: 04/18/25 8:37 am

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

Last approved: 03/17/25 9:05 am

Last edit: 04/18/25 8:37 am

Changes proposed by: Mingzhen Wei (weim)

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

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	PE ENG-BS
Department	Earth Sciences and Engineering
Discipline	Petroleum Engineering
Title	

In Workflow

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

Approval Path

1. 04/08/25 3:18 pm
Stephen Gao (sgao):
Approved for
RGEOENG Chair
2. 04/10/25 1:40 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/11/25 1:34 pm
Jade McCain
(jm558v): Rollback
to Initiator
4. 04/11/25 1:50 pm
Stephen Gao (sgao):
Approved for
RGEOENG Chair
5. 04/17/25 2:33 pm
Crystal Wilson
(wilsoncry):
Rollback to Initiator

6. 04/18/25 8:39 am
Stephen Gao (sgao):
Approved for
RGEOENG Chair
7. 04/18/25 11:34 am
Jade McCain
(jm558v): Approved
for CCC Secretary
8. 04/24/25 9:09 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC
Chair
9. 04/28/25 2:24 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Sep 21, 2015 by
Ralph Flori (reflori)
2. Jun 18, 2018 by
Shari Dunn-Norman
(caolila)
3. Jun 14, 2019 by
Sharon Lauck
(laucks)
4. Mar 3, 2020 by
ershenb
5. Jul 1, 2020 by
Sharon Lauck
(laucks)
6. Jun 10, 2021 by
Sharon Lauck
(laucks)
7. Oct 28, 2021 by
Katherine Grote
(grotekr)
8. May 2, 2022 by

Mingzhen Wei
(weim)

9. Sep 16, 2024 by
Crystal Wilson
(wilsoncry)

10. Mar 17, 2025 by
Jade McCain
(jm558v)

Petroleum Engineering BS

CIP Code 14.2501 - Petroleum Engineering.

Text

Program Requirements and Description

Bachelor of Science Petroleum Engineering

For the Bachelor of Science degree in Petroleum Engineering a minimum of 129 ~~127~~ 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:~~

~~Six credit hours of English: All students are required to take ENGLISH 1120 and either ENGLISH 3560 (preferred) or ENGLISH 1160 or ENGLISH 1600.~~

~~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.~~

~~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.~~

~~Three credit hours of elective humanities and social sciences must meet requirements as specified under "Engineering Degree Requirements" published in the current undergraduate catalog.~~

~~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. 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.

Freshman Year

First Semester	Credits	Second Semester	Credits
<u>FR ENG 1100</u>	1	<u>MATH 1215</u> ²	4
<u>CHEM 1310</u> ¹	4	<u>PHYSICS 1135</u>	4
<u>CHEM 1319</u>	1	<u>GEO ENG 1150</u> or <u>GEOLOGY 1110</u>	3
<u>MATH 1214</u> or <u>1211</u> ²	4	<u>COMP SCI 1500</u>	3
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3	PET ENG 1120	1
<u>ENGLISH 1120</u>	3	<u>PET ENG 2510</u>	<u>3</u>
<u>PET ENG 1120</u>	<u>1</u>		
	17		17

Sophomore Year

First Semester	Credits	Second Semester	Credits
<u>MATH 2222</u>	4	<u>MATH 3304</u>	3
<u>PHYSICS 2135</u>	4	<u>MECH ENG 2350</u>	2
Hum/Soc Sci Elective ⁴	3	<u>CIV ENG 2210</u>	3
<u>General Education Elective</u> ³	<u>3</u>	ECON 1100 or 1200	3
<u>CIV ENG 2200</u>	3	<u>PET ENG 3520</u>	3
PET ENG 2510	4	<u>General Education Elective</u> ³	<u>3</u>
<u>PET ENG 3320</u>	<u>3</u>	<u>PET ENG 3330</u>	3
	17		17

Junior Year

First Semester	Credits	Second Semester	Credits
<u>CIV ENG 3330</u>	3	<u>PET ENG 4410</u>	3
<u>PET ENG 4210</u> ³	3	<u>PET ENG 4631</u>	3
Comp Sci Programming Elective ⁶	3	<u>MECH ENG 2527</u>	3
<u>CS Programming Elective</u> ⁵	<u>3</u>	<u>ENGLISH 1160</u> , or <u>1600</u> , or <u>3560</u>	3
<u>GEOLOGY 3310</u>	3	Hum/Soc Sci Elective ⁴	3
<u>GEOLOGY 3319</u>	1	<u>General Education Elective</u> ³	<u>3</u>
<u>GEOLOGY 5513</u>	3		
	16		15

Senior Year

First Semester	Credits	Second Semester	Credits
<u>PET ENG 4520</u>	3	<u>PET ENG 4097</u>	3
<u>PET ENG 5801</u>	3	<u>GEO ENG 4115</u>	3
<u>PET ENG Elective</u> ⁴	<u>3</u>	Hum/Soc Sci Elective ⁴	3
<u>PET ENG 4590</u>	3	<u>General Education Elective</u> ³	<u>3</u>
<u>PET ENG 4720</u>	3	<u>PET ENG 4531</u>	3

Total Credits: 129

1

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

2

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

3

General Education Requirement. General education electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year

4

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

5

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

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

6

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

~~Students planning on majoring in petroleum engineering should take the following courses.~~ The total number of credit hours required for a degree in Petroleum Engineering is [129](#). ~~127.~~

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.

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

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

Justification for
request

Update based on General Education requirements change.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Jade McCain (jm558v) (04/10/25 1:38 pm): Corrected General education elective format in the plan of study grid.

Jade McCain (jm558v) (04/11/25 1:34 pm): Rollback: rollback per department request.

Crystal Wilson (wilsoncry) (04/17/25 2:33 pm): Rollback: PET ENG 4010 is a senior level course and cannot be on the plan of study grid for the freshman year. This will need to be removed.

Program Change Request

Date Submitted: 04/01/25 1:50 pm

Viewing: **PHIL-BS : Philosophy BS**

Last approved: 03/27/17 2:47 pm

Last edit: 04/01/25 1:53 pm

Changes proposed by: Irina Ivliyeva (ivliyeva)

Catalog Pages Using
this Program
[Philosophy](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	PHIL-BS
Department	Arts, Languages & Philosophy
Discipline	Philosophy
Title	

In Workflow

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

Approval Path

1. 04/01/25 1:55 pm
Irina Ivliyeva (ivliyeva): Approved for RPHILOSO Chair
2. 04/02/25 3:07 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/02/25 3:24 pm
Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 04/28/25 2:24 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. Apr 16, 2014 by
Lahne Black (lahne)
2. Oct 20, 2014 by
pantaleoa
3. Jul 21, 2015 by
pantaleoa
4. Mar 27, 2017 by
dittmerj

Philosophy BS

CIP Code

Program Requirements and Description

Bachelor of Science Philosophy

A minimum of 120 credit hours is required for a bachelor of science degree in philosophy, and a grade point average of 2.0 must be obtained. These requirements for the B.S. are in addition to credit received for basic ROTC. The General Education electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

The B.S. in philosophy degree requires the following:

1. ENGLISH 1120 ~~ENGLISH 1120~~ (entering students will normally take ENGLISH 1120 ~~ENGLISH 1120~~ within their first year of study.) (3 hours)
2. Sciences. A total of 24 hours in biological, physical (chemistry, geology, and physics), and mathematical (mathematics, statistics, computer science, and information science and technology) sciences is required. A course from each of the biological and physical sciences is required. Students have to take two math or statistics courses; both must be at the level of college algebra or higher. At least one hour of lab coursework is required. Students may count up to 12 hours of engineering courses, at the discretion of the major advisor. Also, students may count up to 3 hours from the following list, but which may not be used to satisfy another requirement: History of science and technology classes (HISTORY 2510, HISTORY 3510, ~~HISTORY 2510~~, ~~HISTORY 3510~~, and HISTORY 3530), PHILOS 4345, ~~HISTORY 3530~~, ~~PHILOS 4345~~, or PHILOS 3254 ~~PHILOS 3254~~ (24 hours)
3. Social Sciences. A total of 15 hours in social sciences is required. At least one course from two of the four areas must be taken: economics, sociology/anthropology, history/political science, and psychology. Six (6) hours from the biological, physical, and mathematical science, as well as engineering, not already used for the science requirement, may be substituted for 3 hours of social sciences; this substitution is only permitted once, unless

allowed at the discretion of the major advisor. (15 hours)

4. Humanities. A total of 12 hours in humanities other than philosophy is required. Courses may be taken ~~in literature, foreign/modern languages, speech and media studies, art, music, or theater. Three (3) hours from two of history not used for the following areas: social science requirement, and not HISTORY 1300 or HISTORY 1310, may be used to fulfill this requirement. (12 hours)~~ literature, world languages, speech and media studies, art, music, or theater. Three (3) hours from history not used for the social science requirement, and not HISTORY 1300 or HISTORY 1310, may be used to fulfill this requirement. (12 hours)
5. Two (2) Communication Intensive courses are required in accordance with ~~required; waiving and substitutions are at the General Education requirements; waiving and substitutions are at discretion of the discretion of the~~ student's advisor.
6. Minor: A minor will be selected from any discipline other than the major with approval of the major advisor. A total of at least 15 hours is required for the minor, but may include courses which also satisfy other requirements. At least nine hours must be beyond the introductory level.
7. Basic ROTC may be elected in the freshman and sophomore years, but is not creditable toward the B.S. in philosophy degree. Six credit hours of advanced ROTC may be credited toward this degree.
8. Elective Credits: In consultation with her/his advisor, each student will elect sufficient additional courses to complete a minimum of 120 credit hours which may include MATH 1120 ~~MATH 1120~~ or MATH 1140 ~~MATH 1140~~ and MATH 1160. ~~MATH 1160~~.
9. Philosophy: A total of at least 30 hours of philosophy courses is required. This is to include PHILOS 1105, PHILOS 1115, ~~PHILOS 1105, PHILOS 1115~~, and at least 12 hours at the 4000-level, although substitutions may be permitted at the discretion of the major advisor. All philosophy work must accumulate to at least a 2.0 grade point average.

Justification for
request

Updating the Program Description with the approved language for the Gen. Ed. updates,
effective Fall 2025.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Program Change Request

Date Submitted: 03/21/25 3:52 pm

Viewing: **PHYSIC-BS : Physics BS**

Last approved: 12/20/24 3:25 pm

Last edit: 03/21/25 3:52 pm

Changes proposed by: Crystal Wilson (wilsoncry)

Catalog Pages Using
this Program

[Physics](#)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	PHYSIC-BS
Department	Physics
Discipline	Physics
Title	

In Workflow

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

Approval Path

1. 03/31/25 10:56 am
Thomas Vojta (vojtat): Approved for RPHYSICS Chair
2. 04/02/25 1:34 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/25/25 9:14 am
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 04/28/25 2:24 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

History

1. May 6, 2014 by
waddill
2. Jul 21, 2015 by
pantaleoa
3. Jun 27, 2016 by
waddill
4. Jun 18, 2018 by
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)
8. Jun 10, 2021 by
Thomas Vojta
(vojtat)
9. Oct 28, 2021 by
Thomas Vojta
(vojtat)
10. Apr 6, 2022 by
Thomas Vojta
(vojtat)
11. Jul 8, 2024 by
Crystal Wilson
(wilsoncry)
12. Dec 20, 2024 by
Jade McCain
(jm558v)

Physics BS

CIP Code 40.0801 - Physics, General.

