

Earth Science

Department Chair: Daniel Horns

Office: PS 213

Telephone: 801-863-8582 or 863-6295

E-mail: hornsda@uvu.edu

Advisor: James Holmes

Office: PS 202d

Telephone: 801-863-8616

E-mail: James.Holmes@uvu.edu

Program Director for
Environmental Management:

Jim Callison

Office: EN 101

Telephone: 801-863-8697

Faculty:

Professor

Daniel Horns

Paul Taylor

Associate Professor

Joel Bradford

Michael Bunds

Eddy Cadet

Jim Callison

William Dinklage

Steven Emerman

Assistant Professor

Dan Stephen

Administrative Assistant:

Kellie D. Hancock

Laboratory Instructor:

Emily Bartlett

College of Science and Health

Dean: Sam Rushforth

Office: PS 201a

Telephone: 801-863-8980

CAREER OPPORTUNITIES

Examples of occupations open to graduates of Earth Science bachelor programs are: exploring for oil, coal, gas, and minerals; finding, developing, and protecting water resources; assessing geologic hazards and protecting society from those hazards, assessing and cleaning pollution; and regulating potentially-polluting industries. Current employment opportunities for graduates from Earth Science programs are strong.

PROGRAMS

Students in Earth Science may receive: Bachelor of Science in Earth Science with an Emphasis in Geology; Bachelor of Science in Earth Science with an Emphasis in Environmental Management; Bachelor of Science in Earth Science Education; Bachelor of Science or Arts in Integrated Studies with an emphasis in Earth Science.

Certificate in Water and Wastewater Operations

31 CREDITS

Discipline Core Requirements: 22 Credits

- ENVT 1200 Environmental Worker Safety 3.0
- ENVT 1210 Introduction to Water Reclamation (3.0)
- or ENVT 1360 Introduction to Water Treatment 3.0
- ENVT 1300 Environmental Lab and Sampling 3.0
- ENVT 3280 Environmental Law 3.0
- ENGL 1010 Introduction to Writing 3.0
- DGM 2010 Business Computer Proficiency 3.0
- or Business Computer Proficiency Exam
- MAT 1010 Intermediate Algebra 4.0

Elective Requirements: 9 Credits

- Must take three of the following courses 9.0
- ENVT 3320 Hydraulics of Water (3.0)
 - ENVT 1510 Hazardous Materials Emergency Response (3.0)
 - ENVT 3630 Introduction to Geographic Information Systems (4.0)
 - ENVT 3790 Hydrology (3.0)
 - ENVT 1270 Environmental Microbiology (3.0)
 - ENVT 3330 Water Resources Management (3.0)

AS Pre Major in

Physical Science

63 CREDITS

General Education Requirements: 38 Credits

- ENGL 1010 Introduction to Writing 3.0
 - ENGL 2010 Intermediate Writing--Humanities/Social Sciences 3.0
 - or ENGL 2020 Intermediate Writing--Science and Technology (3.0)
 - MATH 1050 College Algebra 4.0
- Complete one of the following: 3.0
- HIST 2700 US History to 1877 (3.0)
 - or HIST 2710 US History since 1877 (3.0)
 - HIST 1700 American Civilization (3.0)
 - HIST 1740 US Economic History (3.0)
 - POLS 1000 American Heritage (3.0)
 - POLS 1100 American National Government (3.0)

Complete the following:

- PHIL 2050 Ethics and Values 3.0
- HLTH 1100 Personal Health and Wellness 2.0
- or PES 1097 Fitness for Life (2.0)

Distribution Courses

- Biology 3.0
- PHYS 2210 Physics for Scientists and Engineers I 4.0
- PHYS 2220 Physics for Scientists and Engineers II 4.0
- Humanities Distribution 3.0
- Fine Arts Distribution 3.0
- Social/Behavioral Science 3.0

Discipline Core Requirements: 17 Credits

- CHEM 1210 Principles of Chemistry I 4.0
- CHEM 1215 Principles of Chemistry I Laboratory 1.0
- MATH 1210 Calculus I 5.0
- MATH 1220 Calculus II 5.0
- PHYS 2215 Physics for Scientists and Engineers I Lab 1.0
- PHYS 2225 Physics for Scientists and Engineers II Lab 1.0

