

# GEOLOGICAL ENGINEERING (B.S.)

To graduate in this program, a grade of C or better is required in all math, science, and engineering courses used to fulfill degree requirements. Students may accumulate no more than 14 credit hours of D or F in math, science, or engineering courses. Included in this number are multiple repeats of a single class or single repeats of multiple classes, as well as courses transferred from other institutions. Students who exceed 14 credits of D or F will be permanently disqualified from pursuing the B.S. degree in Geological Engineering at the University of Idaho. To complete this degree, all students must show proof of registering for the Fundamentals of Engineering (FE) Exam.

Required course work includes the university requirements (see regulation J-3 (<https://catalog.uidaho.edu/general-requirements-academic-procedures/j-general-requirements-baccalaureate-degrees/>)) and:

Code	Title	Hours
AMST 3010	Studies in American Culture	3
CE 1110	Civil Engineering Drafting	3
CE 2110	Engineering Surveying	3
CE 2150	Civil Engineering Analysis and Design	3
CE 3250	Fundamentals of Hydrologic Engineering	3
CE 3600	Fundamentals of Geotechnical Engineering	4
CE 4930	Senior Design I	2
CE 4940	Senior Design II	3
CHEM 1111	General Chemistry I	3
CHEM 1111L	General Chemistry I Laboratory	1
COMM 1101	Fundamentals of Oral Communication	3
ECON 2201	Principles of Macroeconomics	3
or ECON 2202	Principles of Microeconomics	
or ECON 2720	Foundations of Economic Analysis	
ENGL 1102	Writing and Rhetoric II	3
ENGR 1230	First Year Engineering	2
ENGR 2100	Engineering Statics	3
ENGR 2200	Engineering Dynamics	3
ENGR 2400	Introduction to Electrical Circuits	3
ENGR 3350	Engineering Fluid Mechanics	3
ENGR 3500	Engineering Mechanics of Materials	3
ENGR 3600	Engineering Economy	2
GEOG 1650	Human Geography	3
or GEOG 2000	World Cultures and Globalization	
GEOL 1110	Physical Geology for Science Majors	3
GEOL 1110L	Physical Geology for Science Majors Lab	1
GEOL 2490	Mineralogy and Optical Mineralogy	4
GEOL 3450	Structural Geology	4
GEOL 3610	Geology and the Environment	3
GEOL 4220	Principles of Geophysics	4
GEOL/GEOE 4280	Geostatistics	3
HYDR 4090	Quantitative Hydrogeology	3
MATH 1170	Calculus I	4
MATH 1750	Calculus II	4

MATH 1830	Introduction to Data Science in Python	3
MATH 2750	Calculus III	3
MATH 3100	Ordinary Differential Equations	3
PHIL 1103	Introduction to Ethics	3
PHYS 2110	Engineering Physics I	3
PHYS 2110L	Laboratory Physics I	1
STAT 3010	Probability and Statistics	3
<b>CE Electives</b>		
CE 4600	Geotechnical Engineering Design	3
CE 4840	Engineering Law and Contracts	3
<b>GEOE Electives</b>		
GEOE 4070	Rock Mechanics	3
GEOE 4650	Excavation and Materials Handling	3
<b>Total Hours</b>		<b>123</b>

**Courses to total at least 123 credits for this degree, not counting Math below 1170 or English below 1102.**

## Four-Year Plan

<b>Fall Term 1</b>		<b>Hours</b>
COMM 1101	Fundamentals of Oral Communication	3
ENGR 1230	First Year Engineering	2
GEOL 1110	Physical Geology for Science Majors	3
GEOL 1110L	Physical Geology for Science Majors Lab	1
GEOG 1650 or GEOL 2000	Human Geography or Seminar	3
MATH 1170	Calculus I	4
<b>Hours</b>		<b>16</b>
<b>Spring Term 1</b>		
CE 1110	Civil Engineering Drafting	3
ENGL 1102	Writing and Rhetoric II	3
ENGR 2100	Engineering Statics	3
PHYS 2110	Engineering Physics I	3
PHYS 2110L	Laboratory Physics I	1
MATH 1750	Calculus II	4
<b>Hours</b>		<b>17</b>
<b>Fall Term 2</b>		
CE 2110	Engineering Surveying	3
CHEM 1111	General Chemistry I	3
CHEM 1111L	General Chemistry I Laboratory	1
ENGR 2200	Engineering Dynamics	3
MATH 2750	Calculus III	3
STAT 3010	Probability and Statistics	3
<b>Hours</b>		<b>16</b>
<b>Spring Term 2</b>		
CE 2150	Civil Engineering Analysis and Design	3
CE 3600	Fundamentals of Geotechnical Engineering	4
ENGR 3350	Engineering Fluid Mechanics	3
ENGR 3500	Engineering Mechanics of Materials	3
MATH 3100	Ordinary Differential Equations	3
<b>Hours</b>		<b>16</b>
<b>Fall Term 3</b>		
CE 3250	Fundamentals of Hydrologic Engineering	3
ENGR 2400	Introduction to Electrical Circuits	3
GEOL 3610	Geology and the Environment	3
MATH 1830	Introduction to Data Science in Python	3
PHIL 1103	Introduction to Ethics	3
<b>Hours</b>		<b>15</b>