Program Requirements and Description

Bachelor of Science

Physics

A minimum of 120 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		
MATH 1214 or 1211	4		
	14		14

Sophomore Year

First Semester	Credits	Second Semester	Credits
ENGLISH 1160	3	MATH 3304	3
MATH 2222	4	PHYSICS 2129	3
COMP SCI 1500 or 1972 and 1982	3	PHYSICS 2305	3
PHYSICS 2135	4	PHYSICS 2401	3
Elective ¹	3	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 Area Focus Course ⁴	3	Math/Stat Elective ²	3
Math/Stat Elective ²	3	Electives ¹	6
Electives ¹	3		
	15		15

Senior Year

First Semester	Credits	Second Semester	Credits
PHYSICS 4211	3	PHYSICS 4311	3
PHYSICS 4301	3	Physics Elective ³	3
Physics Area Focus Course ⁴	3	Electives ¹	9

Electives¹

6

15

15

Total Credits: 120

Note: The minimum credit hours required for a bachelor of science in physics is 120 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

30 hours of electives are required in addition to the math/stat electives², physics electives³, and physics area focus courses⁴. These electives shall include six hours of social studies and nine hours of humanities. At least three of the humanity hours must be literature and at least three must be at the 3000 level or above not including Special Problems courses ([PHILOS 4345](#) recommended). 15 hours of free electives may be used to develop an emphasis area. At least 15 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 3000 and 4000 level physics courses listed ([PHYSICS 3119](#), [PHYSICS 3129](#), [PHYSICS 3201](#), [PHYSICS 3211](#), [PHYSICS 4211](#), [PHYSICS 4301](#), [PHYSICS 4311](#)), and in addition to the two physics area focus courses⁴, one other physics 3000 level or higher course is required.

4

Two physics area focus courses are required. Students can pick from [PHYSICS 4323](#), [PHYSICS 4553](#), [PHYSICS 4333](#), and [PHYSICS 4343](#)- Atomic Physics.

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. License reciprocity determinations outside of Missouri can be found at <https://teaching.missouri.edu/student/state-authorization/mst/licensure>.

a. Professional requirements courses:

EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
<u>EDUC 1074</u>	<u>Foundations of Education in a Diverse Society</u>	<u>3</u>

<u>PSYCH 2300</u>	Educational Psychology	3
or <u>EDUC 2102</u>	Educational Psychology	
ENGLISH 3170	Teaching And Supervising Reading and Writing	3
<u>EDUC 2310</u>	Education Of The Exceptional Child	3
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3216</u>	Instructional Literacy in the Content Area	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3
<u>EDUC 3340</u>	Assessment of Student Learning	3
<u>PSYCH 3310</u>	Developmental Psychology	3
<u>EDUC 4298</u>	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:		
<u>EDUC 1104</u>	Teacher Field Experience I	1
<u>EDUC 1164</u>	Teacher Field Experience II	2
<u>EDUC 3298</u>	Teacher Field Experience III	1
<u>EDUC 4299</u>	Student Teaching	12
c. Take these additional courses:		
<u>SP&M S 1185</u>	Principles Of Speech	3
<u>POL SCI 1200</u>	American Government	3
<u>PSYCH 1101</u>	General Psychology	3
<u>BIO SCI 1113</u>	General Biology	3
<u>PHYSICS 1605</u>	Environmental Physics I	3
<u>HISTORY 3530</u>	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

Updated Education course requirements to match previous CCC changes.

Attach Budget

System Approval
Letter
MDHE Approval
Supporting
Documents

Reviewer
Comments

Program Change Request

New Program Proposal

Date Submitted: 04/08/25 3:32 pm

Viewing: **PROPOSED : Geospatial Engineering MS**

Last edit: 04/10/25 4:22 pm

Changes proposed by: Kelly Liu (liukh)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Master of Science
Academic Level	Graduate
Program Code	PROPOSED
Department	Earth Sciences and Engineering
Discipline	Geological Engineering
Title	

In Workflow

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

Approval Path

- 1. 03/21/25 9:35 am
Stephen Gao (sgao): Rollback to Initiator
- 2. 04/08/25 3:35 pm
Stephen Gao (sgao): Approved for RGEOENG Chair
- 3. 04/15/25 2:52 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 4. 04/24/25 9:11 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair
- 5. 04/28/25 2:24 pm
Jade McCain (jm558v): Approved for Pending CCC

Geospatial Engineering MS

CIP Code 14.3801 - Surveying Engineering.

Program Requirements and Description

Master of Science

Geospatial Engineering

The Geospatial Engineering Master's program is designed for students with undergraduate degrees from a wide range of technical backgrounds, including disciplines such as geological, civil, and environmental engineering, geological and environmental sciences, and computer science. Students with these STEM degrees should have the baseline computational and mathematic requirements necessary for the required coursework. The program provides an advanced education in geospatial technologies, preparing graduates to address complex problems across multiple sectors.

The MS program in Geospatial Engineering offers an in-depth curriculum that covers essential geospatial technologies, including:

1. Global Navigation Satellite Systems (GNSS) and geodesy: Understanding satellite-based systems for positioning, timing, and navigation, as well as non-satellite-based positioning methods.
2. Remote Sensing and Synthetic Aperture Radar (SAR): Learning to interpret and analyze data from various imaging technologies.
3. Geographic Information Systems (GIS): Managing, analyzing, and visualizing spatial data.
4. Geomatics: Developing precision in mapping, surveying, and spatial data applications.

These core academic components are supplemented by hands-on training in industry-standard software and data analysis, allowing students to apply their skills in real-world scenarios. Through interdisciplinary courses, students gain collaborative experience, equipping them to work effectively with professionals from diverse fields.

Program Requirements:

The Master of Geospatial Engineering degree requires a minimum of thirty hours of graduate credit. The plan of study must include a minimum of twenty-four credit hours of 4000-, 5000-, and 6000-level lecture courses (1000/2000-level courses cannot be included). A minimum of nine credit hours of the required coursework must come from the group of 6000-level lecture courses. Additionally, no credit hours of graduate research may be applied toward the plan of study. Furthermore, to align with the listed program outcomes, the curriculum is

organized into three major parts: (i) program core courses (15 credit hours), (ii) specialty elective courses (6 credit hours), and (iii) discipline-specific elective courses (9 credit hours).

Curriculum Structure and Course Requirements

Core Geospatial Engineering Courses

Take all 5 (15 credit hours).

<u>GEO ENG 5144</u>	Remote Sensing Technology	3
<u>GEO ENG 5146</u>	Applications Of Geographic Information Systems	3
<u>GEO ENG 6150</u>	Capstone Project in Geospatial Engineering	3
<u>GEOPHYS 6401</u>	Introduction to Positioning, Navigation, and Timing	3
<u>GEOPHYS 6403</u>	Course GEOPHYS 6403 Not Found	3

*Co-listed with Electrical Engineering and Aerospace Engineering

Specialty Elective Courses: In consultation with their advisor(s), students take 6 credit hours (choose two courses out of three) for their specialty area of interest.

Area of Interest: Navigation and Autonomous Systems

<u>ELEC ENG 5680</u>	Introduction to Radar Systems	3
<u>COMP ENG 5880</u>	Introduction to Robotics	3
<u>GEO ENG 6321</u>	Advanced Mapping with Drones	3

Area of Interest: Remote Sensing and Earth Observation

<u>GEO ENG 6146</u>	Advanced Remote Sensing And Image Processing	3
<u>GEOPHYS 6232</u>	Introduction to Satellite Geodesy	3
<u>GEO ENG 6321</u>	Advanced Mapping with Drones	3

Area of Interest: Geodetic Systems

<u>GEOLOGY 6211</u>	Geodynamics	3
<u>GEOPHYS 6232</u>	Introduction to Satellite Geodesy	3
<u>GEOPHYS 5432</u>	Potential Field Theory	3

Justification for
request

The proposed Master of Science (MS) degree in Geospatial Engineering is designed for students with Bachelor's degrees in various technical fields. The program aims to equip students with knowledge and skills in geospatial technology, preparing them to apply these technologies in their field of interest or work. By incorporating geospatial science into engineering and science applications, the program will open new career pathways for students. The curriculum focuses on fundamental geospatial technologies, including Positioning, Navigation, and Timing (PNT), geodesy, remote sensing, and Global Navigation Satellite Systems (GNSS), emphasizing both

foundational and applied aspects of geospatial engineering.

Attach Budget [budget.pdf](#)

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Stephen Gao (sgao) (03/21/25 9:35 am): Rollback: This program is a new one and should not be under the existing Geological Engineering Program.

Jade McCain (jm558v) (04/10/25 1:51 pm): Corrected course list formatting.

Jade McCain (jm558v) (04/10/25 4:22 pm): Corrected course number for GEO ENG 6321.

Program Change Request

New Program Proposal

Date Submitted: 03/21/25 10:21 am

Viewing: **PROPOSED : Materials Science and Engineering Minor**

Last edit: 03/26/25 3:31 pm

Changes proposed by: David Lipke (lipked)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Minor
Academic Level	Undergraduate
Program Code	PROPOSED
Department	Materials Science & Engineering
Discipline	Materials Science & Engineering
Title	

In Workflow

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

Approval Path

- 1. 03/21/25 10:51 am
Michael Moats (moatsm):
Approved for
RMATSENG Chair
- 2. 03/26/25 3:32 pm
Jade McCain (jm558v): Approved
for CCC Secretary
- 3. 04/24/25 9:12 pm
Kelly Liu (liukh):
Approved for
Engineering DSCC Chair
- 4. 04/28/25 2:24 pm
Jade McCain (jm558v): Approved
for Pending CCC
Agenda post

Materials Science and Engineering Minor

CIP Code 14.1801 - Materials Engineering.