Elective Requirements: 8 Credits

Complete 8 credits from the following: 8.0

- CHEM 1220 Principles of Chemistry II (4.0)
- CHEM 2310 Organic Chemistry I (4.0)
- CHEM 2315 Organic Chemistry I Laboratory (1.0)
- CHEM 2325 Organic Chemistry II Laboratory (1.0)
- ENGR 2450 Computational Methods for Engineering Analysis (3.0)
- GEO 1010 Introduction to Geology (3.0)
- GEO 1220 Historical Geology (3.0)
- GEO 1080 Introduction to Oceanography (3.0)
- MATH 2210 Calculus III (3.0)
- MATH 2040 Principles of Statistics (4.0)
- MATH 2270 Linear Algebra (3.0)
- MATH 2280 Ordinary Differential Equations (3.0)
- METO 1010 Introduction to Meteorology (3.0)

Graduation Requirements:

- 1 Completion of a minimum of 63 semester credits.
- 2 Overall grade point average of 2.0 (C) or above (departments may require a higher GPA).
- 3 Residency hours: minimum of 20 credit hours through course attendance at UVU.
- 4 Completion of GE and specified departmental requirements.

BS in Earth Science 121-123 CREDITS

General Education Requirements: 27 Credits

- ENGL 1010 Introduction to Writing 3.0
 - ENGL 2020 Intermediate Writing--Science and Technology 3.0
 - MATH 1050 College Algebra 4.0
- Complete one of the following: 3.0
- HIST 2700 US History to 1877 (3.0)
 - and HIST 2710 US History since 1877 (3.0)
 - HIST 1700 American Civilization (3.0)
 - HIST 1740 US Economic History (3.0)
 - POLS 1000 American Heritage (3.0)
 - POLS 1100 American National Government (3.0)

Complete the following:

- PHIL 2050 Ethics and Values 3.0
- HLTH 1100 Personal Health and Wellness (2.0)
- or PES 1097 Fitness for Life 2.0

Distribution Courses

- Biology*
- Physical Science*
- Additional Biology or Physical Science*
- Humanities Distribution 3.0
- Fine Arts Distribution 3.0
- Social/Behavioral Science 3.0

Discipline Core Requirements: 56 Credits

- BIOL 1010 General Biology 3.0
 - CHEM 1210 Principles of Chemistry I 4.0
 - CHEM 1215 Principles of Chemistry I Laboratory 1.0
 - CHEM 1220 Principles of Chemistry II 4.0
 - CHEM 1225 Principles of Chemistry II Laboratory 1.0
 - CHEM 3020 Environmental Chemistry 3.0
 - GEO 1010 Introduction to Geology 3.0
 - GEO 1015 Introduction to Geology Laboratory 1.0
 - GEO 3080 Earth Materials 4.0
 - GEO 3210 Environmental Geology 4.0
 - MATH 1060 Trigonometry 3.0
 - MATH 2040 Principles of Statistics 4.0
- Complete 21 credits from the following list: 21.0
- BIOL 3800 Conservation Biology (3.0)
 - or BIOL 4500 Principles of Evolution (3.0)
 - ENVT 2730 Introduction to Soils (3.0)
 - ENVT 3280 Environmental Law (3.0)
 - ENVT 3290 Environmental Permits and Reports (3.0)
 - ENVT 3790 Hydrology (3.0)
 - ENVT 482R Geologic/Environmental Internship (1.0)
 - or GEO 482R Geologic/Environmental Internship (1.0)
 - GEOG 3630 Introduction to Geographic Information Systems (4.0)
 - GEO 1220 Historical Geology (3.0)
 - and GEO 1225 Historical Geology Laboratory (1.0)
 - GEO 1080 Introduction to Oceanography (3.0)
 - and GEO 1085 Introduction to Oceanography Laboratory (1.0)
 - GEO 3400 Forensic Geology (4.0)
 - METO 1010 Introduction to Meteorology (3.0)
 - and METO 1020 Introduction to Meteorology Laboratory (1.0)
 - METO 3100 Climate and the Earth System (3.0)

Emphasis:

Complete one of the following:

- * Environmental Management 40.0
- or Geology 38.0

Graduation Requirements:

- 1 Completion of a minimum of 121-123 semester credits.
- 2 Overall grade point average of 2.0 (C) or above.
- 3 Grade of C- or better in every GEO course.
- 4 Residency hours--minimum of 30 credit hours through course attendance at UVU, with at least 10 hours earned in the last 45 hours.
- 5 Completion of GE and specified departmental requirements.

6 Students completing a bachelor degree following the 2008 or later catalog must complete one course that meets the Global/Intercultural Requirement, indicated by a course number ending in G. For a complete listing, see page 25.

Note: *This requirement is satisfied within the discipline core requirements.