**Spring Term 3**

GEOE 4070 or GEOE 4650	Rock Mechanics or Excavation and Materials Handling	3
GEOL 2490	Mineralogy and Optical Mineralogy	4
GEOL 3450	Structural Geology	4
GEOL 4280 or GEOE 4280	Geostatistics or Geostatistics	3

**Hours** 14

**Fall Term 4**

AMST 3010	Studies in American Culture	3
CE 4930	Senior Design I	2
ENGR 3600	Engineering Economy	2
GEOE 4070 or GEOE 4650	Rock Mechanics or Excavation and Materials Handling	3
HYDR 4090	Quantitative Hydrogeology	3

**Hours** 13

**Spring Term 4**

CE 4600	Geotechnical Engineering Design	3
CE 4840	Engineering Law and Contracts	3
CE 4940	Senior Design II	3
ECON 2201 or ECON 2202 or ECON 2720	Principles of Macroeconomics or Principles of Microeconomics or Foundations of Economic Analysis	3
GEOL 4220	Principles of Geophysics	4

**Hours** 16

**Total Hours** 123

## 5-Year Plan

**Fall Term 1**

COMM 1101	Fundamentals of Oral Communication	3
ENGL 1101	Writing and Rhetoric I	3
ENGR 1230	First Year Engineering	2
MATH 1143	Precalculus I: Algebra	3
MATH 1144	Precalculus II: Trigonometry	1

**Hours** 12

**Spring Term 1**

CE 1110	Civil Engineering Drafting	3
ENGL 1102	Writing and Rhetoric II	3
MATH 1170	Calculus I	4
PHIL 1103	Introduction to Ethics	3

**Hours** 13

**Fall Term 2**

CE 2110	Engineering Surveying	3
CHEM 1111	General Chemistry I	3
CHEM 1111L	General Chemistry I Laboratory	1
GEOG 1650 or GEOG 2000	Human Geography or World Cultures and Globalization	3
GEOL 1110	Physical Geology for Science Majors	3
GEOL 1110L	Physical Geology for Science Majors Lab	1

**Hours** 14

**Spring Term 2**

CE 2150	Civil Engineering Analysis and Design	3
ECON 2201 or ECON 2202 or ECON 2720	Principles of Macroeconomics or Principles of Microeconomics or Foundations of Economic Analysis	3
ENGR 2100	Engineering Statics	3
MATH 1750	Calculus II	4

**Hours** 13

**Fall Term 3**

ENGR 2200	Engineering Dynamics	3
MATH 2750	Calculus III	3
PHYS 2110	Engineering Physics I	3

PHYS 2110L	Laboratory Physics I	1
STAT 3010	Probability and Statistics	3

**Hours** 13

**Spring Term 3**

CE 3600	Fundamentals of Geotechnical Engineering	4
ENGR 3350	Engineering Fluid Mechanics	3
ENGR 3500	Engineering Mechanics of Materials	3
MATH 3100	Ordinary Differential Equations	3

**Hours** 13

**Fall Term 4**

CE 3250	Fundamentals of Hydrologic Engineering	3
ENGR 2400	Introduction to Electrical Circuits	3
GEOL 3610	Geology and the Environment	3
MATH 1830	Introduction to Data Science in Python	3

**Hours** 12

**Spring Term 4**

GEOG 4070 or GEOE 4650	Spatial Analysis and Modeling or Excavation and Materials Handling	3
GEOL 2490	Mineralogy and Optical Mineralogy	4
GEOL 3450	Structural Geology	4
GEOL 4280 or GEOE 4280	Geostatistics or Geostatistics	3

**Hours** 14

**Fall Term 5**

AMST 3010	Studies in American Culture	3
CE 4930	Senior Design I	2
ENGR 3600	Engineering Economy	2
GEOG 4070 or GEOE 4650	Spatial Analysis and Modeling or Excavation and Materials Handling	3
HYDR 4090	Quantitative Hydrogeology	3

**Hours** 13

**Spring Term 5**

CE 4600	Geotechnical Engineering Design	3
CE 4840	Engineering Law and Contracts	3
CE 4940	Senior Design II	3
GEOL 4220	Principles of Geophysics	4

**Hours** 13

**Total Hours** 130

The degree map is a guide for the timely completion of your curricular requirements. Your academic advisor or department may be contacted for assistance in interpreting this map. This map is not reflective of your academic history or transcript and it is not official notification of completion of degree or certificate requirements. Please contact the Registrar's Office regarding your official degree/certificate completion status.

By graduation, students will be able to demonstrate the following skills proficiently:

1. Ability to apply mathematics including differential equations, calculus-based physics, and chemistry, to geological engineering problems.
2. Ability to identify rocks and minerals and proficiency in geological science topics including the application of geologic field proficiency to engineering practice.
3. Ability to visualize and solve geological problems in three and four dimensions.
4. Ability to apply principles of geology and elements of geophysics.
5. Ability to apply engineering knowledge to design solutions for geological engineering problems in one of the following areas: the distribution of physical and chemical properties of earth materials, including hydrogeology, and fluid hydrocarbons; the effects of surface and near-surface natural processes; the impacts of construction projects;

the impacts of exploration, development, and extraction of natural resources, and consequent remediation; disposal of wastes; and other activities of society on these materials and processes, as appropriate.