Program Requirements and Description

Any Missouri S&T student pursuing a bachelor of science degree may receive a minor in Materials Science and Engineering by completing a minimum of 15 credit hours of approved courses as listed below. Students must satisfy the prerequisite requirements for each course. The department granting the bachelor of science degree shall determine whether or not courses taken for the minor may also be used to fulfill the requirements of the B.S. degree. At least 9 credit hours must be taken outside the student's major degree program (courses co-listed with the student's major degree program may not count toward these credit hours).¹

Required:

[MET ENG 2110](#) *Metallurgy for Engineers* **or** [CER ENG 2210](#) *Ceramics in the Modern World*

Six (6) or more credit hours at 2000-level or higher in CER ENG, MET ENG, and/or MS&E

Electives:

<u>MECH ENG 2653</u>	Introduction To Manufacturing Processes	3
or <u>MET ENG 3420</u>	Principles Of Materials Processing	
<u>CHEM 4810</u> / <u>MS&E 4810</u>	Chemistry And Inherent Properties Of Polymers	3
<u>AERO ENG 5229</u> / <u>ELEC ENG 5270</u> / <u>MECH ENG 5229</u>	Smart Materials and Sensors	3
<u>AERO ENG 5236</u> / <u>MECH ENG 5236</u>	Fracture Mechanics	3
<u>AERO ENG 5238</u> / <u>MECH ENG 5238</u>	Fatigue Analysis	3
<u>AERO ENG 5282</u> / <u>MECH ENG 5282</u>	Introduction to Composite Materials & Structures	3
<u>MET ENG 5310</u> / <u>CHEM ENG 5315</u>	Corrosion and Its Prevention	3
3000-level or higher courses in MET ENG, CER ENG, or MS&E ^{2,3}		

1

CER ENG and MET ENG majors may not count any required courses in CER ENG, MET ENG, and/or MS&E toward the minimum 9 credit hour out of program requirement for the minor.

2

The following courses may not be used for the minor: CER ENG 4096 CER ENG 4097, CER ENG 5002, CER ENG 5810, MET ENG 3002, MET ENG 4002 MET ENG 4096, MET ENG 4097,MET ENG 5810.

3

CER ENG 4099, MET ENG 4099 require prior approval from the minor program committee.

4

Students may not count both MECH ENG 2653 and MET ENG 3420 toward the minor.

Justification for
request

A Materials Minor was previously offered by the MSE department as recently as 2012, but was de-activated. The department believes that students across various disciplines may have interest in pursuing a minor in Materials Science and Engineering to complement their studies and proposes to re-activate a revised version of this minor.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Jade McCain (jm558v) (03/24/25 10:33 am): Added "Proposed" to program code, added minor to end of title for consistency, and corrected program description format.

Jade McCain (jm558v) (03/26/25 3:31 pm): Corrected footnote format.

Program Change Request

New Program Proposal

Date Submitted: 04/02/25 2:45 pm

Viewing: **PROPOSED : Semiconductor Engineering BS**

Last edit: 04/10/25 1:14 pm

Changes proposed by: David Lipke (lipked)

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
Academic Level	Undergraduate
Program Code	PROPOSED
Department	Materials Science & Engineering
Discipline	Semiconductor Engineering
Title	

In Workflow

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

Approval Path

- 1. 04/02/25 3:05 pm
Michael Moats (moatsm):
Approved for RMATSENG Chair
- 2. 04/10/25 3:39 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:13 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
- 4. 04/28/25 2:24 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Program Requirements and Description

Bachelor of Science

Semiconductor Engineering

For the Bachelor of Science degree in Semiconductor Engineering a minimum of 127 credit hours (Semiconductor Device Engineering emphasis area) or 128 credit hours (Semiconductor Process Engineering emphasis area) is required. A cumulative grade point average of at least 2.0 is required for all courses applied toward the degree, as well as for all required courses in the major field of study, defined as SEMI ENG, ELEC ENG, COMP ENG, and/or CHEM ENG.

Semiconductor Device Engineering emphasis area

First Year

First Semester	Credits	Second Semester	Credits
<u>ENGLISH 1120</u>	3	<u>MECH ENG 1720</u>	3
<u>CHEM 1310</u> ¹	4	<u>CHEM 1320</u> ¹	3
<u>CHEM 1319</u> ¹	1	<u>MATH 1215</u> or <u>1221</u> ¹	4
<u>MATH 1214</u> or <u>1211</u>	4	<u>PHYSICS 1135</u>	4
<u>FR ENG 1100</u>	1	<u>SEMI ENG 1100</u>	1
General Education Elective ²	3		
	16		15

Second Year

First Semester	Credits	Second Semester	Credits
<u>COMP SCI 1500</u> or <u>1972</u> and <u>1982</u>	3	<u>MATH 2222</u> ¹	4
<u>ELEC ENG 2100</u> ¹	3	<u>SEMI ENG 2100</u> ¹	3
<u>ELEC ENG 2101</u> ¹	1	<u>ELEC ENG 2120</u> ¹	3
<u>MATH 3304</u>	3	<u>COMP ENG 2210</u> ¹	3
<u>PHYSICS 2135</u> ¹	4	<u>COMP ENG 2211</u>	1
<u>SEMI ENG 3230</u>	3	<u>ENGLISH 1160</u> , or <u>3560</u> , or <u>SPM S 1185</u> ³	3
	17		17

Third Year

First Semester	Credits	Second Semester	Credits
<u>SEMI ENG 3019</u> ¹	1	<u>SEMI ENG 3101</u> ¹	3
<u>SEMI ENG 3100</u> ¹	3	<u>SEMI ENG 3410</u>	3
<u>ELEC ENG 3100</u>	3	<u>ELEC ENG 3250</u>	3

<u>ELEC ENG 3101</u>	1	<u>ELEC ENG 3600</u>	3
<u>STAT 3115</u> or <u>3117</u>	3	General Education Elective ²	3
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3		
General Education Elective ²	3		
	17		15
Fourth Year			
First Semester	Credits	Second Semester	Credits
<u>SEMI ENG 4096</u> ¹	3	<u>SEMI ENG 4097</u>	3
<u>SEMI ENG 4100</u>	3	<u>SEMI ENG 4200</u>	3
<u>SEMI ENG 4101</u>	3	<u>SEMI ENG 4400</u>	3
<u>SEMI ENG 4300</u>	3	General Education Elective ²	3
<u>COMP ENG 5210</u>	3	Free Elective	3
	15		15
Total Credits: 127			

1

A grade of "C" or better is required in the following courses to satisfy prerequisite requirements for subsequent coursework and to meet graduation criteria: CHEM 1310, CHEM 1319, CHEM 1320, COMP ENG 2210, ELEC ENG 2100, ELEC ENG 2101, ELEC ENG 2120, MATH 1215 or MATH 1221, MATH 2222, PHYSICS 2135, SEMI ENG 2100, SEMI ENG 3019, SEMI ENG 3100, SEMI ENG 3101, SEMI ENG 4096.

2

Gen. Ed. electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

3

Students may replace SP&M S 1185 with the ROTC sequence of MIL ARMY 4250 and MIL ARMY 4500 or MIL AIR 4110 and MIL AIR 4120.

Semiconductor Process Engineering emphasis area

First Year			
First Semester	Credits	Second Semester	Credits
<u>ENGLISH 1120</u>	3	<u>MECH ENG 1720</u>	3
<u>CHEM 1310</u> ¹	4	<u>CHEM 1320</u> ¹	3
<u>CHEM 1319</u> ¹	1	<u>MATH 1215</u> or <u>1221</u> ¹	4
<u>MATH 1214</u> or <u>1211</u>	4	<u>PHYSICS 1135</u>	4
<u>FR ENG 1100</u>	1	<u>SEMI ENG 1100</u>	1
General Education Elective ²	3		
	16		15
Second Year			
First Semester	Credits	Second Semester	Credits
<u>COMP SCI 1500</u> or <u>1972</u> and <u>1982</u>	3	<u>CHEM ENG 2110</u> ¹	3
<u>PHYSICS 2135</u> ¹	4	<u>SEMI ENG 2100</u> ¹	3

<u>MATH 2222</u> ¹	4	<u>MATH 3304</u> ¹	3
<u>CHEM ENG 2100</u> ¹	4	<u>ELEC ENG 2100</u>	3
General Education Elective ²	3	<u>ELEC ENG 2101</u> ¹	1
		<u>ENGLISH 1160</u> , or <u>3560</u> , or <u>SPM S 1185</u> ³	3
	18		16
Third Year			
First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 3111</u>	3	<u>CHEM ENG 3150</u>	3
<u>CHEM ENG 3101</u>	4	<u>ELEC ENG 2200</u>	3
<u>CHEM ENG 3120</u>	3	<u>ELEC ENG 2201</u>	1
<u>SEMI ENG 3019</u> ¹	1	<u>SEMI ENG 3101</u> ¹	3
<u>SEMI ENG 3100</u> ¹	3	<u>SEMI ENG 3410</u>	3
<u>HISTORY 1200</u> , or <u>1300</u> , or <u>1310</u> , or <u>POL SCI 1200</u>	3	<u>STAT 3113</u> or <u>3115</u>	3
	17		16
Fourth Year			
First Semester	Credits	Second Semester	Credits
<u>CHEM ENG 4110</u>	3	<u>SEMI ENG 4097</u>	3
<u>CHEM ENG 4101</u>	3	<u>SEMI ENG 4200</u>	3
<u>SEMI ENG 4096</u> ¹	3	General Education Elective ²	3
<u>SEMI ENG 4101</u>	3	General Education Elective ²	3
<u>SEMI ENG 4300</u>	3	Free Elective	3
	15		15

Total Credits: 128

1

A grade of "C" or better is required in the following courses to satisfy prerequisite requirements for subsequent coursework and to meet graduation criteria: CHEM 1310, CHEM 1319, CHEM 1320 CHEM ENG 2100, CHEM ENG 2110, ELEC ENG 2101, MATH 1215 or MATH 1221, MATH 2222, MATH 3304, PHYSICS 2135, SEMI ENG 2100, SEMI ENG 3019, SEMI ENG 3100, SEMI ENG 3101, SEMI ENG 4096.

2

Gen. Ed. electives must fulfill the Missouri S&T general education requirements applicable to the student's catalog year.

3

Students may replace SP&M S 1185 with the ROTC sequence of MIL ARMY 4250 and MIL ARMY 4500 or MIL AIR 4110 and MIL AIR 4120.

Justification for
request

Semi Eng BS program approved by UM System BOC (2/6/2025). Awaiting MDHE approval (April 2025).

Attach Budget	<u>Semiconductor Engineering Pro Forma.pdf</u>
System Approval Letter	<u>0 - Board Approval BS Semiconductor Engineering – S&T.pdf</u>
MDHE Approval	<u>MDHE Approval Letter ST MAR 2025.pdf</u>
Supporting Documents	<u>ST BS Semiconductor Engineering Proposal Final.pdf</u>

Reviewer

Comments

Jade McCain (jm558v) (04/07/25 1:37 pm): Corrected plan of study grid and hyperlinked courses in the footnotes.

Jade McCain (jm558v) (04/08/25 11:19 am): Added BS to the end of the title and attached the full proposal.

Crystal Wilson (wilsoncry) (04/10/25 12:10 pm): Changed SEMI ENG 3001 to SEMI ENG 3019 in plan of study grid and footnote 1 per department renumbering this on their CC form.

Crystal Wilson (wilsoncry) (04/10/25 1:14 pm): Added MATH 1221 to footnote 1 as it's listed on the plan of study grid.

