# Campus Curricula Committee Meeting Agenda

**January 21st, 2025**
**8:15am - 9:30am, Parker Hall 203**
**(For Faculty Senate Meeting of February 27th, 2025)**

**Review of submitted Course Change forms:**

File: 1782 CHEM ENG 5120 : Interfacial Phenomena In Chemical Engineering
File: 5997 COMP SCI 1010 : Introduction To Computer Science
File: 6002 COMP SCI 1580 : Introduction To Programming Laboratory
File: 10196 COMP SCI 2580 : Algorithms Laboratory
File: 6022 COMP SCI 3100 : Software Engineering I
File: 10197 COMP SCI 4095 : Software Systems Planning and Ethics
File: 1304 COMP SCI 4096 : Software Systems Development I
File: 9146 NUC ENG 4367 : Radioactive Waste Management And Remediation
File: 9182 PET ENG 2510 : Rock and Fluid Properties
File: 4189 PET ENG 3320 : Petrophysics
File: 4931 PSYCH 4995 : Rationality

**Review of submitted Program Change forms:**

File: 28 CMP SC-BS : Computer Science BS
File: 382 ENV SCI-BS : Environmental Science BS
File: 51 EV ENG-BS : Environmental Engineering BS
File: 156 GE ENG-BS : Geological Engineering BS
File: 366 LOGIC-CTU : UCT - Logic and the Philosophical Foundations of STEM
File: 108 PE ENG-BS : Petroleum Engineering BS

**Review of submitted Experimental Course forms**:

File: 505 PHYSICS 5001.004: Quantum Materials

**New Business:**

General Education Program

# Course Change Request

Date Submitted: 10/16/24 2:51 pm

## Viewing: CHEM ENG 5120 : Interfacial Phenomena In Chemical Engineering

Also listed as: **MIN ENG 5420**

Last approved: 03/02/20 6:01 am

Last edit: 12/16/24 12:07 pm

Changes proposed by: Stephen Casey (caseysc)

| | |
|---|---|
| Programs referencing this course | **CHEM ENG 5120:**<br>CHEMPRO-CT: Chemical Process Engineering CT<br>CM ENG-CT: Carbon Management Engineering CT<br>BIOENG-PHD: Bioengineering PhD |

| | |
|---|---|
| Requested Effective Date | Fall 2025 |
| Department | Chemical and Biochemical Engineering (RCHEMENG) |
| Discipline | Chemical Engineering (CHEM ENG) |
| Course Number | 5120 |
| Title | Interfacial Phenomena In Chemical Engineering |
| Abbreviated Course Title | Interfac Phenomena Ch E |
| Co-Listed Course | MIN ENG 5420 — Department: Mining and Explosives Engineering (RMINENG) |

Catalog Description

The course deals with the effects of surfaces on transport phenomena and on the role of surface active agents. Topics include fundamentals of thermodynamics, momentum, heat and mass transfer at interfaces and of surfactants. Some applications are included.

Prerequisite(s):

Chem Eng 3131 or graduate standing.

Corequisite(s):

**Credit Hours**

### In Workflow

1. **RCHEMENG Chair**
2. **RMINENG 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. 10/16/24 2:52 pm Hu Yang (huyang): Approved for RCHEMENG Chair
2. 12/16/24 11:49 am Kwame Awuah-Offei (kabp3): Approved for RMINENG Chair
3. 12/16/24 12:17 pm Jade McCain (jm558v): Approved for CCC Secretary
4. 01/02/25 10:06 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
5. 01/03/25 10:38 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

### History

1. Mar 2, 2020 by

Christi Luks (luksc)

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Lecture | 3 |

Total: 3

Required for Majors: No

Elective for Majors: Yes

Grading Basis: Graded

Repeatable: No

Justification: Adding co-list of MIN ENG 5420 beginning FS 2025.

## Semesters Previously Offered

Term(s) Offered as experimental

Is this a MOTR Course?

Reviewer Comments: **Jade McCain (jm558v) (12/16/24 12:07 pm):** Added punctuation and changed the requested effective date to Fall 2025.

Key: 1782

Preview Bridge

# Course Change Request

Date Submitted: 10/31/24 3:32 am

## Viewing: COMP SCI 1010 : Introduction To Computer Science

### Last edit: 10/31/24 3:32 am

Changes proposed by: Venkata Sriram Siddhardh Nadendla (nadendla)

| | |
|---|---|
| Catalog Pages referencing this course | Degree Programs |
| Programs referencing this course | CMP SC-BS: Computer Science BS |

| | |
|---|---|
| Requested Effective Date | 8/18/2025 |
| Department | Computer Science (RCOMPSCI) |
| Discipline | Computer Science (COMP SCI) |
| Course Number | 1010 |
| Title | Introduction To Computer Science |
| Abbreviated Course Title | Intro / Computer Science |
| Co-Listed Course | |

Catalog Description

This course is devoted to an introduction of programming development tools such as version control systems, integrated development environments, debuggers, profilers, ~~various areas of Computer Science, the faculty members,~~ and event-based programming environments. ~~lab equipment. Computer ethics will be discussed in several lectures.~~

Prerequisite(s):

Corequisite(s):

**Credit Hours**

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Lecture | 1 |

Total: 1

## 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. 10/31/24 6:34 am Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
2. 10/31/24 10:33 am Jade McCain (jm558v): Approved for CCC Secretary
3. 11/12/24 9:06 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 11/18/24 8:28 am Jade McCain (jm558v): Approved for Pending CCC Agenda post
5. 12/03/24 10:26 am Jade McCain (jm558v): Rollback to Pending CCC Agenda post for CCC Meeting Agenda
6. 01/03/25 10:38 am Jade McCain (jm558v): Approved

for Pending CCC Agenda post

| | |
|---|---|
| Required for Majors | Yes ~~No~~ |
| Elective for Majors | No |
| Grading Basis | Graded |
| Repeatable | No |
| Justification | Sid Nadendla [10/29/2024]: In alignment with the changes proposed in the B.S. Comp Sci degree program, Comp Sci 1010 is introduced into the degree requirements so that programming tools currently taught in Comp Sci 1585 (Data Structures Laboratory) can be covered in a different course. This allows us to cover more hands-on activities on data structures in alignment with its original lecture course Comp Sci 1575 (Data Structures). The creation of this course is approved by the department faculty on 10/25/2024. |

## Semesters Previously Offered

| | |
|---|---|
| Term(s) Offered as experimental | |
| Is this a MOTR Course? | |
| Reviewer Comments | **Jade McCain (jm558v) (12/03/24 10:26 am):** Rollback: Needs to be submitted alongside COMP SCI BS form. |

Key: 5997

Preview Bridge

# Course Change Request

Date Submitted: 10/31/24 3:31 am

## Viewing: COMP SCI 1580 : Introduction To Programming Laboratory

Last edit: 10/31/24 3:31 am

Changes proposed by: Venkata Sriram Siddhardh Nadendla (nadendla)

| | |
|---|---|
| Programs referencing this course | AP MATH-BS: Applied Mathematics BS<br>BIOINFO-MI: Bioinformatics Minor<br>BIO SC-BA: Biological Sciences BA<br>CP ENG-BS: Computer Engineering BS<br>FR ENG-UN: Foundational Engineering and Computing<br>CMP SC-BS: Computer Science BS<br>CMP SC-MI: Computer Science Minor<br>MC ENG-BS: Mechanical Engineering BS |

| | |
|---|---|
| Requested Effective Date | 8/18/2025 |
| Department | Computer Science (RCOMPSCI) |
| Discipline | Computer Science (COMP SCI) |
| Course Number | 1580 |
| Title | Introduction To Programming Laboratory |
| Abbreviated Course Title | Intro To Programming Lab |
| Co-Listed Course | |

Catalog Description

Practical applications of concepts learned in Computer Science 1570. Hands-on instruction in C++ developing, debugging, and testing programming projects.

Prerequisite(s):

Accompanied by Comp Sci 1570.

Corequisite(s):

### Credit Hours

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Laboratory | 1 |

Total: 1

### 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. 10/31/24 6:34 am Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
2. 10/31/24 10:34 am Jade McCain (jm558v): Approved for CCC Secretary
3. 11/12/24 9:08 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 11/18/24 8:28 am Jade McCain (jm558v): Approved for Pending CCC Agenda post
5. 12/03/24 10:26 am Jade McCain (jm558v): Rollback to Pending CCC Agenda post for CCC Meeting Agenda
6. 01/03/25 10:38 am Jade McCain (jm558v): Approved

for Pending CCC Agenda post

| | |
|---|---|
| Required for Majors | Yes ~~No~~ |
| Elective for Majors | No |
| Grading Basis | Graded |
| Repeatable | No |

| | |
|---|---|
| Justification | Sid Nadendla: This is included in the B.S. Comp Sci degree requirements, but was not listed as being required for majors. Otherwise, there is no major modification to this course. |

## Semesters Previously Offered

| | |
|---|---|
| Term(s) Offered as experimental | |
| Is this a MOTR Course? | |

| | |
|---|---|
| Reviewer Comments | **Jade McCain (jm558v) (12/03/24 10:26 am):** Rollback: Needs to be submitted alongside COMP SCI BS form. |

Key: 6002

Preview Bridge

# Course Change Request

## New Course Proposal

Date Submitted: 10/31/24 3:28 am

## Viewing: COMP SCI 2580 : Algorithms Laboratory

### Last edit: 10/31/24 3:28 am

Changes proposed by: Venkata Sriram Siddhardh Nadendla (nadendla)

| | |
|---|---|
| Programs referencing this course | CMP SC-BS: Computer Science BS |

| | |
|---|---|
| Requested Effective Date | 8/18/2025 |
| Department | Computer Science (RCOMPSCI) |
| Discipline | Computer Science (COMP SCI) |
| Course Number | 2580 |
| Title | Algorithms Laboratory |
| Abbreviated Course Title | Algorithms Lab |
| Co-Listed Course | |

Catalog Description

This laboratory course focuses on the application of concepts learned in Comp Sci 2500. Specifically, students will implement algorithms covered in the class and measure the runtimes of various algorithms on varying inputs to empirically analyze their scalability with input size in terms of memory and runtime. In addition, students will also design and analyze new algorithms for relevant problems that are not covered in Comp Sci 2500.