Program Change Request

Date Submitted: 03/21/25 4:03 pm

Viewing: **PSYCH-BA : Psychological Science BA**

Last approved: 10/25/24 3:24 pm

Last edit: 04/28/25 10:01 am

Changes proposed by: Crystal Wilson (wilsoncry)

Catalog Pages Using

this Program

[Psychological Science](#)

In Workflow

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

Approval Path

1. 03/31/25 4:47 pm
Clair Kueny
(reynoldscla):
Approved for
RPSYCHOL Chair
2. 04/02/25 1:34 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/02/25 3:15 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
4. 04/04/25 3:42 pm
Jade McCain
(jm558v): Rollback
to RPSYCHOL Chair
for Pending CCC
Agenda post
5. 04/07/25 11:19 am
Clair Kueny
(reynoldscla):

Approved for
RPSYCHOL Chair

6. 04/10/25 3:39 pm
Jade McCain
(jm558v): Approved
for CCC Secretary

7. 04/10/25 3:56 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair

8. 04/28/25 2:24 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Aug 4, 2014 by
Nancy Stone
(nstone)
2. Mar 20, 2015 by
Nancy Stone
(nstone)
3. Jun 19, 2015 by
Nancy Stone
(nstone)
4. Jul 21, 2015 by
pantaleoa
5. Jun 28, 2017 by
Nathan Weidner
(weidnern)
6. Jun 14, 2019 by
Susan Murray
(murray)
7. Jul 1, 2020 by Devin
Burns (burnsde)
8. Mar 4, 2021 by
Devin Burns
(burnsde)
9. May 5, 2021 by
Devin Burns
(burnsde)

Rationale for
Inactivation

10. Feb 25, 2022 by
Devin Burns
(burnsde)
11. Apr 14, 2023 by
Devin Burns
(burnsde)
12. Oct 17, 2023 by
Devin Burns
(burnsde)
13. Jul 5, 2024 by
Crystal Wilson
(wilsoncry)
14. Oct 25, 2024 by
Devin Burns
(burnsde)

Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Arts
CIM Prospectus	
Academic Level	Undergraduate
Program Code	PSYCH-BA
Department	Psychological Science
Discipline	Psychology
Offered by	
Title	Psychological Science BA
CIP Code	42.0101 - Psychology, General.

Purpose

Intended Audience

Program-Specific Admission

Program Requirements and Description

Bachelor of Arts

Psychological Science

A minimum of 120 credit hours is required for a bachelor of arts degree in psychological science and an average of at least two grade points per credit hour must be obtained. The psychological science B.A. curriculum requires 6 hours of English Composition, 14 hours of math and science, 12 semester hours in humanities, 12 semester hours is required in social sciences, 11-16 hours of foreign language and a minimum of 35 hours are required in psychology. Up to 12 credit hours of advanced ROTC may be credited toward the degree. Specific requirements for the bachelor of arts degree are outlined in the sample program listed below. Additionally, students must complete all general education requirements as stated in the catalog, and as applicable to the student's catalog year. These requirements are built into the degree program.

ENGLISH 1120 and one additional three hour composition course (6 hours).

Western civilization (HISTORY 1100 and HISTORY 1200) (6 hours).

Foreign languages for at least 3 semesters of basic study in French, German, Russian, Spanish or an approved substitute; or one year of basic study in a foreign language in either French, German, Russian, Spanish, or an approved substitute, and a humanities or social sciences course taught in a foreign country and employing the language of that country; or one year of basic study in each of two of the foreign languages of French, German, Russian or Spanish or an approved substitute (11-16 hours).

Sciences. At least one course taken in biological (biological sciences) and physical (chemistry, geology and geophysics, physics) sciences. A laboratory course is required (and a lab offered in engineering also may count at the discretion of the student's major advisor) toward the total requirement. STAT 1115 ~~Stat 1115~~ is required, and an additional elective in Science or Math (14 hours).

Humanities and fine arts. Courses used to satisfy this requirement must include one course in each of the three areas of literature (English or American), philosophy, and fine arts (art, music or theater), but not to include studio and performance offerings (12 hours).

Social Sciences. At least two of the following social science areas are to be included: economics, political science, or history (6 hours).

Psychology Courses (35 hours)

Required:*

General Skills Courses:

<u>PSYCH 1100</u>	Introduction to Psychology	1
<u>PSYCH 1101</u>	General Psychology	3
<u>PSYCH 2200</u>	Research Methods & Statistics 1	4
Content Courses:		
<u>PSYCH 3310</u>	Developmental Psychology	3
<u>PSYCH 4400</u>	Cognitive Psychology	3
<u>PSYCH 4501</u>	Abnormal Psychology	3
<u>PSYCH 4600</u>	Social Psychology	3
And one of the following 2 courses:		
<u>PSYCH 4410</u>	Neuroscience	3
<u>PSYCH 4411</u>	Sensation and Perception	3
Capstone Course:		
Select three credit hours from the Capstone courses:		
<u>PSYCH 4995</u>	Rationality	3
<u>PSYCH 4720</u>	Psychology of Social Technology	3
<u>PSYCH 4590</u>	Health Psychology	3
<u>PSYCH 4992</u>	Cross-Cultural Psychology	3
<u>PSYCH 4993</u>	Psychology of Gender	3
<u>PSYCH 4990</u>	Internship	0-6
<u>PSYCH 4099</u>	Undergraduate Research	0-6
*These required courses total 26 hours.		
Elective Courses:		
Select an additional 9 hours of psychology electives to complete the 35 hour degree requirement.		
Major-field requirements: A cumulative grade point average of 2.0 must be earned in all course work taken in the major field. Upper-class (3000-4000-level) courses completed with grades of "D" may not be included in the course work for the major field without the approval of the chair of the department. At least nine hours of upper-class work in the major field must be completed in residence at Missouri S&T.		
Minor: A minor will be selected from any discipline other than the major with the approval of the student's advisor. A total of at least 15 hours is required for the minor, but may include courses which also satisfy other requirements. At least nine hours must be beyond the introductory level. A cumulative grade point average of 2.0 must be earned in all course work required in the minor field. At least six hours of work in the minor field must be completed in residence at Missouri S&T.		
Basic ROTC may be elected in the freshman and sophomore years, but is not creditable toward a degree. Up to 12 credit hours of advanced ROTC may be credited toward a degree.		
Elective Credits: In consultation with his/her advisor, each student will elect sufficient additional courses to complete a		

minimum of 120 credit hours.

Emphasis Areas

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

Industrial/Organizational Psychology

PSYCH 4700	Industrial Psychology	3
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PSYCH 4602	Organizational Psychology	3
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And 2 of the following 4:

PSYCH 4500	Personality Theory	3
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PSYCH 4600	Social Psychology	3
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PSYCH 4601	Group Dynamics	3
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PSYCH 4610	Psychology of Leadership in Organizations	3
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Health Psychology

PSYCH 4590	Health Psychology	3
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And 3 of the following 4:

PSYCH 4501	Abnormal Psychology	3
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PSYCH 3501	Drugs and Behavior	3
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PSYCH 4510	Clinical Psychology	3
----------------------------	---------------------	---

PSYCH 4990	Internship	0-6
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Cognition and Neuroscience

PSYCH 4400	Cognitive Psychology	3
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PSYCH 4410	Neuroscience	3
----------------------------	--------------	---

And 2 of the following 3:

PSYCH 4411	Sensation and Perception	3
----------------------------	--------------------------	---

PSYCH 3501	Drugs and Behavior	3
----------------------------	--------------------	---

PSYCH 4501	Abnormal Psychology	3
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Human Factors

PSYCH 4400	Cognitive Psychology	3
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PSYCH 4710	Human Factors	3
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And 2 of the following 3:		
<u>PSYCH 4720</u>	Psychology of Social Technology	3
<u>PSYCH 4411</u>	Sensation and Perception	3
<u>PSYCH 4700</u>	Industrial Psychology	3
Diversity and Inclusion		
<u>PSYCH 4600</u>	Social Psychology	3
And 3 of the following 4:		
<u>PSYCH 4993</u>	Psychology of Gender	3
<u>PSYCH 4500</u>	Personality Theory	3
<u>PSYCH 4992</u>	Cross-Cultural Psychology	3
<u>PSYCH 4310</u>	Psychology Of The Exceptional Child	3
<h2>Bachelor of Arts Psychological Science (Secondary Education Emphasis Area)</h2>		
<p>You may earn a B.A. degree in psychological science from Missouri S&T and certification to teach at the secondary level in the schools of Missouri with the secondary education emphasis area program.</p> <p><u>To be eligible for student teaching and certification, students must have a 2.5 content GPA and a 3.0 education GPA. Students must also pass the appropriate content assessment.</u> 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. License reciprocity determinations outside of Missouri can be found at https://teaching.missouri.edu/student/state-authorization/mst/licensure.</p> <p>A degree with this emphasis area requires 121 credit hours. The required courses are provided below.</p>		
Communications Skills: 6 semester hours		
<u>ENGLISH 1120</u>	Exposition And Argumentation	3
<u>ENGLISH 1160</u>	Writing And Research	3
Humanities: 9 semester hours		
Art, Music, or Theatre course		3
<u>ART 1180</u>	<u>Art Appreciation</u>	<u>3</u>
<u>or MUSIC 1150</u>	<u>Music Appreciation: Music of Latin America</u>	
<u>or THEATRE 1150</u>	<u>Theatre for Social Change</u>	
Philosophy course		3
Literature course		3

One additional humanities from the above course groups, Foreign Language, or Etymology		3
<u>ENGLISH 1211</u>	<u>British Literature I: The Beginnings To 1800</u>	<u>3</u>
or <u>ENGLISH 1212</u>	<u>British Literature II 1800 To Present</u>	
or <u>ENGLISH 1221</u>	<u>American Literature: 1600 To 1865</u>	
or <u>ENGLISH 1222</u>	<u>American Literature: 1865 To Present</u>	
or <u>ENGLISH 1231</u>	<u>World Literature I: From The Beginnings To The Renaissance</u>	
Social Sciences: 21 semester hours		
<u>HISTORY 1300</u>	American History To 1877	3
<u>HISTORY 1310</u>	American History Since 1877	3
<u>POL SCI 1200</u>	American Government	3
<u>POL SCI 3211</u>	American Political Parties	3
or <u>POL SCI 3300</u>	Principles Of Public Policy	
or <u>POL SCI 3760</u>	The American Presidency	
or <u>POL SCI 3763</u>	Contemporary Political Thought	
<u>PSYCH 1101</u>	General Psychology	3
<u>ECON 1100</u>	Principles Of Microeconomics	3
or <u>ECON 1200</u>	Principles Of Macroeconomics	
Geography		3
Natural Science/Mathematics: 12 semester hours		
One course in Physics, Chemistry or Geology		3
Mathematics 1120, 1103, 1140+		3
<u>STAT 1115</u>	Statistics For The Social Sciences I	3
<u>BIO SCI 1113</u>	General Biology	3
Professional Requirements: 25 semester hours		
EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
<u>EDUC 1074</u>	<u>Foundations of Education in a Diverse Society</u>	<u>3</u>
<u>EDUC 2251</u>	Historical Foundation Of American Education	3
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3216</u>	Instructional Literacy in the Content Area	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3

<u>EDUC 4298</u>	Student Teaching Seminar	1
<u>PSYCH 2300</u>	Educational Psychology	3
<u>PSYCH 3311</u>	Psychological & Educational Development Of The Adolescent	3
<u>PSYCH 4310</u>	Psychology Of The Exceptional Child	3
Clinical Experience: 16 semester hours		
<u>EDUC 1104</u>	Teacher Field Experience I	1
<u>EDUC 1164</u>	Teacher Field Experience II	2
<u>EDUC 3298</u>	<u>Teacher Field Experience III</u>	<u>1</u>
<u>EDUC 4299</u>	Student Teaching	12
Psychology Degree Requirements: 17 semester hours		
<u>PSYCH 1100</u>	Introduction to Psychology	1
<u>PSYCH 2200</u>	Research Methods & Statistics 1	4
<u>PSYCH 3310</u>	Developmental Psychology	3
<u>PSYCH 4400</u>	Cognitive Psychology	3
<u>PSYCH 4501</u>	Abnormal Psychology	3
<u>PSYCH 4600</u>	Social Psychology	3
Certification: 15 semester hours		
6 hours of American History from the following:		
<u>HISTORY 3320</u>	Colonial America	
<u>HISTORY 3325</u>	Revolutionary America, 1754-1789	
<u>HISTORY 3340</u>	Age Of Jefferson And Jackson	
<u>HISTORY 3345</u>	Civil War And Reconstruction	
<u>HISTORY 3360</u>	Recent United States History	
<u>HISTORY 3425</u>	History Of The Old South	
<u>HISTORY 3426</u>	History Of The Modern South	
<u>HISTORY 3480</u>	History Of Baseball	
<u>HISTORY 3440</u>	Grunts: 20th Century Americans In Combat	
<u>HISTORY 3442</u>	The United States in Vietnam	
<u>HISTORY 3761</u>	U.S. Diplomatic History to World War II	
<u>HISTORY 4435</u>	History of the American West	
9 hours of World History from the following:		

<u>HISTORY 1100</u>	Early Western Civilization
<u>HISTORY 1200</u>	Modern Western Civilization
<u>HISTORY 2220</u>	Making Of Modern Britain
<u>HISTORY 2222</u>	The Making Of Modern France
<u>HISTORY 2224</u>	Making Of Modern Russia
<u>HISTORY 3130</u>	Medieval History I
<u>HISTORY 3135</u>	Medieval History II
<u>HISTORY 3140</u>	History Of Renaissance Thought
<u>HISTORY 3230</u>	Europe In The Age Of The French Revolution And Napoleon
<u>HISTORY 3235</u>	Foundations Of Contemporary Europe 1815-1914
<u>HISTORY 3240</u>	Contemporary Europe
<u>HISTORY 3660</u>	Modern East Asia

Justification for request Updated Education course requirements to match previous CCC changes.
Updated to also reflect recent changes to Gen Edu requirements approved by Faculty Senate on March 20, 2025

Attach Budget

System Approval Letter

MDHE Approval

Supporting Documents [Psych-Title Change-Psychogocial Sciences.pdf](#)
[MS&T PC April 2023 _Approval Degree Change Name.pdf](#)
[Email thread confirming change to Psych Science.pdf](#)

Reviewer Comments **Jade McCain (jm558v) (04/04/25 3:42 pm):** Rollback: Rollback per department request.
Jade McCain (jm558v) (04/09/25 11:51 am): Updated content GPA to 2.5 per State Board legislature and department request via email on 4/9.
Jade McCain (jm558v) (04/10/25 12:28 pm): Adjusted content GPA wording per department request via email on 4/10.
Jade McCain (jm558v) (04/24/25 9:32 am): Hyperlinked courses in the description.

Program Change Request

Date Submitted: 03/31/25 3:26 pm

Viewing: **PSYCH-BS : Psychological Science BS**

Last approved: 10/25/24 3:24 pm

Last edit: 04/28/25 10:09 am

Changes proposed by: Crystal Wilson (wilsoncry)

Catalog Pages Using

this Program

[Psychological Science](#)

In Workflow

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

Approval Path

1. 03/31/25 4:41 pm
Clair Kueny
(reynoldscla):
Approved for
RPSYCHOL Chair
2. 04/02/25 1:46 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/02/25 3:15 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
4. 04/04/25 3:42 pm
Jade McCain
(jm558v): Rollback
to RPSYCHOL Chair
for Pending CCC
Agenda post
5. 04/07/25 11:19 am

Clair Kueny

(reynoldscla):

Approved for

RPSYCHOL Chair

6. 04/10/25 3:39 pm

Jade McCain

(jm558v): Approved

for CCC Secretary

7. 04/10/25 3:56 pm

Cecil Eng Huang

Chua (cchua):

Approved for Social

Sciences DSCC Chair

8. 04/28/25 2:24 pm

Jade McCain

(jm558v): Approved

for Pending CCC

Agenda post

History

1. May 6, 2014 by

Nancy Stone

(nstone)

2. Jul 8, 2014 by

pantaleoa

3. Jul 8, 2014 by

pantaleoa

4. Mar 20, 2015 by

Nancy Stone

(nstone)

5. Jun 19, 2015 by

Nancy Stone

(nstone)

6. Jul 21, 2015 by

pantaleoa

7. Jun 28, 2017 by

Nathan Weidner

(weidnern)

8. Jun 14, 2019 by

Susan Murray

(murray)

Rationale for
Inactivation

- 9. Jul 1, 2020 by Devin Burns (burnsde)
- 10. Mar 4, 2021 by Devin Burns (burnsde)
- 11. May 5, 2021 by Devin Burns (burnsde)
- 12. Feb 25, 2022 by Devin Burns (burnsde)
- 13. Apr 14, 2023 by Devin Burns (burnsde)
- 14. Oct 17, 2023 by Devin Burns (burnsde)
- 15. Jul 5, 2024 by Crystal Wilson (wilsoncry)
- 16. Oct 25, 2024 by Devin Burns (burnsde)

Supporting
Documents

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	Bachelor of Science
CIM Prospectus	
Academic Level	Undergraduate
Program Code	PSYCH-BS
Department	Psychological Science
Discipline	Psychology
Offered by	
Title	Psychological Science BS

Purpose

Intended Audience

Program-Specific

Admission

Program Requirements and Description

Bachelor of Science Psychological Science

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

The psychological science bachelor of science curriculum requires six hours of English composition; twenty hours of math, science and computer science; twelve semester hours in the humanities; and twelve semester hours in the social sciences. Specific requirements for the bachelor degree are outlined in the sample program listed below. Additionally, students must complete all general education requirements as stated in the catalog, and as applicable to the student's catalog year. ~~below.~~ These requirements are built into the degree program.

ENGLISH 1120 and ENGLISH 1160 (entering students will normally take ENGLISH 1120 either semester of the first year.) (6 hours)

A total of 20 hours in biological, physical, (chemistry, geology and geophysics, and physics), and mathematical (mathematics/statistics and computer science or information science & technology) sciences, to include at least one course taken in the biological and one in the physical sciences. Of the biological and physical science offerings, at least one must be a laboratory course. STAT 1115 ~~Stat 1115~~ is required. Engineering courses may, at the discretion of the student's major advisor, also count toward this total requirement. (20 hours)

12 hours in humanities and fine arts (literature, philosophy, art, music, or theater). Foreign language courses may

count toward fulfilling this requirement. Courses used to satisfy this requirement must be taken in at least two humanities areas. (12 hours)

12 hours in at least two social sciences fields outside the major area (economics or history or political science). A course in Modern Western Civilization ([HISTORY 1200](#)), American History To 1877 ([HISTORY 1300](#)) or American History Since 1877 ([HISTORY 1310](#)), or American Government ([POL SCI 1200](#)) must be taken to satisfy the requirement of the state of Missouri (the “Williams Law”), and this course may count toward fulfilling the social sciences requirement. (12 hours)

Minor: A minor will be selected from any discipline other than the major with the approval of the student’s advisor. A total of at least 15 hours is required for the minor, but may include courses which also satisfy other requirements. At least nine hours must be beyond the introductory level.

Basic ROTC may be elected in the freshman and sophomore years, but is not creditable toward a degree. Six credit hours of advanced ROTC may be credited toward a degree.

Elective Credits: In consultation with his/her advisor, each student will elect sufficient additional courses to complete a minimum of 120 credit hours which may include [MATH 1160](#) and one of [MATH 1120](#) or [MATH 1140](#) .

Psychology Courses (35 hours)			
Required:*			
General Skills Courses:			
PSYCH 1100	Introduction to Psychology	1	
PSYCH 1101	General Psychology	3	
PSYCH 2200	Research Methods & Statistics 1	4	
Content Courses:			
PSYCH 3310	Developmental Psychology	3	
PSYCH 4400	Cognitive Psychology	3	
PSYCH 4501	Abnormal Psychology	3	
PSYCH 4600	Social Psychology	3	
And one of the following 2 courses:			
PSYCH 4410	Neuroscience	3	
PSYCH 4411	Sensation and Perception	3	
Capstone Course:			
Select three credit hours from the following Capstone courses:			
PSYCH 4995	Rationality	3	
PSYCH 4720	Psychology of Social Technology	3	
PSYCH 4590	Health Psychology	3	
PSYCH 4992	Cross-Cultural Psychology	3	

PSYCH 4993	Psychology of Gender	3
PSYCH 4990	Internship	0-6
PSYCH 4099	Undergraduate Research	0-6
*These required courses total 26 hours.		
Elective Courses:		
Select an additional 9 hours of psychology electives to complete the 35 hour degree requirement.		
A cumulative grade point average of 2.0 must be earned in all course work taken in the major field. Upper class (3000-level and above) courses completed with grades of "D" may not be included in the course work for the major field without the approval of the advisor and the chair of the department concerned.		
<h2>Emphasis Areas</h2>		
Note: The following areas identify courses from which a student may opt to develop an emphasis area. It is not required that students obtain an emphasis specialty within psychological science. <u>At least one class for each emphasis area is already required for all majors, so the remaining three may be taken as the additional 9 hours of required psychology electives. In this way, getting an emphasis requires no additional courses, just less flexibility in which courses you take.</u>		
Industrial/Organizational Psychology		
PSYCH 4700	Industrial Psychology	3
PSYCH 4602	Organizational Psychology	3
And 2 of the following 4:		
PSYCH 4600	Social Psychology	3
PSYCH 4601	Group Dynamics	3
PSYCH 4500	Personality Theory	3
PSYCH 4610	Psychology of Leadership in Organizations	3
Health Psychology		
PSYCH 4590	Health Psychology	3
And 3 of the following 4:		
PSYCH 4501	Abnormal Psychology	3
PSYCH 4510	Clinical Psychology	3
PSYCH 3501	Drugs and Behavior	3
PSYCH 4990	Internship	0-6
Cognition and Neuroscience		

<u>PSYCH 4400</u>	Cognitive Psychology	3
<u>PSYCH 4410</u>	Neuroscience	3
And 2 of the following 3:		
<u>PSYCH 4411</u>	Sensation and Perception	3
<u>PSYCH 3501</u>	Drugs and Behavior	3
<u>PSYCH 4501</u>	Abnormal Psychology	3
Human Factors		
<u>PSYCH 4400</u>	Cognitive Psychology	3
<u>PSYCH 4710</u>	Human Factors	3
And 2 of the following 3:		
<u>PSYCH 4720</u>	Psychology of Social Technology	3
<u>PSYCH 4700</u>	Industrial Psychology	3
<u>PSYCH 4411</u>	Sensation and Perception	3
Diversity and Inclusion		
<u>PSYCH 4600</u>	Social Psychology	3
And 3 of the following 4:		
<u>PSYCH 4993</u>	Psychology of Gender	3
<u>PSYCH 4992</u>	Cross-Cultural Psychology	3
<u>PSYCH 4310</u>	Psychology Of The Exceptional Child	3
<u>PSYCH 4500</u>	Personality Theory	3

Bachelor of Science Psychological Science (Secondary Education Emphasis Area)

You may earn a B.S. degree in psychological science from Missouri S&T and certification to teach at the secondary level in the schools of Missouri with the secondary education emphasis area program.