Prerequisite(s):

Accompanied by COMP SCI 2500

Corequisite(s):

**Credit Hours**

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Laboratory | 1 |

Total: 1

Required for Majors Yes

### 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. 10/31/24 6:34 am Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
2. 11/05/24 3:43 pm Jade McCain (jm558v): Approved for CCC Secretary
3. 11/21/24 3:20 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 01/03/25 10:38 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

| | |
|---|---|
| Elective for Majors | No |
| Grading Basis | |
| Repeatable | No |
| Justification | Sid Nadendla [10/29/2024]: In alignment with the changes proposed in the B.S. Comp Sci degree program, this new laboratory course is being created as a support to Comp Sci 2500, and is one of the degree requirements in B.S. Comp Sci degree program. The creation of this course is approved by the department faculty on 10/25/2024. The main goal is to supplement the learning outcomes of Comp Sci 2500 to build the necessary skill expected in today's job market for both internships and full-time jobs. |

## Semesters Previously Offered

| | |
|---|---|
| Term(s) Offered as experimental | |
| Previous Course Code | |
| Is this a MOTR Course? | |
| Reviewer Comments | |

Key: 10196

Preview Bridge

# Course Change Request

Date Submitted: 10/31/24 3:27 am

## Viewing: COMP SCI 3100 : Software Engineering I

### Last edit: 10/31/24 3:27 am

Changes proposed by: Venkata Sriram Siddhardh Nadendla (nadendla)

| | |
|---|---|
| Programs referencing this course | CMP SC-BS: Computer Science BS |

| | |
|---|---|
| Requested Effective Date | 8/18/2025 |
| Department | Computer Science (RCOMPSCI) |
| Discipline | Computer Science (COMP SCI) |
| Course Number | 3100 |
| Title | Software Engineering I |
| Abbreviated Course Title | Software Engineering I |
| Co-Listed Course | |

Catalog Description

This course introduces ~~Development of methodologies useful in~~ the fundamental principles within a ~~software engineering~~ classical software engineering life cycle, including software process, analysis and design. ~~cycle.~~ ~~Thisincludes:~~Topics includes requirement specifications, ~~requirements,~~ design, implementation, management and testing phases. ~~These methodologies are reinforced through utilization of a CASE tool and a group project.~~

Prerequisite(s):

A "C" or better grade in Comp Sci 2500 and at least Junior standing.

Corequisite(s):

**Credit Hours**

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Lecture | 3 |

Total: 3

Required for Majors Yes ~~No~~

Elective for Majors No

## 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. 10/31/24 6:34 am Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
2. 10/31/24 10:36 am Jade McCain (jm558v): Approved for CCC Secretary
3. 11/12/24 9:12 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 11/18/24 8:28 am Jade McCain (jm558v): Approved for Pending CCC Agenda post
5. 12/03/24 10:26 am Jade McCain (jm558v): Rollback to Pending CCC Agenda post for CCC Meeting Agenda
6. 01/03/25 10:39 am Jade McCain (jm558v): Approved

| | |
|---|---|
| Grading Basis | Graded |
| Repeatable | No |

for Pending CCC Agenda post

| | |
|---|---|
| Justification | Sid Nadendla [10/29/2024]: In alignment with the changes proposed in the B.S. Comp Sci degree program, Comp Sci 4090 will be replaced by two courses - Comp Sci 3100 (this current course) and Comp Sci 4095. The creation of this course is approved by the department faculty on 10/25/2024. |

## Semesters Previously Offered

| | |
|---|---|
| Term(s) Offered as experimental | |
| Is this a MOTR Course? | |
| Reviewer Comments | **Jade McCain (jm558v) (12/03/24 10:26 am):** Rollback: Needs to be submitted alongside COMP SCI BS form. |

Key: 6022

Preview Bridge

# Course Change Request

## New Course Proposal

Date Submitted: 10/31/24 3:23 am

Viewing: **COMP SCI 4095 : Software Systems Planning and Ethics**

Last edit: 10/31/24 3:23 am

Changes proposed by: Venkata Sriram Siddhardh Nadendla (nadendla)

| | |
|---|---|
| Programs referencing this course | CMP SC-BS: Computer Science BS |

| | |
|---|---|
| Requested Effective Date | 8/18/2025 |
| Department | Computer Science (RCOMPSCI) |
| Discipline | Computer Science (COMP SCI) |
| Course Number | 4095 |
| Title | Software Systems Planning and Ethics |
| Abbreviated Course Title | Softw Syst Planning |
| Co-Listed Course | |

Catalog Description

This is the first course in the software systems sequence where students will work in small teams to plan and document the design and development of a complete software system, which will then be prototyped, deployed and maintained in Comp Sci 4096. In addition, computer ethics will also be discussed in several lectures.

Prerequisite(s):

A grade of "C" or better in both Comp Sci 2300 and Comp Sci 3100.

Corequisite(s):

**Credit Hours**

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Lecture | 1 |

Total: 1

Required for Majors Yes

### 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. 10/31/24 6:34 am Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
2. 11/05/24 3:43 pm Jade McCain (jm558v): Approved for CCC Secretary
3. 11/21/24 3:12 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 01/03/25 10:39 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

| | |
|---|---|
| Elective for Majors Grading Basis | No |
| Repeatable | No |
| Justification | Sid Nadendla [10/29/2024]: In alignment with the changes proposed in the B.S. Comp Sci degree program, the current Comp Sci 4090 will be replaced by two courses - Comp Sci 3100 and Comp Sci 4095 (this current course). The creation of this course is approved by the department faculty on 10/25/2024. |

## Semesters Previously Offered

| | |
|---|---|
| Term(s) Offered as experimental | |
| Previous Course Code | |
| Is this a MOTR Course? | |
| Reviewer Comments | |

Key: 10197

Preview Bridge

# Course Change Request

Date Submitted: 10/31/24 3:38 am

## Viewing: COMP SCI 4096 : Software Systems Development I

Last approved: 10/19/15 3:33 am

Last edit: 10/31/24 3:38 am

Changes proposed by: Venkata Sriram Siddhardh Nadendla (nadendla)

| | |
|---|---|
| Programs referencing this course | CMP SC-BS: Computer Science BS |

| | |
|---|---|
| Requested Effective Date | 8/18/2025 |
| Department | Computer Science (RCOMPSCI) |
| Discipline | Computer Science (COMP SCI) |
| Course Number | 4096 |
| Title | Software Systems Development I |
| Abbreviated Course Title | Software Syst Developmnt I |
| Co-Listed Course | |

Catalog Description

This is the second course ~~Class members will work~~ in the ~~small teams to develop a complete~~ software systems sequence where students will work in small teams to prototype, deploy ~~system beginning with end-user interviews~~ and maintain the software system they planned in Comp Sci 4095. ~~concluding with end-user training.~~

Prerequisite(s):

100 credit hours completed and a grade of "C" or better in both Comp Sci 3610 ~~3100~~ and Comp Sci 4095. ~~one of Phil 3225, Phil 3235, Phil 4340, or Phil 4368.~~

Corequisite(s):

**Credit Hours**

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Lecture | 3 |

Total: 3

Required for Majors Yes

### 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. 10/31/24 6:34 am Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
2. 10/31/24 10:36 am Jade McCain (jm558v): Approved for CCC Secretary
3. 11/12/24 9:13 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 11/18/24 8:28 am Jade McCain (jm558v): Approved for Pending CCC Agenda post
5. 12/03/24 10:26 am Jade McCain (jm558v): Rollback to Pending CCC Agenda post for CCC Meeting Agenda
6. 01/03/25 10:39 am Jade McCain (jm558v): Approved

| | |
|---|---|
| Elective for Majors | No |
| Grading Basis | Graded |
| Repeatable | No |

Justification

Sid Nadendla [10/29/2024]: In alignment with the changes proposed in the B.S. Comp Sci degree program, Comp Sci 4091 will be replaced by Comp Sci 4096 (this current course). The inclusion of this course in the B.S. Comp Sci degree requirements is approved by the department faculty on 10/25/2024.

for Pending CCC Agenda post

## History

1. Oct 19, 2015 by tauritzd

### Semesters Previously Offered

Term(s) Offered as experimental

Is this a MOTR Course?

Reviewer Comments **Jade McCain (jm558v) (12/03/24 10:26 am):** Rollback: Needs to be submitted alongside COMP SCI BS form.

Key: 1304

Preview Bridge

# Course Change Request

A deleted record cannot be edited

## Course Inactivation Proposal

Date Submitted: 08/29/24 1:06 pm

Viewing: **NUC ENG 4367 : Radioactive Waste Management And Remediation**

Also listed as: **GEOLOGY 4421**

Last edit: 12/16/24 2:09 pm

Changes proposed by: Joshua Schlegel (schlegelj)

Justification for this inactivation request

NERS is working toward improvements in elective course numbering, and this course will be duplicated by NUC ENG 5367

| | | | |
|---|---|---|---|
| Requested Effective Date | Fall 2025 | | |
| Department | Nuclear Eng & Radiation Sci (RNUCLENG) | | |
| Discipline | Nuclear Engineering (NUC ENG) | | |
| Course Number | 4367 | | |
| Title | Radioactive Waste Management And Remediation | | |
| Abbreviated Course Title | Radioact Waste Mgt Remed | | |
| Co-Listed Course | GEOLOGY 4421 | Department | Earth Sciences and Engineering (RGEOSENG) |

Catalog Description

Sources and classes of radioactive waste, long-term decay, spent fuel storage, transport, disposal options, regulatory control, materials issues, site selection and geologic characterization, containment, design and monitoring requirements, domestic and foreign waste disposal programs, economic and environmental issues, history of disposal actions, and conduct of remedial actions and clean up.

Prerequisite(s):

Math 3304.

Corequisite(s):

**Credit Hours**

### In Workflow

1. **NUC ENG Chair**
2. **CCC Secretary**
3. **RGEOSENG Chair**
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. 09/06/24 10:17 am Joseph Newkirk (jnewkirk): Approved for NUC ENG Chair
2. 09/13/24 1:27 pm Jade McCain (jm558v): Approved for CCC Secretary
3. 09/13/24 1:30 pm Stephen Gao (sgao): Approved for RGEOSENG Chair
4. 10/04/24 8:55 am Kelly Liu (liukh): Approved for Engineering DSCC Chair
5. 10/07/24 2:17 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post
6. 10/22/24 11:26 am Jade McCain

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Lecture | 3 |

Total: 3

Required for Majors: No

Elective for Majors:

Grading Basis: Graded

Repeatable: No

Justification

## Semesters Previously Offered

Term(s) Offered as experimental:

Previous Course Code:

Is this a MOTR Course?:

Reviewer Comments:

**Jade McCain (jm558v) (10/22/24 11:26 am):** Rollback: Rollback to remove GEOLOGY 4421 as a co-list.

**Jade McCain (jm558v) (10/31/24 3:56 pm):** Rollback: Rollback per needing DC forms.

**Jade McCain (jm558v) (12/16/24 2:09 pm):** Changed end term to Fal 2025.

(jm558v): Rollback to CCC Secretary for CCC Meeting Agenda

7. 10/31/24 3:56 pm Jade McCain (jm558v): Rollback to NUC ENG Chair for CCC Secretary
8. 12/16/24 2:23 pm Joseph Newkirk (jnewkirk): Approved for NUC ENG Chair
9. 12/16/24 2:27 pm Jade McCain (jm558v): Approved for CCC Secretary
10. 12/16/24 2:29 pm Stephen Gao (sgao): Approved for RGEOSENG Chair
11. 01/02/25 10:09 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
12. 01/03/25 10:39 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

Key: 9146

# Course Change Request

Date Submitted: 10/18/24 2:34 pm

## Viewing: PET ENG 2510 : Rock and Fluid Properties ~~Properties Of Hydrocarbon Fluids~~

Last edit: 11/08/24 11:34 am

Changes proposed by: Mingzhen Wei (weim)

| | |
|---|---|
| Programs referencing this course | PE ENG-BS: Petroleum Engineering BS<br>GE ENG-BS: Geological Engineering BS |

| | |
|---|---|
| Requested Effective Date | 8/18/2025 |
| Department | Earth Sciences and Engineering (RGEOSENG) |
| Discipline | Petroleum Engineering (PET ENG) |
| Course Number | 2510 |
| Title | Rock and Fluid Properties ~~Properties Of Hydrocarbon Fluids~~ |
| Abbreviated Course Title | Rock and Fluid Properties ~~Prop Of Hydrocar Fluid~~ |
| 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):

None ~~Chem 1310.~~

Corequisite(s):

### Credit Hours

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Lecture | 3 |
| Laboratory | 1 |

Total: 4 ~~3~~

### 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. 10/18/24 2:34 pm Stephen Gao (sgao): Approved for RGEOSENG Chair
2. 11/08/24 11:34 am Jade McCain (jm558v): Approved for CCC Secretary
3. 11/21/24 3:12 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 01/03/25 10:39 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

| | |
|---|---|
| Required for Majors | Yes ~~No~~ |
| Elective for Majors | |
| Grading Basis | Graded |
| Repeatable | No |

| | |
|---|---|
| Justification | This course combines existing PE2510 for petroleum fluid properties and PE3320 for petrophysics into a 4 credit hours course. It will cover all required materials from both courses and save the overlapping materials in existing two courses. |

## Semesters Previously Offered

| | |
|---|---|
| Term(s) Offered as experimental | |
| Is this a MOTR Course? | |
| Reviewer Comments | |

Key: 9182

Preview Bridge

# Course Change Request

A deleted record cannot be edited

## Course Inactivation Proposal

Date Submitted: 11/06/24 2:38 pm

## Viewing: PET ENG 3320 : Petrophysics

Last approved: 10/28/19 6:00 am

Last edit: 11/06/24 2:38 pm

Changes proposed by: Mingzhen Wei (weim)

Justification for this inactivation request

PE3320 will be combined with PE2510 from Fall 2025

| | |
|---|---|
| Requested Effective Date | 8/18/2025 |
| 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

| Credit Type | Credit Hours |
|---|---|
| Lecture | 2 |
| Laboratory | 1 |

Total: 3

### 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. 11/06/24 2:54 pm Stephen Gao (sgao): Approved for RGEOSENG Chair
2. 11/08/24 11:34 am Jade McCain (jm558v): Approved for CCC Secretary
3. 11/21/24 3:12 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 01/03/25 10:39 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

### History

1. Oct 16, 2017 by Ralph Flori (reflori)
2. Jun 20, 2019 by Ralph Flori (reflori)
3. Oct 28, 2019 by

| | |
|---|---|
| Required for Majors | Yes |
| Elective for Majors | No |
| Grading Basis | Graded |
| Repeatable | No |

Ralph Flori (reflori)

Justification

## Semesters Previously Offered

Term(s) Offered as experimental

Previous Course Code

Is this a MOTR Course?

Reviewer Comments

Key: 4189

Preview Bridge

# Course Change Request

Date Submitted: 12/23/24 10:58 am

## Viewing: PSYCH 4995 : Rationality

Also listed as: **PHILOS 4884**

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

Last edit: 12/23/24 10:58 am

Changes proposed by: Crystal Wilson (wilsoncry)

| | |
|---|---|
| Programs referencing this course | **PHILOS 4884:**<br>LOGIC-CTU: UCT - Logic and the Philosophical Foundations of STEM<br>**PSYCH 4995:**<br>PSYCH-BA: Psychological Science BA<br>PSYCH-BS: Psychological Science BS |

| | | | |
|---|---|---|---|
| Requested Effective Date | Fall 2025 | | |
| Department | Psychological Science (RPSYCHOL) | | |
| Discipline | Psychology (PSYCH) | | |
| Course Number | 4995 | | |
| Title | Rationality | | |
| Abbreviated Course Title | Rationality | | |
| Co-Listed Course | PHILOS 4884 | Department | Arts, Languages & Philosophy (RPHILOSO) |

Catalog Description

This course will discuss the various ways our natural thinking style can lead us to make reasoning errors and how we can try to do better. Our focus will be on using results from Cognitive Psychology to improve our everyday lives, doing various hands-on projects throughout the semester.

Prerequisite(s):

Corequisite(s):

**Credit Hours**

Credit Hours

### In Workflow

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

### Approval Path

1. 12/23/24 11:31 am Irina Ivliyeva (ivliyeva): Approved for RPHILOSO Chair
2. 12/23/24 11:39 am Clair Kueny (reynoldscla): Approved for RPSYCHOL Chair
3. 12/23/24 11:41 am Crystal Wilson (wilsoncry): Approved for CCC Secretary
4. 12/23/24 3:02 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
5. 12/24/24 8:43 am Cecil Eng Huang Chua (cchua): Approved for Social

| Credit Type | Credit Hours |
|---|---|
| Lecture | 3 |

Total: 3

Required for Majors: No

Elective for Majors: Yes

Grading Basis: Graded

Repeatable: No

Justification

Submitting this form because PHILOS 4884 is being created as a co-list to PSYCH 4995. Department had originally submitted PHILOS 4884 as its own course form, but if it's going to be co-listed it needs to be submitted on the Psychology 4995 form.-CW

Justification per ALP department:
The creation of this co-taught course results from the Curriculum Development Grant from CASE awarded to Dr. Burns (psychology) and Dr. Finke (Arts, languages, and philosophy) in December of 2024. It also has the consequence of expanding the limited number of 4000-level courses available to philosophy majors so that time to graduation is reduced. We request the permanent number for this course as it will be included into the ETHICS-CTU: Logic and the Philosophical Foundations of STEM. Please see the updated form.

We also would like to co-list it with Psych 4995, as it will be co-taught. Please see above.

## Semesters Previously Offered

Term(s) Offered as experimental

Is this a MOTR Course?