To be eligible for student teaching and certification, students must have a 2.5 content GPA and a 3.0 education GPA.

Students must also pass the appropriate content assessment. ~~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. ~~available. This program is approved by the Missouri Department of~~

~~Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at [https://](https://teaching.missouri.edu/student/state-authorization/mst/licensure)~~

~~teaching.missouri.edu/student/state-authorization/mst/licensure.~~ This program is approved by the Missouri

Department of Elementary and Secondary Education. License reciprocity determinations outside of Missouri can be found at <https://teaching.missouri.edu/student/state-authorization/mst/licensure>.

A degree with this emphasis area requires 121 credit hours. The required courses are provided below.

Communications Skills: 6 semester hours

<u>ENGLISH 1120</u>	Exposition And Argumentation	3
<u>ENGLISH 1160</u>	<u>Writing And Research</u>	<u>3</u>

Humanities: 6 semester hours

Art, Music, or Theatre course		3
Philosophy course		3
Literature course		3
One additional humanities from the above course groups, Foreign Language, or Etymology		3-4

6 Credits in Humanities & Fine Arts, selected from two disciplines across

<u>ART 1180</u>	<u>Art Appreciation</u>	<u>3</u>
<u>or MUSIC 1150</u>	<u>Music Appreciation: Music of Latin America</u>	
<u>or THEATRE 1150</u>	<u>Theatre for Social Change</u>	
<u>or ENGLISH 1211</u>	<u>British Literature I: The Beginnings To 1800</u>	
<u>or ENGLISH 1212</u>	<u>British Literature II 1800 To Present</u>	
<u>or ENGLISH 1221</u>	<u>American Literature: 1600 To 1865</u>	
<u>or ENGLISH 1222</u>	<u>American Literature: 1865 To Present</u>	
<u>or ENGLISH 1231</u>	<u>World Literature I: From The Beginnings To The Renaissance</u>	

Social Sciences: 21 semester hours

<u>HISTORY 1300</u>	American History To 1877	3
<u>HISTORY 1310</u>	American History Since 1877	3
<u>POL SCI 1200</u>	American Government	3
<u>POL SCI 3211</u>	American Political Parties	3
<u>or POL SCI 3300</u>	Principles Of Public Policy	
<u>or POL SCI 3760</u>	The American Presidency	
<u>or POL SCI 3763</u>	Contemporary Political Thought	
<u>PSYCH 1101</u>	General Psychology	3
<u>ECON 1100</u>	Principles Of Microeconomics	3

or <u>ECON 1200</u>	Principles Of Macroeconomics	
<u>HISTORY 2110</u>	World Regional Geography	3
Natural Sciences/Mathematics: 15 semester hours		
One course in Physics, Chemistry or Geology		3
Mathematics 1120, 1130, 1140+		3
<u>BIO SCI 1113</u>	General Biology	3
<u>STAT 1115</u>	Statistics For The Social Sciences I	3
3 additional hours of Math &/or Science courses		3
Professional Requirements: 25 semester hours		
EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
<u>EDUC 1074</u>	<u>Foundations of Education in a Diverse Society</u>	<u>3</u>
<u>EDUC 2251</u>	Historical Foundation Of American Education	3
<u>EDUC 3170</u>	<u>Teaching Reading and Writing in Middle/High School</u>	<u>3</u>
<u>EDUC 3216</u>	Instructional Literacy in the Content Area	3
<u>EDUC 3280</u>	Instructional Strategies in the Content Area	3
<u>EDUC 4298</u>	Student Teaching Seminar	1
<u>PSYCH 2300</u>	Educational Psychology	3
<u>PSYCH 3311</u>	Psychological & Educational Development Of The Adolescent	3
<u>PSYCH 4310</u>	Psychology Of The Exceptional Child	3
Clinical Experience: 16 semester hours		
<u>EDUC 1104</u>	Teacher Field Experience I	1
<u>EDUC 1164</u>	Teacher Field Experience II	2
<u>EDUC 3298</u>	<u>Teacher Field Experience III</u>	<u>1</u>
<u>EDUC 4299</u>	Student Teaching	12
Psychology Degree Requirements: 17 semester hours		
<u>PSYCH 1100</u>	Introduction to Psychology	1
<u>PSYCH 2200</u>	Research Methods & Statistics 1	4
<u>PSYCH 3310</u>	Developmental Psychology	3

<u>PSYCH 4400</u>	Cognitive Psychology	3
<u>PSYCH 4501</u>	Abnormal Psychology	3
<u>PSYCH 4600</u>	Social Psychology	3
Certification: 15 semester hours		
6 hours of American History from the following:		
<u>HISTORY 3320</u>	Colonial America	
<u>HISTORY 3325</u>	Revolutionary America, 1754-1789	
<u>HISTORY 3340</u>	Age Of Jefferson And Jackson	
<u>HISTORY 3345</u>	Civil War And Reconstruction	
<u>HISTORY 3360</u>	Recent United States History	
<u>HISTORY 3425</u>	History Of The Old South	
<u>HISTORY 3426</u>	History Of The Modern South	
<u>HISTORY 3480</u>	History Of Baseball	
<u>HISTORY 3440</u>	Grunts: 20th Century Americans In Combat	
<u>HISTORY 3442</u>	The United States in Vietnam	
<u>HISTORY 3761</u>	U.S. Diplomatic History to World War II	
<u>HISTORY 4435</u>	History of the American West	
9 hours of World History from the following:		
<u>HISTORY 1100</u>	Early Western Civilization	
<u>HISTORY 1200</u>	Modern Western Civilization	
<u>HISTORY 2220</u>	Making Of Modern Britain	
<u>HISTORY 2222</u>	The Making Of Modern France	
<u>HISTORY 2224</u>	Making Of Modern Russia	
<u>HISTORY 3130</u>	Medieval History I	
<u>HISTORY 3135</u>	Medieval History II	
<u>HISTORY 3140</u>	History Of Renaissance Thought	
<u>HISTORY 3230</u>	Europe In The Age Of The French Revolution And Napoleon	
<u>HISTORY 3235</u>	Foundations Of Contemporary Europe 1815-1914	
<u>HISTORY 3240</u>	Contemporary Europe	

Justification for
request

Updated Education course requirements to match previous CCC changes.

Updated to also reflect recent changes to Gen Edu requirements approved in Faculty Senate on
March 20, 2024

Attach Budget

System Approval
Letter

MDHE Approval

Supporting Documents [Psych-Title Change-Psychogocial Sciences.pdf](#)
[MS&T PC April 2023 Approval Degree Change Name.pdf](#)
[Email thread confirming change to Psych Science.pdf](#)

Reviewer

Comments

Jade McCain (jm558v) (04/04/25 3:42 pm): Rollback: Rollback per department request.

Jade McCain (jm558v) (04/09/25 11:53 am): Updated content GPA to 2.5 per State Board
legislature and department request via email on 4/9.

Jade McCain (jm558v) (04/10/25 1:06 pm): Adjusted content GPA wording per department
request via email on 4/10.

Jade McCain (jm558v) (04/24/25 10:41 am): Hyperlinked courses in the description.

Program Change Request

Date Submitted: 04/01/25 2:37 pm

Viewing: **Q ECON-MI : Quantitative Economics**
Minor

Last approved: 12/20/24 3:13 pm

Last edit: 04/07/25 8:17 am

Changes proposed by: Melody Lo (mlc2d)

Catalog Pages Using
this Program
Economics

Rationale for
Supporting

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Minor</u>
Academic Level	<u>Undergraduate</u>
Program Code	Q ECON-MI
Department	Economics
Discipline	Economics
Title	

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

Approval Path

1. 04/01/25 2:38 pm
Melody Lo (mlc2d):
Approved for
RECONOMI Chair
2. 04/02/25 11:11 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/07/25 8:08 am
Cecil Eng Huang
Chua (cchua):
Rollback to CCC
Secretary for Social
Sciences DSCC Chair
4. 04/07/25 8:10 am
Jade McCain
(jm558v): Rollback
to RECONOMI Chair
for CCC Secretary
5. 04/07/25 8:18 am

Melody Lo (mlc2d):
Approved for
RECONOMI Chair

6. 04/07/25 9:12 am

Jade McCain
(jm558v): Approved
for CCC Secretary

7. 04/07/25 7:43 pm

Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair

8. 04/28/25 2:24 pm

Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. Jun 7, 2023 by
Melody Lo (mlc2d)
2. Jun 8, 2023 by
Jennifer Pohlsander
(jpnfd)
3. Jun 14, 2024 by
Michael Davis
(davismc)
4. Dec 20, 2024 by
Jade McCain
(jm558v)

Quantitative Economics Minor

CIP Code

Intended Audience

Program-Specific
Admission

Program Requirements and Description

Quantitative Economics Minor

The Quantitative Economics minor aims to increase job prospects for students across the campus. This minor is designed to prepare business, engineering, or science students to become future business and industry professionals who can apply the core economics principles and quantitative methods to articulate and make policy recommendations aligned with the current and projected economic environment. The minor provides foundational knowledge of market structure, the global business environment, data analytics, and public policies necessary for strategic corporate and government decision-making.

The Quantitative Economics minor requires completing of a minimum of 17 to 18 hours of coursework with a grade of “C” or better. Required courses in the minor program include both Principles of Microeconomics ([ECON 1100](#)) and Macroeconomics ([ECON 1200](#)), Introduction to Econometrics ([ECON 3300](#)), one course between Data Intelligence using Case Studies ([ECON 5380](#)) ([ECON 5350](#)) and Data-Driven Strategic Insights ([ECON 5360](#)), and two courses among Economic Analysis of Engineering Projects ([ENG MGT 1210](#)), [ECON 2100](#), [ECON 2200](#), or any 3000 and above economic electives of the student’s choices in consultation with the department’s minor advisor.

ECON 1100	Principles Of Microeconomics	3
ECON 1200	Principles Of Macroeconomics	3
ECON 3300	Introduction to Econometrics	3
Choose One or Both: ¹		
ECON 5360	Data Driven Strategic Insights	3
ECON 5380	Data Intelligence using Case Studies	3
Choose One or Two Courses to Make a Total of 17-18 Credits:		
ENG MGT 1210	Economic Analysis of Engineering Projects	2
ECON 2100	Intermediate Microeconomic Theory	3
ECON 2200	Intermediate Macroeconomic Theory	3
ECON 3333	Computational Economics	3
ECON 3512	Mining Industry Economics	3
ECON 3880	Introduction to Sports Economics	3
ECON 4383	Financial Economics	3

<u>ECON 4430</u>	Cost-Benefit Analysis	3
<u>ECON 4440</u>	Environmental And Natural Resource Economics	3
<u>ECON 4538</u>	Advanced Econometrics	3
<u>ECON 4540</u>	Energy Economics	3
<u>ECON 4720</u>	International Finance	3
<u>ECON 5532</u>	Advanced Mining Economics	3
<u>ECON 5337</u>	Financial Mathematics	3

Total Credits: 17 - 18

1

Both data analytics courses can be counted as a total of six credit hours for this minor. When students choose to take both [ECON 5360](#) and [ECON 5380](#), they must only choose one course from [ENG MGT 1210](#), [ECON 2100](#), [ECON 2200](#), or any other 3000-level and above economic electives to complete the minor.

Justification for
request

ECON 5350 has been replaced by ECON 5380. As a result, we need to remove ECON 5350 from this minor and replace it with ECON 5380.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer

Comments

Jade McCain (jm558v) (04/02/25 11:10 am): Changed program type back to minor.

Cecil Eng Huang Chua (cchua) (04/07/25 8:08 am): Rollback: Made recommendations to make this more enduring. Instead of choose one, you might want to say choose one or both. Instead of choose two, you might want to say choose one or two courses to make a total of 18 credits. Also, instead of listing all these economics courses, based on the footnote, you might want to just say Any ECON 3XXX or above course not listed here. This makes it easier when you introduce a new course or remove an old one where you won't have to then change this document as well.

Jade McCain (jm558v) (04/07/25 8:10 am): Rollback: Rollback per see comments from DSCC Chair.

Program Change Request

Date Submitted: 04/21/25 3:30 pm

Viewing: **TEACH-CTU : Teaching and Learning**
Undergraduate Certificate

Last approved: 06/14/21 11:07 am

Last edit: 04/22/25 10:20 am

Changes proposed by: Beth Kania-Gosche (bakm75)

Catalog Pages Using
this Program
Education

Effective Catalog Edition	FS2025-SP2026
Start Term	Fall 2025
Program Type	<u>Certificate</u>
Academic Level	<u>Undergraduate</u>
Program Code	TEACH-CTU
Department	Education
Discipline	Education
Title	

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

Approval Path

1. 04/21/25 3:40 pm
Beth Kania-Gosche
(bakm75):
Approved for
REDUCATION Chair
2. 04/22/25 8:46 am
Jade McCain
(jm558v): Approved
for CCC Secretary
3. 04/22/25 10:20 am
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
4. 04/28/25 2:25 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

History

1. May 12, 2021 by
Beth Kania-Gosche
(bakm75)
2. Jun 14, 2021 by
Crystal Wilson
(wilsoncry)

Teaching and Learning Undergraduate Certificate

CIP Code

Intended Audience

[Main Campus Students](#)

Program Requirements and Description

Teaching and Learning Undergraduate Certificate

This certificate is designed to give students background in important educational concepts such as instructional design, learner engagement, assessment, diversity, and inclusion. This would be helpful for students who intend to work in higher education or nonprofit organizations as well as those who want to conduct industry training. The courses in this certificate may be used to meet some of the requirements for teacher certification programs. Students must meet regular Missouri S&T undergraduate admission requirements.

Certificate Requirements

A student must have completed the following courses, totaling 12 ~~13~~ hours.

EDUC 1040	Perspectives In Education	2
EDUC 1174	School Organization and Administration For Teachers	2
<u>EDUC 1074</u>	<u>Foundations of Education in a Diverse Society</u>	<u>3</u>
<u>EDUC 3216</u>	Instructional Literacy in the Content Area	3
<u>EDUC 3340</u>	Assessment of Student Learning	3
<u>EDUC 2310</u>	Education Of The Exceptional Child	3

Justification for
request

Education Department is replacing EDUC 1040 and 1174 with EDUC 1074.

Attach Budget

System Approval
Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Jade McCain (jm558v) (04/22/25 8:46 am): This is considered a minor change per Provost's Office approval via email on 4/22.

Cecil Eng Huang Chua (cchua) (04/22/25 10:20 am): Made friendly amendment 12 credit hours after consulting with submitter.

Experimental Change Request

New Proposal

Date Submitted: 04/02/25 11:41 am

Viewing: **BUS 5001.014: Corporate Entrepreneurship and Ecosystem Strategy**

Last edit: 04/21/25 2:11 pm

Changes proposed by: Cecil Eng Huang Chua (cecq8z)

Requested Effective Date	Fall 2025
Department	Business and Information Tech (RBUS&IT)
Discipline	Business (BUS)
Course Number	5001
Topic ID	014
Experimental Title	Corporate Entrepreneurship and Ecosystem Strategy
Experimental Abbreviated Course Title	Entrp Strat
Co-Listed Course	
Instructors	TBD
Experimental Catalog Description	Course explores how established organizations identify, develop, and capitalize on innovative opportunities within dynamic ecosystems. Topics include corporate venturing, collaborative innovation, entrepreneurial leadership, public–private partnerships, and ecosystem development at the local and regional levels. Students will learn frameworks for ecosystem mapping, stakeholder analysis, strategic partnership formation, and managing intrapreneurial ventures. Emphasis is placed on real-world case studies, ecosystem projects, and applied research in various organizational contexts.
Prerequisite(s)	
Corequisite(s)	
Field Trip Statement	
Credit Hours	

Credit Type	Credit Hours
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In Workflow

- 1. RBUS&IT Chair
- 2. CCC Secretary
- 3. Social Sciences DSCC Chair
- 4. Pending CCC Agenda post
- 5. CCC Meeting Agenda
- 6. Campus Curricula Committee Chair
- 7. CAT entry
- 8. Registrar

Approval Path

- 1. 04/02/25 11:57 am
Cassie Elrod (cassa):
Approved for
RBUS&IT Chair
- 2. 04/02/25 2:43 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
- 3. 04/02/25 3:13 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
- 4. 04/28/25 2:17 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

Credit Type	Credit Hours
Lecture	3

Total: 3

Required for Majors No

Elective for Majors Yes

Grading Basis Graded

Repeatable No

Justification for experimental course: Course fills a strategic gap by focusing on ecosystem-building as part of corporate entrepreneurship. Moreover, it offers advanced insights into how large organizations and public–private partnerships support regional innovation. Distinct from existing innovation/ entrepreneurship courses by emphasizing cross-sector, ecosystem-focused strategies. Lastly, aligns with department goals to grow entrepreneurship presence and complements current technology-focused environment.

Reviewer **Jade McCain (jm558v) (04/02/25 2:41 pm):** Added grading basis and corrected prerequisite format.

Comments **Jade McCain (jm558v) (04/21/25 2:11 pm):** Added Topic ID.

Experimental Change Request

New Proposal

Date Submitted: 04/02/25 11:42 am

Viewing: **BUS 5001.015: Entrepreneurial Finance and Funding Strategies**

Last edit: 04/21/25 2:13 pm

Changes proposed by: Cecil Eng Huang Chua (cecq8z)

Requested Effective Date	Fall 2025
Department	Business and Information Tech (RBUS&IT)
Discipline	Business (BUS)
Course Number	5001
Topic ID	015
Experimental Title	Entrepreneurial Finance and Funding Strategies
Experimental Abbreviated Course Title	Ent Fin and Fund
Co-Listed Course	
Instructors	TBD
Experimental Catalog Description	A deep exploration of the financial tools, frameworks, and instruments used to fund innovative corporate projects and startup ventures. Topics include seed funding, angel and venture capital, corporate venture capital, valuation techniques, deal structuring, crowdfunding, and public-private funding partnerships. Students will practice creating pitch decks, performing due diligence, and structuring deal terms. Emphasis is placed on analyzing real venture financing deals, applying financial modeling, and interfacing with external funding partners.
Prerequisite(s)	
Corequisite(s)	
Field Trip Statement	
Credit Hours	

Credit Type	Credit Hours
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In Workflow

- 1. RBUS&IT Chair
- 2. CCC Secretary
- 3. Social Sciences DSCC Chair
- 4. Pending CCC Agenda post
- 5. CCC Meeting Agenda
- 6. Campus Curricula Committee Chair
- 7. CAT entry
- 8. Registrar

Approval Path

- 1. 04/02/25 11:59 am
Cassie Elrod (cassa):
Approved for
RBUS&IT Chair
- 2. 04/02/25 2:46 pm
Jade McCain
(jm558v): Approved
for CCC Secretary
- 3. 04/02/25 3:13 pm
Cecil Eng Huang
Chua (cchua):
Approved for Social
Sciences DSCC Chair
- 4. 04/28/25 2:17 pm
Jade McCain
(jm558v): Approved
for Pending CCC
Agenda post

Credit Type	Credit Hours
Lecture	3

Total:	3
Required for Majors	No
Elective for Majors	Yes
Grading Basis	Graded
Repeatable	No
Justification for experimental course:	<p>Course addresses entrepreneurial financing from both a corporate and startup perspective, bridging a gap in current offerings that focus primarily on new ventures or generalized finance. As such, equips students with practical skills in valuation, term sheets, and due diligence. Further it can prepare students to interact with emerging venture fund ideas, thereby fostering local/regional economic development. More generally, course can serve as a valuable elective for students in multiple disciplines who seek deeper expertise in funding strategies and financial modeling.</p>
Reviewer Comments	<p>Jade McCain (jm558v) (04/02/25 2:44 pm): Added grading basis and corrected prerequisite format.</p> <p>Jade McCain (jm558v) (04/21/25 2:13 pm): Added Topic ID.</p>

Experimental Change Request

New Proposal

Date Submitted: 04/10/25 3:01 pm

Viewing: **CHEM ENG 5001.038: Green Engineering: Sustainable Chemical Process Design**

Last edit: 04/28/25 10:49 am

Changes proposed by: Christi Luks (luksc)

Requested Effective Date	Fall 2026
Department	Chemical and Biochemical Engineering (RCHEMENG)
Discipline	Chemical Engineering (CHEM ENG)
Course Number	5001
Topic ID	038
Experimental Title	Green Engineering: Sustainable Chemical Process Design
Experimental Abbreviated Course Title	Green Engineering
Co-Listed Course	
Instructors	Hossein Abedsoltan
Experimental Catalog Description	This course introduces students to the principles and practices of sustainable engineering within the context of chemical processes. It emphasizes design approaches that minimize environmental impacts, promote pollution prevention, and encourage the efficient use of resources across the chemical industry. Topics include environmental regulations, green chemistry, life cycle thinking, process optimization for sustainability, and strategies for integrating environmental goals into engineering decisions.
Prerequisite(s)	Senior standing.
Corequisite(s)	
Field Trip Statement	
Credit Hours	

Credit Type	Credit Hours
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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. CAT entry
8. Registrar