Reviewer Comments

Sciences DSCC Chair
6. 01/03/25 10:39 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

## History

1. Apr 15, 2023 by Devin Burns (burnsde)

Key: 4931

Preview Bridge

# Program Change Request

Date Submitted: 11/01/24 3:56 pm

## Viewing: **CMP SC-BS : Computer Science BS**

Last approved: 03/27/24 9:10 am

Last edit: 11/01/24 3:56 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. 07/03/24 7:39 am Crystal Wilson (wilsoncry): Rollback to Initiator
2. 07/03/24 5:25 pm Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
3. 07/08/24 8:19 am Crystal Wilson (wilsoncry): Rollback to Initiator
4. 07/10/24 1:44 pm Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
5. 07/11/24 12:12 pm Crystal Wilson (wilsoncry):

Rollback to Initiator
6. 07/11/24 3:37 pm Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
7. 07/12/24 8:22 am Crystal Wilson (wilsoncry): Approved for CCC Secretary
8. 07/18/24 3:30 pm Mark Fitch (mfitch): Approved for Engineering DSCC Chair
9. 07/22/24 9:27 am Crystal Wilson (wilsoncry): Approved for Pending CCC Agenda post
10. 08/07/24 1:16 pm Jade McCain (jm558v): Rollback to Initiator
11. 09/27/24 2:54 pm Jade McCain (jm558v): Rollback to Initiator
12. 09/30/24 1:29 pm Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
13. 09/30/24 2:45 pm Jade McCain (jm558v): Approved for CCC Secretary
14. 10/15/24 1:24 pm Kelly Liu (liukh): Approved for

Rationale for Inactivation

Engineering DSCC Chair

15. 10/28/24 1:06 pm Jade McCain (jm558v): Rollback to Initiator
16. 11/01/24 4:12 pm Seung-Jong Park (spxzb): Approved for RCOMPSCI Chair
17. 11/05/24 3:43 pm Jade McCain (jm558v): Approved for CCC Secretary
18. 11/21/24 3:11 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
19. 01/03/25 10:38 am 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

Supporting Documents

| | |
|---|---|
| Effective Catalog Edition | FS2025-SP2026 |
| Start Term | 8/18/2025 |
| 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

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)

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 ~~exclusive of foreign language, and~~ must include ENGLISH 1120, one of PHILOS 3225, PHILOS 3235, PHILOS 4340, ~~ENGLISH 1160~~ or PHILOS 4368 for ethics elective; and one of ENGLISH 1160 or ENGLISH 3560 for technical writing. ~~ENGLISH 3560.~~ A minimum of nine semester hours is required in social sciences, including one of ~~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.

## Sample Course of Study

| Freshman Year | | | |
|---|---|---|---|
| First Semester | Credits | Second Semester | Credits |
| FR ENG 1100 | 1 | COMP SCI 1200 | 3 |
| COMP SCI 1010 | 1 | COMP SCI 1570 | 3 |
| COMP SCI 1500[1] | 3 | COMP SCI 1580 | 1 |
| Laboratory Science Elective[2] | 5 | MATH 1215[4] | 4 |
| MATH 1214 or 1211[3] | 4 | ENGLISH 1160 or 3560 | 3 |
| ENGLISH 1120 | 3 | ~~Humanities / Social Science Elective[5]~~ | ~~3~~ |
| | | HISTORY 1300, or 1310, or 1200, or POL SCI 1200 | 3 |
| | 17 | | 17 |

| Sophomore Year | | | |
|---|---|---|---|
| First Semester | Credits | Second Semester | Credits |
| COMP SCI 1575 | 3 | ~~COMP SCI 3800~~ | ~~3~~ |

| | | | |
|---|---|---|---|
| COMP SCI 1585 | 1 | ~~COMP SCI 2200~~ | ~~3~~ |
| COMP ENG 2210[6] | 3 | COMP SCI 2300 | 3 |
| ~~PHYSICS 1135~~[7] | ~~4~~ | COMP SCI 2500 | 3 |
| ~~Statistics Elective~~[8] | ~~3~~ | ~~COMP ENG 3150~~[6] | ~~3~~ |
| MATH 3108 | 3 | ~~PHYSICS 2135~~[9] | ~~4~~ |
| Sci/Eng Elective[9] | 3 | COMP SCI 2580 | 1 |
| Humanities / Social Science Elective[5] | 3 | Sci/Eng Elective[9] | 3 |
| | | Statistics Elective[7] | 3 |
| | | PHILOS 3225, or 3235, or 4340, or 4368 (Ethics Elective) | 3 |
| | 16 | | 16 |

Junior Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| ~~COMP SCI 2300~~ | ~~3~~ | ~~COMP SCI 3500~~ | ~~3~~ |
| ~~COMP SCI 3610~~ | ~~3~~ | ~~Cmp Sc Elective~~[12, 16] | ~~3~~ |
| ~~MATH 3108~~ | ~~3~~ | ~~Cmp Sc Elective~~ [12, 16] | ~~3~~ |
| COMP SCI 3100 | 3 | ~~Sci/Eng Elective~~[13] | ~~3~~ |
| COMP SCI 3800 | 3 | COMP SCI 2200 | 3 |
| COMP ENG 3150 | 3 | COMP SCI 3610 | 3 |
| Comp Sci Elective[8, 12] | 3 | Comp Sci Elective[8, 12] | 3 |
| Humanities / Social Science Elective[5] | 3 | Sci/Eng Elective [9] | 3 |
| ~~Ethics Elective~~[11] | ~~3~~ | SP&M S 1185[10] | 3 |
| | 15 | | 15 |

Senior Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| ~~COMP SCI 4090~~ | ~~3~~ | ~~COMP SCI 4091~~ | ~~3~~ |
| COMP SCI 3500 | 3 | ~~Cmp Sc Electives~~[12, 16] | ~~3~~ |
| COMP SCI 4095 | 1 | COMP SCI 4096 | 3 |
| COMP SCI 4610 | 3 | Comp Sci Elective[8, 12] | 3 |
| ~~Cmp Sc Electives~~[12, 16] | ~~6~~ | Comp Sci Elective[8, 12] | 3 |
| ~~Sci/Eng Elective~~[13] | ~~3~~ | Humanities / Social Science Elective[5] | 3 |
| Comp Sci Elective[8, 12] | 3 | ~~Free Elective~~[15,16] | ~~8~~ |
| Comp Sci Elective[8, 12] | 3 | Free Elective[11, 12] | 4 |
| Free Elective[11, 12] | 3 | | |
| | 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]

Or MATH 1208.

[4]

Or MATH 1221.

[5]

Any six credit hours of social science courses (excluding either one of , which are accounted under the ethics elective) and three credit hours of humanities courses (excluding 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.

[6]

Laboratory not required.

[7]

One of STAT 3113, STAT 3115, STAT 3117, or STAT 5643.

[8]

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.

[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]

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).

[11]

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.

12

COMP SCI 4010 can be counted as Computer Science Elective or Free Elective, limited to three times.

13

~~Any six 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, PHYSICS 2119, PHYSICS 2135, and PHYSICS 2145.~~

14

~~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).~~

15

~~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.~~

~~16COMP SCI 4010 can be counted as Computer Science Elective or Free Elective, limited to three times.~~

Justification for request

Sid Nadendla (10/30): The CS department faculty has voted favorably on the following change to the degree requirement:

1. Remove PHYS-1135 (4 credits) and PHYS-2135 (4 credits) from the degree requirements
AND
- Increase CS course elective requirements from 15 credit hours to 18 credit hours
- Increase Sci/Eng course elective requirements from 6 credit hours to 9 credit hours
- Allow at most one of PHYS-1135 and PHYS-1145, and at most one of PHYS-2135 and PHYS-2145, to be counted in Sci/Eng electives.

2. Remove COMP SCI 4090 (3 credits) and COMP SCI 4091 (3 credits) from the degree requirements
- Replace with COMP SCI 3100 (3 credits), COMP SCI 4095 (1 credit) and COMP SCI 4096 (3 credits) in the degree requirements. Note that COMP SCI 4095 is a new course - so, a CC form is submitted along with this proposal.

3. Include COMP SCI 1010 and COMP SCI 2580 in the degree requirements. Note that COMP SCI

2580 is a new course - so, CC form is submitted along with this proposal. Furthermore, COMP SCI 1010 will now cover CS tools that have been covered in CS 1585, which is not aligned with its lecture course CS 1575. So, CC forms are also submitted to modify COMP SCI 1010 and COMP SCI 1585 in accordance with this proposed change.

4. Reduce Free Electives from 8 credit hours to 7 credit hours.

In addition to the above changes, I also made some clarifications to clear any confusion regarding the humanities and social sciences electives. Specifically, I clearly highlighted the required English, History and Ethics electives in the initial text, sample course of study and the footnotes. Finally, I removed any references to the deactivated courses that are not listed in our current catalog.

Attach Budget

System Approval Letter

MDHE Approval

Supporting Documents

Reviewer Comments

**Crystal Wilson (wilsoncry) (07/03/24 7:39 am):** Rollback: Please make edits to the degree as specified in the justifications.

**Crystal Wilson (wilsoncry) (07/08/24 8:19 am):** Rollback: Please update footnotes and credit hours per email.

**Crystal Wilson (wilsoncry) (07/11/24 12:12 pm):** Rollback: Rollback per department. They still have some corrections to make on the form.

**Crystal Wilson (wilsoncry) (07/12/24 6:25 am):** Updated the footnotes numbering because footnote 7 and 9 were removed. Department also added Sci/Eng Elective for 2 hours to sophomore year 2nd semester to keep total credit hours at 128.

**Jade McCain (jm558v) (08/07/24 1:16 pm):** Rollback: Rollback per August 6, 2024, CCC Meeting. Mr. Gosnell discussed the electives on the form were not what the entire CS Faculty agreed on in the justifications.