Approval Path

1. 04/10/25 3:02 pm
Hu Yang (huyang):
Approved for RCHEMENG Chair
2. 04/11/25 3:18 pm
Jade McCain (jm558v): Approved for CCC Secretary
3. 04/24/25 8:16 pm
Kelly Liu (liukh):
Approved for Engineering DSCC Chair
4. 04/28/25 2:18 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Credit Type	Credit Hours
Lecture	3

Total:	3
Required for Majors	No
Elective for Majors	Yes
Grading Basis	Graded
Repeatable	No
Justification for experimental course:	This course supports the department’s mission to produce engineers who are equipped to address 21st-century challenges. It integrates ethical and environmental considerations into engineering education, aligns with ABET’s emphasis on sustainability and societal impact, and prepares students for evolving career landscapes that increasingly demand sustainability expertise
Reviewer Comments	<p>Jade McCain (jm558v) (04/11/25 3:17 pm): Adjusted prerequisite format and added grading basis.</p> <p>Jade McCain (jm558v) (04/28/25 10:49 am): Added Topic ID.</p>

Experimental Change Request

New Proposal

Date Submitted: 04/22/25 1:22 pm

Viewing: **COMP SCI 5001.078: Foundations of Network Security**

Last edit: 04/28/25 10:53 am

Changes proposed by: Venkata Sriram Siddhardh Nadendla (nadendla)

Requested Effective Date	Fall 2025
Department	Computer Science (RCOMPSCI)
Discipline	Computer Science (COMP SCI)
Course Number	5001
Topic ID	078
Experimental Title	Foundations of Network Security
Experimental Abbreviated Course Title	Network Security
Co-Listed Course	
Instructors	Junjie Xiong (Assistant Professor in Computer Science, starting Fall 2025)
Experimental Catalog Description	This course provides an in-depth study of various network attacks techniques and methods to defend against them. A number of network threats and vulnerabilities will be covered, including various vulnerabilities of TCP/IP protocols, denial of service (DOS), authentication pitfalls, and so on. This course will also cover defense mechanisms, including firewalls, VPN, and cryptography.
Prerequisite(s)	A grade of "C" or better in either Comp Sci 3610 or Comp Sci 4601.
Corequisite(s)	
Field Trip Statement	
Credit Hours	

Credit Type	Credit Hours
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In Workflow

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

Approval Path

- 1. 04/22/25 1:24 pm
Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
- 2. 04/23/25 8:34 am
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/24/25 9:27 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair
- 4. 04/28/25 2:18 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Credit Type	Credit Hours
Lecture	3

Total:	3
Required for Majors	No
Elective for Majors	Yes
Grading Basis	Graded
Repeatable	No
Justification for experimental course:	This course fills a gap in our current catalog between the 4000-level and 6000-level network security courses. To better prepare students for CIS 6605: Advanced Network Security, a 5000-level network security course is essential. Additionally, network security remains a highly relevant and in-demand field in both academia and industry. As cybersecurity threats continue to evolve, equipping students with a strong foundation at the graduate level will enable them to effectively address emerging security challenges in both research and practical applications.
Reviewer	Jade McCain (jm558v) (04/23/25 8:33 am): Removed Topic ID, corrected prerequisite
Comments	formatting, and added grading basis. Jade McCain (jm558v) (04/28/25 10:53 am): Added Topic ID.

Experimental Change Request

New Proposal

Date Submitted: 04/03/25 4:23 pm

Viewing: **ENG MGT 3001.002: Introduction to Data Analytics/Fundamentals of Business Analytics**

Last edit: 04/28/25 10:56 am

Changes proposed by: Joan Schuman (schumanj)

Requested Effective Date	Fall 2025
Department	Engineering Mgt & Sys Engr (RENGMNGT)
Discipline	Engineering Management (ENG MGT)
Course Number	3001
Topic ID	002
Experimental Title	Introduction to Data Analytics/Fundamentals of Business Analytics
Experimental Abbreviated Course Title	Intro to Data Analytics
Co-Listed Course	
Instructors	Amaury Lendasse
Experimental Catalog Description	Fundamentals of data visualization, analytics techniques such as K-NN clustering, decision trees, and neural networks, input-output analysis, input identification, basics of output metrics like inventory turns, EBITDA, churn rates, OEE, along with case studies on supply chains, stock market, and medical records, and teaching the use of a basic programming tool such as Python.
Prerequisite(s)	STAT 3115/3117.
Corequisite(s)	
Field Trip Statement	
Credit Hours	

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. CAT entry
8. Registrar

Approval Path

1. 03/19/25 7:22 pm
Amaury Lendasse (altmg): Approved for RENG MNGT Chair
2. 03/28/25 8:24 am
Jade McCain (jm558v): Rollback to Initiator
3. 04/03/25 4:31 pm
Amaury Lendasse (altmg): Approved for RENG MNGT Chair
4. 04/07/25 3:04 pm
Jade McCain (jm558v): Approved for CCC Secretary
5. 04/24/25 8:31 pm
Kelly Liu (liukh): Approved for Engineering DSCC Chair
6. 04/28/25 2:20 pm
Jade McCain (jm558v): Approved for Pending CCC

Credit Type	Credit Hours
Lecture	3.0

Total: 3.0

Required for Majors No

Elective for Majors Yes

Grading Basis Graded

Repeatable No

Justification for experimental course: This course will serve as the foundational course in the pathway towards the Data Analytics Emphasis Area (or Track) within Engineering Management. Currently, no such course exists, and the existing curriculum does not provide the necessary background to support advancements in Data Analytics. The course will introduce fundamental concepts essential for professionals aiming to complete the Data Analytics Emphasis Area successfully and secure relevant employment in the industry upon graduation.

Reviewer Comments **Jade McCain (jm558v) (03/28/25 8:24 am):** Rollback: Rollback per this course should be submitted as a CC form since it is a required course on the Engineering Management BS.
Jade McCain (jm558v) (04/07/25 3:00 pm): Added punctuation and grading basis.
Jade McCain (jm558v) (04/07/25 3:04 pm): Confirmed this course is an elective for majors with department via Teams call on 4/4/2025.
Jade McCain (jm558v) (04/28/25 10:56 am): Assigned Topic ID.

Experimental Change Request

New Proposal

Date Submitted: 04/08/25 9:52 am

Viewing: **HISTORY 2001.008: History of Great Britain**

Last edit: 04/21/25 2:21 pm

Changes proposed by: Michael Bruening (bruening)

Requested Effective Date

Spring 2026

Department

History & Political Science (RHISTORY)

Discipline

History (HISTORY)

Course Number

2001

Topic ID

008

Experimental Title

History of Great Britain

Experimental Abbreviated Course Title

History of Britain

Co-Listed Course

Instructors

Michael Bruening

Experimental Catalog Description

This course explores some aspect of the History of Great Britain in conjunction with a required two-week study abroad trip to Britain after the close of the term. The exact topic will vary depending on the instructor, but all will deal with aspects of British history that will be further explored in person during the study abroad portion of the class.

Prerequisite(s)

History 1100, History 1200, History 1300, History 1310, or Political Science 1200.

Corequisite(s)

Field Trip Statement

A two-week trip abroad in the United Kingdom is required for this course, with additional program fees to be determined each time it is offered.

- In Workflow
1. RHISTORY Chair

2. CCC Secretary

3. Arts & Humanities DSCC Chair

4. Pending CCC Agenda post

5. CCC Meeting Agenda

6. Campus Curricula Committee Chair

7. CAT entry

8. Registrar

- Approval Path
1. 04/08/25 12:54 pm
Shannon Fogg
(sfogg): Approved for RHISTORY Chair

2. 04/09/25 3:41 pm
Jade McCain
(jm558v): Approved for CCC Secretary

3. 04/09/25 4:26 pm
Petra Dewitt
(dewittp): Approved for Arts & Humanities DSCC Chair

4. 04/28/25 2:22 pm
Jade McCain
(jm558v): Approved for Pending CCC Agenda post

Credit Hours	
Credit Type	Credit Hours
Lecture	3

Total:	3
Required for Majors	No
Elective for Majors	Yes
Grading Basis	Graded
Repeatable	No
Justification for experimental course:	Missouri S&T is seeking to expand its faculty-led study abroad offerings. Currently, our department has no regular study abroad opportunities. We intend for this course to be offered every other year. For our majors it would serve as an upper-level European history elective, and for non-majors, it would serve as an upper-level humanities or social science course. For most students it would also meet the campus experiential learning requirement.
Reviewer Comments	<p>Jade McCain (jm558v) (04/09/25 3:41 pm): Corrected prerequisite format and added grading basis.</p> <p>Jade McCain (jm558v) (04/21/25 2:21 pm): Added Topic ID.</p>

Experimental Change Request

New Proposal

Date Submitted: 04/10/25 12:29 pm

Viewing: **MATH 5001.009: Theoretical Foundations of Data Science I**

Last edit: 04/28/25 11:00 am

Changes proposed by: John Singler (singlerj)

Requested Effective Date	Fall 2025
Department	Mathematics & Statistics (RMATHEMA)
Discipline	Mathematics (MATH)
Course Number	5001
Topic ID	009
Experimental Title	Theoretical Foundations of Data Science I
Experimental Abbreviated Course Title	Theor Found Data Sci I
Co-Listed Course	
Instructors	Jeffrey Humpherys (new Kummer Professor in Fall 2025)
Experimental Catalog Description	<p>We present machine learning from an information theoretic point of view that combines both frequentist and Bayesian statistical learning theory into a single universal framework. We then introduce classifiers and build up the foundational mathematics behind ensemble theory used to prove results about random forests and extreme-gradient boosting. In particular, we develop several concentration inequalities, including Breiman’s theorem. We also give a survey of high-dimensional probability theory and unsupervised learning. In particular we examine the mathematical formulations of T-SNE, UMAP, spectral clustering, and other dimensionality reduction methods. This course will be both mathematically rigorous (proofs) and computationally intensive.</p>
Prerequisite(s)	A grade of "C" or better in Math 2222, Math 3108, and Math 4209; programming competency.
Corequisite(s)	
Field Trip	
Statement	

In Workflow

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

Approval Path

- 1. 04/10/25 12:29 pm
John Singler (singlerj): Approved for RMATHEMA Chair
- 2. 04/15/25 12:04 pm
Jade McCain (jm558v): Approved for CCC Secretary
- 3. 04/25/25 9:10 am
Katie Shannon (shannonk): Approved for Sciences DSCC Chair
- 4. 04/28/25 2:23 pm
Jade McCain (jm558v): Approved for Pending CCC Agenda post

Credit Hours

Credit Type	Credit Hours
Lecture	3

Total:	3
Required for Majors	No
Elective for Majors	Yes
Grading Basis	Graded
Repeatable	No
Justification for experimental course:	This course leverages the expertise of our new Kummer Professor and builds our department's offerings in data science.
Reviewer	Jade McCain (jm558v) (04/15/25 12:03 pm): Added grading basis.
Comments	Jade McCain (jm558v) (04/28/25 11:00 am): Assigned Topic ID.