**Jade McCain (jm558v) (09/27/24 2:54 pm):** Rollback: Rollback per department request.

**Jade McCain (jm558v) (10/28/24 1:06 pm):** Rollback: Rollback per department request.

# Program Change Request

Date Submitted: 12/09/24 11:22 am

## Viewing: ENV SCI-BS : Environmental Science BS

Last approved: 07/05/24 1:23 pm

Last edit: 12/09/24 11:22 am

Changes proposed by: Joel Burken (burken)

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. 09/24/24 10:14 am David Duvernell (duvernelld): Approved for RBIOLSCI Chair
2. 09/24/24 11:07 am Jade McCain (jm558v): Approved for CCC Secretary
3. 10/04/24 10:00 am Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 10/07/24 2:16 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post
5. 10/22/24 10:17 am

Jade McCain (jm558v): Approved for CCC Meeting Agenda
6. 10/22/24 10:47 am Petra Dewitt (dewittp): Approved for Campus Curricula Committee Chair
7. 10/24/24 8:37 am Jade McCain (jm558v): Rollback to Initiator
8. 12/09/24 11:25 am David Duvernell (duvernelld): Approved for RBIOLSCI Chair
9. 12/16/24 2:08 pm Jade McCain (jm558v): Approved for CCC Secretary
10. 01/02/25 6:00 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
11. 01/03/25 10:39 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

## History

1. Jan 24, 2022 by Nancy Winterburg (nancym)
2. Jan 24, 2022 by Evie

Rationale for Inactivation

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)

Supporting Documents

| | |
|---|---|
| Effective Catalog Edition | FS2025-SP2026 |
| Start Term | 8/18/2025 |
| 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.

Freshman Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| BIO SCI 1173 | 3 | ENGLISH 1160 | 3 |
| ENV SCI 1110 | 1 | CHEM 1320 or GEOLOGY 3410 | 3 |
| CHEM 1310 | 4 | BIO SCI 1223 | 3 |
| CHEM 1100 | 1 | BIO SCI 1229 | 1 |
| CHEM 1319 | 1 | MATH 1212, or 1208, or 1211, or 1214 | 4 |
| ECON 1100 | 3 | | |
| ENGLISH 1120 | 3 | | |
| | 16 | | 14 |

Sophomore Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| GEOLOGY 1110 | 3 | BIO SCI 2263 | 3 |
| ECON 4440 or MIN ENG 4523 | 3 | HISTORY 1200, or 1300, or 1310 | 3 |
| ENV ENG 2601 or CIV ENG 2601 | 3 | ENV ENG 2602 or CIV ENG 2602 | 3 |
| PHYSICS 1145 or 1135 | 4 | GEO ENG 3148 | 3 |
| POL SCI 1200 | 3 | CIV ENG 5640 or ENV ENG 5640 | 3 |
| | 16 | | 15 |

Junior Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| 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 |
| BIO SCI 5443 | Population and Conservation Genetics | 3 |
| CHEM 4710 | Principles Of Environmental Monitoring | 3 |
| CIV ENG 5605 | Environmental Systems Modeling | 3 |
| CIV ENG 5630 | Remediation of Contaminated Groundwater and Soil | 3 |
| CIV ENG 5635 | Phytoremediation and Natural Treatment Systems: Science and Design | 3 |
| CIV ENG 5650 | Public Health Engineering | 3 |
| CIV ENG 5660 | Introduction To Air Pollution | 3 |
| CIV ENG 5662 | Air Pollution Control Methods | 3 |
| CIV ENG 5665 | Indoor Air Pollution | 3 |

| | | |
|---|---|---|
| ECON 4085 | Internship | 0-6 |
| ECON 4641 | Foundations of Sustainability | 3 |
| ECON 4642 | Introduction to Global Eco- and Social-preneurship and Innovation | 3 |
| ECON 4643 | Ethical Problems in a Global Environment | 3 |
| ECON 5644 | Creativity, Innovation, and Sustainability | 3 |
| ENV ENG 3615 | Water And Wastewater Engineering | 3 |
| ENV ENG 4010 | Senior Seminar: Engineering In A Global Society | 1 |
| ENV ENG 4099 | Undergraduate Research | 0-6 |
| ENV ENG 4609 | Research in Environmental Engineering | 1 |
| ENV ENG 5605 | Environmental Systems Modeling | 3 |
| ENV ENG 5630 | Remediation of Contaminated Groundwater And Soil | 3 |
| ENV ENG 5635 | Phytoremediation and Natural Treatment Systems: Science and Design | 3 |
| ENV ENG 5650 | Public Health Engineering | 3 |
| ENV ENG 5660 | Introduction To Air Pollution | 3 |
| ENV ENG 5662 | Air Pollution Control Methods | 3 |
| ENV ENG 5665 | Indoor Air Pollution | 3 |
| GEO ENG 4099 | Undergraduate Research | 0-6 |
| GEO ENG 4115 | Statistical Methods in Geology and Engineering | 3 |
| GEO ENG 4276 | Environmental Aspects Of Mining | 3 |
| GEO ENG 5085 | Internship | 0-15 |
| GEO ENG 5146 | Applications Of Geographic Information Systems | 3 |
| GEO ENG 5174 | Geological Engineering Field Methods | 3 |
| GEO ENG 5233 | Risk Assessment In Environmental Studies | 3 |
| GEO ENG 5239 | Groundwater Remediation | 3 |
| GEO ENG 5276 | Environmental Aspects of Mining | 3 |
| GEO ENG 5320 | Groundwater Modeling | 3 |
| GEO ENG 5332 | Fundamentals of Groundwater Hydrology | 3 |
| GEO ENG 5556 | Renewable Energy Systems | 3 |

| | | |
|---|---|---|
| GEOLOGY 2096 | Field Geology | 3 |
| GEOLOGY 2731 | Introduction to Planetary Science | 3 |
| GEOLOGY 4085 | Internship | 3 |
| GEOLOGY 4099 | Undergraduate Research | 0-6 |
| GEOLOGY 4310 | Remote Sensing Technology | 3 |
| GEOLOGY 4411 | Hydrogeology | 3 |
| ~~GEOLOGY 4421~~ | ~~Radioactive Waste Management And Remediation~~ | ~~3~~ |
| GEOLOGY 4431 | Methods Of Karst Hydrogeology | 3 |
| GEOLOGY 4711 | Paleoclimatology and Paleoecology | 3 |
| GEOLOGY 4721 | Climate Change and Society | 3 |
| GEOLOGY 4841 | Geological Field Studies | 3 |
| GEOLOGY 5681 | Lidar Principles and Application | 3 |
| GEOLOGY 5741 | Micropaleontology | 3 |
| MIN ENG 5742 | Environmental Aspects of Mining | 3 |
| POL SCI 3300 | Principles Of Public Policy | 3 |
| POL SCI 4085 | Political Science Internship | 0-6 |
| POL SCI 4320 | 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.

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 128 credit hours. The required courses are provided below.

**Humanities: 15 semester hours**

| | | |
|---|---|---|
| ENGLISH 1120 | Exposition And Argumentation | 3 |
| ENGLISH 1160 | Writing And Research | 3 |
| or ENGLISH 3560 | Technical Writing | |
| ENGLISH 3170 | Teaching And Supervising Reading and Writing | 3 |
| PHILOS 1130 | How Should I Live? An Introduction to Ethics | 3 |
| PHILOS 4350 | Environmental Ethics and Justice | 3 |
| **Social Sciences: 18 semester hours** | | |
| HISTORY 1310 | American History Since 1877 | 3 |
| PSYCH 1101 | General Psychology | 3 |
| PSYCH 3310 | Developmental Psychology | 3 |
| ECON 1100 | Principles Of Microeconomics | 3 |
| ECON 4440 | Environmental And Natural Resource Economics | 3 |
| HISTORY 2510 | History of Technology | 3 |
| or HISTORY 3510 | Twentieth Century Technology And Society | |
| or HISTORY 3530 | History of Science | |
| **Mathematics/Physical Science: 12 semester hours** | | |
| MATH 1208 | Calculus With Analytic Geometry I | 4-9 |
| or MATH 1214 | Calculus I | |
| or MATH 1210 & MATH 1211 | Calculus I-A and Calculus I-B | |
| PHYSICS 1505 & PHYSICS 1509 | Introductory Astronomy and Astronomy Laboratory | 4 |
| PHYSICS 1145 | 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<br>& BIO SCI 1229 | Biodiversity<br>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: 36 semester hours** | | |
| EDUC 1040 | Perspectives In Education | 2 |
| EDUC 1174 | School Organization and Administration For Teachers | 2 |
| EDUC 3216 | Instructional Literacy in the Content Area | 3 |
| EDUC 3280 | Instructional Strategies in the Content Area | 3 |

| | | |
|---|---|---|
| EDUC 4298 | Student Teaching Seminar | 1 |
| PSYCH 2300 | Educational Psychology | 3 |
| or EDUC 2102 | Educational Psychology | |
| EDUC 3340 | Assessment of Student Learning | 3 |
| PSYCH 4310 | Psychology Of The Exceptional Child | 3 |
| or EDUC 2310 | Education Of The Exceptional Child | |
| EDUC 1104 | Teacher Field Experience I | 1 |
| EDUC 1164 | Teacher Field Experience II | 2 |
| EDUC 3298 | Teacher Field Experience III | 1 |
| EDUC 4299 | Student Teaching | 12 |

Justification for request

Removing GEOLOGY 4421 due to course being inactivated.

Attach Budget

System Approval Letter

MDHE Approval

Supporting Documents

Reviewer Comments

**Jade McCain (jm558v) (09/24/24 11:07 am):** Edited justification to say, "Removing GEOLOGY 4421 due to course being inactivated." Instead of, "Removing GEO ENG 4421 due to course being inactivated"

**Jade McCain (jm558v) (10/24/24 8:37 am):** Rollback: Rollback per waiting for clarification from the Geology department on the inactivation of GEOLOGY 4421.

Key: 382

# Program Change Request

Date Submitted: 12/10/24 9:36 am

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

Last approved: 05/02/22 1:31 pm

Last edit: 12/10/24 9:36 am

Changes proposed by: Jody Seely (seelyj)

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. 12/09/24 11:25 pm Mohamed Elgawady (elgawadym): Approved for RCIVILEN Chair
2. 12/10/24 9:30 am Jade McCain (jm558v): Rollback to Initiator
3. 12/16/24 2:01 pm Mohamed Elgawady (elgawadym): Approved for RCIVILEN Chair
4. 12/16/24 2:08 pm Jade McCain (jm558v): Approved for CCC Secretary
5. 01/02/25 10:07 pm

Kelly Liu (liukh): Approved for Engineering DSCC Chair
6. 01/03/25 10:39 am 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)

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.

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.

Freshman Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| FR ENG 1100[2] | 1 | MECH ENG 1720 | 3 |
| CHEM 1310 & CHEM 1319 | 5 | MATH 1215 | 4 |
| MATH 1214 or 1211 | 4 | PHYSICS 1135 | 4 |
| ENGLISH 1120 | 3 | General Education Elective[1] | 6 |
| General Education Elective[1] | 3 | | |
| | 16 | | 17 |

Sophomore Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| CIV ENG 2200 | 3 | CIV ENG 2210 | 3 |
| MATH 2222 | 4 | CIV ENG 2211 | 1 |
| ENV ENG 2601[3] | 3 | MECH ENG 2350 | 2 |
| CHEM 1320 or GEOLOGY 3410 | 3 | CHEM ENG 2100 | 4 |
| BIO SCI 1113 | 3 | ENV ENG 2602 | 3 |
| | | ENV ENG 3603 | 3 |
| | 16 | | 16 |

Junior Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| ENV ENG 3615[3] | 3 | ENV ENG 5619 | 3 |
| CIV ENG 3330[2] | 3 | STAT 3113 | 3 |
| MATH 3304 | 3 | CHEM ENG 2110 | 3 |
| GEO ENG 1150 | 3 | ENV ENG Technical Elective[5,6] | 3 |
| PHYSICS 2135 | 4 | Communications Elective[7] | 3 |
| | 16 | | 15 |

Senior Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| CIV ENG 4448 | 3 | ENV ENG 4097[3] | 3 |
| ENV ENG 4010[3] | 1 | ENV ENG Depth Elective[5,6] | 3 |
| CIV ENG 3334 | 4 | ENV ENG Depth Elective[5,6] | 3 |
| ENV ENG Air Pollution Elective[4,5] | 3 | ENV ENG Technical Elective[5,6] | 3 |
| HISTORY 2510 or 3530 | 3 | ENV ENG 4609 | 1 |
| ENV ENG Depth Elective[5,6] | 3 | General Education Elective[1] | 3 |
| | 17 | | 16 |

Total Credits: 129

**1**

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

**2**

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

**3**

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

**4**

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

**5**

A grade of 'C' or better may be required in ENV ENG technical and depth elective prerequisite courses. Refer to

the Missouri S&T undergraduate catalog for this prerequisite information.

[6]

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

[7]

Choose 1 of the following: CIV ENG 2003, ENGLISH 1160, ENGLISH 3560, or SP&M S 1185

**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 |
| ENV ENG 5670 | Solid Waste Management | 3 |
| ENV ENG 5605 | Environmental Systems Modeling | 3 |
| ENV ENG 5642 | Sustainability, Population, Energy, Water, and Materials | 3 |
| ENV ENG 5665 | Indoor Air Pollution | 3 |
| ENV ENG 5660 | Introduction To Air Pollution | 3 |
| ENV ENG 5662 | Air Pollution Control Methods | 3 |
| GEO ENG 5331 | Subsurface Hydrology | 3 |
| ENV ENG 5360 | Water Resources And Wastewater Engineering | 3 |
| ENV ENG 5635 | 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:

| | | |
|---|---|---|
| CIV ENG 5331 | Hydraulics Of Open Channels | 3 |
| CIV ENG 5335 | Water Infrastructure Engineering | 3 |
| CIV ENG 5446 | Management Of Construction Costs | 3 |
| CIV ENG 5360 | Water Resources And Wastewater Engineering | 3 |
| CIV ENG 5448 | Green Engineering: Analysis of Constructed Facilities | 3 |
| CHEM ENG 3101 | Fundamentals of Transport in Chemical and Biochemical Engineering | 4 |
| CIV ENG 5744 | Geosynthetics in Engineering | 3 |
| CHEM ENG 5340 | Principles of Environmental Monitoring | 3 |
| GEO ENG 3148 | Fundamentals Of Geographic Information Systems | 3 |
| GEO ENG 3175 | Geomorphology And Terrain Analysis | 3 |
| GEO ENG 5233 | Risk Assessment In Environmental Studies | 3 |
| GEO ENG 5235 | Environmental Geological Engineering | 3 |
| GEO ENG 5239 | Groundwater Remediation | 3 |
| GEO ENG 4276 | Environmental Aspects Of Mining | 3 |
| GEOLOGY 3410 | Introduction To Geochemistry | 3 |
| PET ENG 4210 | Drilling and Well Integrity | 3 |
| GEOLOGY 4451 | Aqueous Geochemistry | 3 |
| CIV ENG 5662/ ENV ENG 5662 | Air Pollution Control Methods | 3 |
| GEOLOGY 3811 | Fundamentals Of Geographic Information Systems | 3 |
| ~~GEOLOGY 4421~~ | ~~Radioactive Waste Management And Remediation~~ | ~~3~~ |
| ~~CHEM 3410~~ | ~~Course CHEM 3410 Not Found~~ | ~~3~~ |
| CHEM 5510 | Introduction to Chemical Analysis | 4 |
| CHEM 4510 | Instrumental Methods Of Chemical Analysis | 4 |
| CHEM ENG 3120 | Chemical Engineering Thermodynamics II | 3 |
| CHEM ENG 5130 | Risk Assessment and Reduction | 3 |
| CHEM 2210 | Organic Chemistry I | 3 |
| BIO SCI 2263 | Ecology | 3 |

| | | |
|---|---|---|
| BIO SCI 5313 | Pathogenic Microbiology | 3 |
| BIO SCI 4323 | Molecular Genetics | 3 |
| GEO ENG 5237 | Geological Aspects Of Hazardous Waste Management | 3 |
| GEO ENG 5276 | Environmental Aspects of Mining | 3 |
| GEO ENG 5320 | Groundwater Modeling | 3 |
| GEO ENG 5331 | Subsurface Hydrology | 3 |
| GEO ENG 5332 | Fundamentals of Groundwater Hydrology | 3 |
| GEO ENG 5381 | Intermediate Subsurface Hydrology And Contaminant Transport Mechs | 3 |
| MIN ENG 5742 | Environmental Aspects of Mining | 3 |
| BIO SCI 3313 | Microbiology | 3 |
| BIO SCI 4313 | Introduction to Environmental Microbiology | 3 |
| BIO SCI 4363 | Freshwater Ecology | 3 |
| BIO SCI 4316 | Introduction to Geomicrobiology | 3 |
| BIO SCI 4563 | Global Ecology | 3 |
| BIO SCI 4329 | Molecular Genetics Laboratory | 2 |
| BIO SCI 4383 | Toxicology | 3 |
| CIV ENG 5330 | Unsteady Flow Hydraulics | 3 |
| CIV ENG 5332 | Transport Processes in Environmental Flows | 3 |
| CIV ENG 5333 | Intermediate Hydraulic Engineering | 3 |
| CIV ENG 5337 | River Mechanics And Sediment Transport | 3 |
| CIV ENG 5338 | Hydrologic Engineering | 3 |

Justification for request

Course no longer being offered on campus

Attach Budget

System Approval Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

**Jade McCain (jm558v) (12/10/24 9:30 am):** Rollback: Rollback per Chem 3410 needs to be removed from the DC form due to the course being inactivated.

Key: 51

# Program Change Request

Date Submitted: 09/13/24 1:51 pm

## Viewing: GE ENG-BS : Geological Engineering BS

Last approved: 06/14/24 1:13 pm

Last edit: 12/16/24 2:08 pm

Changes proposed by: Katherine Grote (grotekr)

Catalog Pages Using this Program

Geological Engineering

| | |
|---|---|
| Effective Catalog Edition | FS2025-SP2026 |
| Start Term | Fall 2025 |
| Program Type | Bachelor of Science |
| Academic Level | Undergraduate |
| Program Code | GE ENG-BS |
| Department | Earth Sciences and Engineering |
| Discipline | Geological Engineering |
| Title | |

### 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. 09/13/24 1:52 pm Stephen Gao (sgao): Approved for RGEOSENG Chair
2. 09/17/24 10:21 am Jade McCain (jm558v): Approved for CCC Secretary
3. 10/04/24 8:53 am Kelly Liu (liukh): Approved for Engineering DSCC Chair
4. 10/07/24 2:16 pm Jade McCain (jm558v): Approved for Pending CCC Agenda post
5. 10/22/24 10:17 am

Jade McCain (jm558v): Approved for CCC Meeting Agenda

6. 10/22/24 10:48 am Petra Dewitt (dewittp): Approved for Campus Curricula Committee Chair
7. 10/24/24 8:36 am Jade McCain (jm558v): Rollback to RGEOSENG Chair for FS Meeting Agenda
8. 11/06/24 2:54 pm Stephen Gao (sgao): Approved for RGEOSENG Chair
9. 11/14/24 1:40 pm Jade McCain (jm558v): Rollback to RGEOSENG Chair for CCC Secretary
10. 12/06/24 9:14 pm Stephen Gao (sgao): Approved for RGEOSENG Chair
11. 12/16/24 2:08 pm Jade McCain (jm558v): Approved for CCC Secretary
12. 01/02/25 10:08 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair
13. 01/03/25 10:39 am Jade McCain

(jm558v): Approved for Pending CCC Agenda post

## 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)

Geological Engineering BS

CIP Code

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. 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. A passing grade is not required; however, passing this examination is the first step toward becoming a registered professional engineer. This requirement is part of the Missouri S&T assessment process.

The geological engineering program at Missouri S&T is characterized by comprehensive understanding of the scientific basics of engineering and innovative application. We focus on solving the problems and meeting the needs of civilization as those are affected by geological materials, structures, or events. The necessary interactions required for this among the various sciences, engineering disciplines, and human professions are emphasized in research, analysis, synthesis, and design. Learning occurs in classroom, laboratory, online, field, and combined modes.

Freshman Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| MATH 1214 or 1211[1] | 4 | MATH 1215[1] | 4 |
| CHEM 1100 | 1 | MECH ENG 1720 | 3 |
| CHEM 1310 | 4 | PHYSICS 1135 | 4 |
| CHEM 1319 | 1 | GEO ENG 1150 or GEOLOGY 1110 | 3 |
| ENGLISH 1120 | 3 | Humanities/Soc Sci Elective[3] | 3 |
| FR ENG 1100 | 1 | | |
| History elective[2] | 3 | | |
| | 17 | | 17 |

Sophomore Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| MATH 2222 | 4 | MATH 3304 | 3 |
| PHYSICS 2135 | 4 | CIV ENG 2200 | 3 |
| GEO ENG 3148 | 3 | GEO ENG 2110 | 1 |

| | | | |
|---|---|---|---|
| Programming Elective[4] | 3 | GEOLOGY 2611 | 3 |
| | | GEO ENG 3175 | 3 |
| | | Humanities/Soc Sci Elective[3] | 3 |
| | 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[5] | 3 |
| GEOLOGY 3319 | 1 | Technical Elective[5] | 3 |
| ECON 1100 or 1200 | 3 | | |
| | 15 | | 15 |

Senior Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| GEO ENG 4010 | 0.5 | GEO ENG 4010 | 0.5 |
| GEO ENG 5441 | 3 | GEO ENG 5090 | 3 |
| GEO ENG 5443 | 3 | Geo Eng Elective[7] | 3 |
| ENGLISH 3560 | 3 | Eng Econ Elective[8] | 3 |
| Geophysics Elective[6] | 3 | Humanities/Soc Sci Elective[3] | 3 |
| Technical Elective[5] | 3 | Statistics Elective[9] | 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**

History Elective: choose one course from HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200

**3**

Humanities/Social Sciences Elective: HSS courses may be selected from courses in art, English and technical communication, etymology, foreign languages, music, philosophy, speech and media studies, theatre, economics, history, political science, and psychology. A total of 9 credit hours is required. Transfer credits from other universities in sociology and general humanities may count as humanities or social science electives.

**4**

Programming Elective: Select from COMP SCI 1500, both COMP SCI 1971 and COMP SCI 1981, or both COMP SCI 1972 and1982.

**5**

Technical Elective: Select from advanced courses in engineering as approved by advisor.

**6**

Geophysics Elective: Select from GEO ENG 5736, GEO ENG 5761, or GEO ENG 5782.
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

| | | |
|---|---|---|
| GEOLOGY 2096 | Field Geology | 3 |
| GEOLOGY 3410 | Introduction To Geochemistry | 3 |
| GEOLOGY 3620 | Stratigraphy And Sedimentation | 3 |
| GEOLOGY 4097 | Advanced Field Geology | 3 |
| GEOLOGY 4841 | Geological Field Studies | 3 |
| GEO ENG 5144 | Remote Sensing Technology | 3 |

### Engineering Geology and Geotechnics

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

### Environmental and Engineering Geophysics

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

| | | |
|---|---|---|
| GEOPHYS 4261 | Geophysical Instrumentation | 1 |
| GEOPHYS 5231 | Seismic Data Processing | 3 |
| Groundwater Hydrology and Environmental Protection | | |
| GEO ENG 4276 | Environmental Aspects Of Mining | |
| GEO ENG 5233 | Risk Assessment In Environmental Studies | 3 |
| GEO ENG 5235 | Environmental Geological Engineering | 3 |
| GEO ENG 5237 | Geological Aspects Of Hazardous Waste Management | 3 |
| GEO ENG 5320 | Groundwater Modeling | 3 |
| GEO ENG 5381 | Intermediate Subsurface Hydrology And Contaminant Transport Mechs | 3 |
| CIV ENG 5640 | Environmental Law And Regulations | 3 |
| PET ENG 3330 | Formation Evaluation | 3 |
| Quarry and Mine Engineering | | |
| GEO ENG 4276 | Environmental Aspects Of Mining | 3 |
| GEO ENG 5471 | Rock Engineering | 3 |
| GEO ENG 5575 | Aggregates And Quarrying | 3 |
| CIV ENG 3116 | Construction Materials, Properties And Testing | 3 |
| MIN ENG 3913 | Mineral Identification and Exploration | 3 |
| MIN ENG 5612 | Principles of Explosives Engineering | 3 |
| MIN ENG 5822 | Strata Control | 3 |
| MIN ENG 5823 | Rock Mechanics | 3 |
| MIN ENG 5912 | Mine Power and Drainage | 3 |
| Renewable and Conventional Energy Resources | | |
| GEO ENG 5146 | Applications Of Geographic Information Systems | 3 |
| GEO ENG 5556 | Renewable Energy Systems | 3 |
| ~~GEOLOGY 4421~~ | ~~Radioactive Waste Management And Remediation~~ | ~~3~~ |
| ~~or NUC ENG 4367~~ | ~~Radioactive Waste Management And Remediation~~ | |
| GEOLOGY 5511 | Applied Petroleum Geology | 3 |
| MIN ENG 5322 | Coal Mining Methods | 3 |

| | | |
|---|---|---|
| MIN ENG 5422 | Coal Preparation | 3 |
| MIN ENG 5823 | Rock Mechanics | 3 |
| PET ENG 2510 | Rock and Fluid Properties | 3 |
| PET ENG 3330 | Formation Evaluation | 3 |
| PET ENG 3520 | Petroleum Reservoir Engineering | 3 |
| PET ENG 4520 | Well Test Analysis | 3 |

## Accelerated BS/MS Option (Graduate Pathway)

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

Have completed 64 credit hours of course work, including:

All chemistry and mathematics requirements, and

21 credit hours of geological engineering courses with a minimum GPA of 3.20 in the geological engineering courses.

Complete an application listing the courses to be shared, with approval from the undergraduate advisor and a recommendation from the geological engineering faculty member who agrees to serve as their MS advisor. The shared courses may not be undergraduate research, special problems, or transfer courses. Applications are due within one semester of completing the last shared course.

Follow all geological engineering non-thesis MS program requirements (see the Graduate Catalog).

All other MS degree requirements remain the same. The program may be combined with existing honors research, emphasis areas, and certificate options. An additional six credit hours of coursework for graduate credit (beyond the shared BS/MS credits) can be taken while in the undergraduate program by applying for dual undergraduate/graduate enrollment. Taking additional courses for graduate credit as a dual enrolled student will require formal application to the graduate program. Upon application, acceptance 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

Geol 4421 is an inactive course that is being removed from the catalog.

Attach Budget

System Approval Letter

MDHE Approval

Supporting Documents

Reviewer Comments

**Jade McCain (jm558v) (10/24/24 8:36 am):** Rollback: Rollback per waiting for clarification from the Geology department on the inactivation of GEOLOGY 4421.

**Jade McCain (jm558v) (11/14/24 1:40 pm):** Rollback: Rollback per still waiting for the Environmental Engineering DC form to be submitted, so the DC forms can be approved alongside NUC ENG 4367.

**Jade McCain (jm558v) (12/16/24 2:08 pm):** Changed the start term to Fall 2025 for formatting purposes.

# Program Change Request

Date Submitted: 12/12/24 11:41 am

## Viewing: LOGIC-CTU : UCT - Logic and the Philosophical Foundations of STEM

Last approved: 03/09/21 4:16 pm

Last edit: 12/12/24 11:41 am

Changes proposed by: Irina Ivliyeva (ivliyeva)

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

Catalog Pages Using this Program

Philosophy

| | |
|---|---|
| Effective Catalog Edition | FS2025-SP2026 |
| Start Term | Fall 2025 |
| Program Type | Certificate |
| Academic Level | Undergraduate |
| Program Code | LOGIC-CTU |
| Department | Arts, Languages & Philosophy |
| Discipline | Philosophy |
| Title | |

## Approval Path

1. 12/12/24 11:46 am Irina Ivliyeva (ivliyeva): Approved for RPHILOSO Chair
2. 12/16/24 1:26 pm Jade McCain (jm558v): Approved for CCC Secretary
3. 12/16/24 1:48 pm Petra Dewitt (dewittp): Approved for Arts & Humanities DSCC Chair
4. 01/03/25 10:39 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

## History

1. Feb 3, 2021 by Patrick Gamez (gamezp)
2. Mar 9, 2021 by Crystal Wilson (wilsoncry)

UCT - Logic and the Philosophical Foundations of STEM

CIP Code

Intended Audience

Main Campus Students

Program Requirements and Description

# Logic and the Philosophical Foundations of STEM

How can we tell what makes a scientific theory *true*? How do experimental results and observations serve as evidence for a theory or law? Indeed, what *are* theories and laws? While it's easy to make appeals to something called "the scientific method," the reality is much more complex. The certificate in Logic and the Philosophical Foundations of STEM will provide students with a working grasp of the basic intellectual framework of modern science, mathematics, and engineering. For those who want to learn more about the very nature of the modern scientific enterprise, this program provides a chance to understand their conceptual, historical, and epistemological foundations.

Students may elect to not only develop their formal skills in the logic and reasoning that allow for the development of scientific theories, but also to go beyond the formal dimensions of science and interrogate the ways in which science has developed historically, and what that tells us about its structure.

The abilities and base of knowledge provided by this certificate can serve as a fascinating supplement to the study of the natural and human sciences, and signal to potential employers not only advanced reasoning skills but a curiosity and intellectual energy that can be applied in a wide variety of areas.

| | | |
|---|---|---|
| REQUIRED COURSES: | | |
| PHILOS 1115 | Logic and Reasoning: An Introduction | 3 |
| PHILOS 3254 | Symbolic Logic in Argumentation | 3 |
| A further six (6) credits can be chosen from: | | |
| PHILOS 4320 | Minds And Machines | 3 |
| PHILOS 4325 | Who Knows What? Knowledge, Truth, and Justification | 3 |
| PHILOS 4345 | Philosophy Of Science | 3 |
| PHILOS 4884 | Course PHILOS 4884 Not Found | 3 |
| HISTORY 3530 | History of Science | 3 |

Justification for request

The creation of this co-taught course results from the Curriculum Development Grant from CASE awarded to Dr. Burns (psychology) and Dr. Finke (Arts, languages, and philosophy) in December of 2024. It also has the consequence of expanding the limited number of 4000-level courses available to philosophy majors so that time to graduation is reduced.

Attach Budget

System Approval

Letter

MDHE Approval

Supporting
Documents

Reviewer
Comments

Key: 366

# Program Change Request

Date Submitted: 11/08/24 11:15 am

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

Last approved: 09/16/24 3:49 pm

Last edit: 11/21/24 3:13 pm

Changes proposed by: Jade McCain (jm558v)

Catalog Pages Using this Program

Petroleum Engineering

| | |
|---|---|
| Effective Catalog Edition | FS2025-SP2026 |
| Start Term | 8/18/2025 |
| 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. **RGEOSENG Chair**
2. **CCC Secretary**
3. **Sciences DSCC Chair**
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. 11/08/24 11:28 am Stephen Gao (sgao): Approved for RGEOSENG Chair
2. 11/08/24 11:35 am Jade McCain (jm558v): Approved for CCC Secretary
3. 11/12/24 12:21 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 11/21/24 3:14 pm Kelly Liu (liukh): Approved for Engineering DSCC Chair

5. 01/03/25 10:39 am 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)

Petroleum Engineering BS

CIP Code 14.2501 - Petroleum Engineering.

Program Requirements and Description

# Bachelor of Science
# Petroleum Engineering

For the Bachelor of Science degree in Petroleum Engineering a minimum of 127 ~~129~~ 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.

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

Freshman Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| FR ENG 1100 | 1 | MATH 1215[2] | 4 |
| CHEM 1310[1] | 4 | PHYSICS 1135 | 4 |
| CHEM 1319 | 1 | ~~MECH ENG 1720~~ | ~~3~~ |

| | | | |
|---|---|---|---|
| MATH 1214 or 1211[2] | 4 | GEO ENG 1150 or GEOLOGY 1110 | 3 |
| HISTORY 1200, or 1300, or 1310, or POL SCI 1200 | 3 | ~~PET ENG 2510~~ | ~~3~~ |
| ENGLISH 1120 | 3 | COMP SCI 1500 | 3 |
| ~~PET ENG 1120~~ | ~~1~~ | PET ENG 1120 | 1 |
| | 16 | | 15 |

Sophomore Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| MATH 2222 | 4 | MATH 3304 | 3 |
| PHYSICS 2135 | 4 | MECH ENG 2350 | 2 |
| ~~PET ENG 3320~~ | ~~3~~ | CIV ENG 2210 | 3 |
| HUMANITIES/SS ELECTIVES[4] | 3 | ECON 1100 or 1200 | 3 |
| CIV ENG 2200 | 3 | PET ENG 3520 | 3 |
| PET ENG 2510 | 4 | PET ENG 3330 | 3 |
| | 18 | | 17 |

Junior Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| CIV ENG 3330 | 3 | PET ENG 4410 | 3 |
| PET ENG 4210[3] | 3 | PET ENG 4631 | 3 |
| CS PROGRAMMING ELECTIVE[6] | 3 | MECH ENG 2527 | 3 |
| ~~HUMANITIES/SS ELECTIVES~~[4] | ~~3~~ | ~~GEOLOGY 5513~~ | ~~3~~ |
| GEOLOGY 3310 | 3 | ENGLISH 1160, or 1600, or 3560 | 3 |
| GEOLOGY 3319 | 1 | HUMANITIES/SS ELECTIVES | 3 |
| GEOLOGY 5513 | 3 | | |
| | 16 | | 15 |

Senior Year

| First Semester | Credits | Second Semester | Credits |
|---|---|---|---|
| PET ENG 4520 | 3 | PET ENG 4097 | 3 |
| PET ENG 5801 | 3 | GEO ENG 4115 | 3 |
| PET ENG Elective[3] | 3 | Hum/Soc Sci Elective[4] | 3 |
| PET ENG 4590 | 3 | PET ENG 4531 | 3 |
| PET ENG 4720 | 3 | PET ENG 5050 | 3 |
| | 15 | | 15 |

Total Credits: 127

**1**

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

**2**

MATH 1208 or MATH 1211 may be substituted for MATH 1214. MATH 1221 may be substituted for MATH 1215.

**3**

Select Petroleum Engineering electives in accordance with interest and availability of courses. Courses include secondary recovery of petroleum, advanced drilling technology, well completion design and artificial lift.
4

Humanities/Social Science electives are to be selected from a list of approved courses to be taken in accordance with the University policy. Petroleum Engineering students are especially encouraged to study foreign languages
5

All Petroleum Engineering students must take the Fundamentals of Engineering Examination prior to graduation. A passing grade on this examination is not required to earn a B.S. degree, however, it is the first step to becoming a registered professional engineer. This requirement is part of Missouri S&T assessment process as described in Assessment Requirements found elsewhere in this catalog. Students must sign a release form giving the University access to their Fundamentals of Engineering Examination score.
6

selection can be COMP SCI 1972 and COMP SCI 1982, or COMP SCI 2300, or be replaced by formal online program course credits.
The total number of credit hours required for a degree in Petroleum Engineering is 127. ~~129.~~
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

there are some course adjustment:

1. Combine PE2510 and PE3320 to reduce the total credit hours, into PE2510 with adjusted course title and content, as the preliminary Petroleum Engineering course as prerequisite of many other course. To be offered in Fall of Sophomore year. Accordingly, cancel the original PE2510 in Freshman year Spring semester and PE3320 in sophomore year Fall semester.

2. Geology 5513 is now only offering in Fall semester, so move it to Fall semester in Junior year. Accordingly more Humanities/SS elective to Spring semester in Junior year to balance the total credit hours in each semester affected.

3. Reflect the change of Mechanical Engineering 1720 to CS 1500 for Computational Problem Solving, as in the curriculum change from 2022 Fall.

Attach Budget

System Approval Letter

MDHE Approval

Supporting Documents

Reviewer Comments

Key: 108

# Experimental Change Request

## New Proposal

Date Submitted: 12/09/24 9:00 am

## Viewing: PHYSICS 5001.004: Quantum Materials

### Last edit: 01/03/25 8:19 am

Changes proposed by: Thomas Vojta (vojtat)

| | |
|---|---|
| Requested Effective Date | Fall 2025 |
| Department | Physics (RPHYSICS) |
| Discipline | Physics (PHYSICS) |
| Course Number | 5001 |
| Topic ID | 004 |
| Experimental Title | Quantum Materials |
| Experimental Abbreviated Course Title | Quantum Materials |
| Co-Listed Course | |
| Instructors | Dr. Halyna Hodovanets. |
| Experimental Catalog Description | Introduction into crystalline quantum materials. Topics include classes of quantum materials, basic characterization techniques, and materials tuning, crystal growth techniques, thermodynamics of phase diagrams, and binary and ternary phase diagrams. |
| Prerequisite(s) | Physics 2135 or Physics 2111. |
| Corequisite(s) | |
| Field Trip Statement | |

Credit Hours

| Credit Type | Credit Hours |
|---|---|
| Lecture | 3 |

| | |
|---|---|
| Total: | 3 |
| Required for Majors | No |
| Elective for Majors | Yes |
| Grading Basis | |

### In Workflow

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

### Approval Path

1. 12/09/24 9:02 am Thomas Vojta (vojtat): Approved for RPHYSICS Chair
2. 12/09/24 9:20 am Jade McCain (jm558v): Approved for CCC Secretary
3. 01/02/25 6:00 pm Katie Shannon (shannonk): Approved for Sciences DSCC Chair
4. 01/03/25 10:39 am Jade McCain (jm558v): Approved for Pending CCC Agenda post

| | |
|---|---|
| Repeatable | No |
| Justification for experimental course: | Quantum materials, i.e., materials whose properties are dominated by quantum phenomena, have seen an enormous interest in recent years. They form the basis of technologies ranging from quantum sensors to quantum computing and information. The proposed course closes the gap between topics covered in a standard solid-state physics class and the current research. |
| Reviewer Comments | **Jade McCain (jm558v) (01/03/25 8:19 am):** Assigned Topic ID. |

Key: 505