Emphasis in Environmental Management 40 Credits

Emphasis Requirements: 22 Credits

- ENVT 1110 Introduction to Environmental Management 3.0
- ENVT 1200 Environmental Worker Safety 3.0
- ENVT 1300 Environmental Lab and Sampling 3.0
- ENVT 1510 Hazardous Materials Emergency Response 3.0
- ENVT 2560 Environmental Health 3.0
- ENVT 2710 Environmental Careers 1.0
- ENVT 1270 Environmental Microbiology 3.0
- ENVT 3850 Environmental Policy 3.0

Emphasis Elective Requirements: 18 Credits

Take 18 credits from the following: 18.0

- ENVT 1210 Introduction to Water Reclamation (3.0)
- ENVT 1360 Introduction to Water Treatment (3.0)
- ENVT 2600 Skills for Humanitarian Projects (3.0)
- ENVT 2730 Introduction to Soils (3.0)
- ENVT 282R Environmental Internship (1.0)
- ENVT 3010 Environmental Toxicology (3.0)
- ENVT 3320 Hydraulics of Water (3.0)
- ENVT 3330 Water Resources Management (3.0)
- ENVT 3530 Environmental Management Systems (3.0)
- ENVT 3630 Introduction to Geographic Information Systems (4.0)
- ENVT 3550 Site Investigation (3.0)
- ENVT 3700 Current Topics in Environmental Management (3.0)
- ENVT 3750 Land Use Planning (3.0)
- ENVT 3770 Natural Resources Management (3.0)
- ENVT 3800 Energy Use on Earth (3.0)
- ENVT 495R Special Projects in Environmental Management (1.0)
- GEO 4500 Sedimentary Geology (4.0)
- CHEM 2310 Organic Chemistry I (4.0)

Emphasis in Geology 38 Credits

Emphasis Requirements: 38 Credits

- MATH 1210 Calculus I 5.0
- MATH 1220 Calculus II 5.0
- PHYS 2210 Physics for Scientists and Engineers I 4.0
- PHYS 2220 Physics for Scientists and Engineers II 4.0
- GEO 3200 Geologic Hazards 4.0
- GEO 3700 Structure and Tectonics 4.0
- GEO 4500 Sedimentary Geology 4.0
- GEO 4510 Paleontology 4.0
- GEO 4600 Field Experience 4.0

BS in Earth Science Education 121 CREDITS

Matriculation Requirements:

- 1 Complete the following courses: GEO 1010, GEO 1015, MATH 1050, MATH 1060, BIOL 1610 with a grade of "C-" or higher in each.
- 2 Complete a minimum of 30 semester hours of college credit.
- 3 Apply to the department of Earth Science for admission.

General Education Requirements: 27 Credits

- ENGL 1010 Introduction to Writing 3.0
 - ENGL 2010 Intermediate Writing--Humanities/ Social Sciences 3.0
 - or ENGL 2020 Intermediate Writing--Science and Technology (3.0)
 - MATH 1050 College Algebra 4.0
- Complete one of the following: 3.0
- HIST 2700 US History to 1877 (3.0)

- and HIST 2710 US History since 1877 (3.0)
 - HIST 1700 American Civilization (3.0)
 - HIST 1740 US Economic History (3.0)
 - POLS 1000 American Heritage (3.0)
 - POLS 1100 American National Government (3.0)
- Complete the following:
- PHIL 2050 Ethics and Values 3.0
 - HLTH 1100 Personal Health and Wellness (2.0)
 - or PES 1097 Fitness for Life 2.0

Distribution Courses

- Biology*
- Physical Science*
- Additional Biology or Physical Science*
- Humanities Distribution 3.0
- Fine Arts Distribution 3.0
- Social/Behavioral Science 3.0

Discipline Core Requirements: 84 Credits

- PHYS 1040 Elementary Astronomy 3.0
- BIOL 1010 General Biology 3.0
- BIOL 2500 Environmental Biology 3.0
- CHEM 1210 Principles of Chemistry I 4.0
- CHEM 1215 Principles of Chemistry I Laboratory 1.0
- CHEM 1220 Principles of Chemistry II 4.0
- CHEM 1225 Principles of Chemistry II Laboratory 1.0
- GEO 1010 Introduction to Geology 3.0
- GEO 1015 Introduction to Geology Laboratory 1.0
- GEO 3080 Earth Materials 4.0
- GEO 3700 Structure and Tectonics 4.0
- GEO 4500 Sedimentary Geology 4.0
- GEO 4200 Teaching Methods in Science 3.0
- MATH 1060 Trigonometry 3.0
- METO 3100 Climate and the Earth System 3.0
- PHYS 2010 College Physics I 4.0
- PHYS 2015 College Physics I Lab 1.0
- PHYS 2020 College Physics II 4.0
- PHYS 2025 College Physics II Lab 1.0

Education Courses

- EDSC 2540 Development of the Adolescent Student 2.0
- EDSP 3400 Exceptional Students 2.0
- EDSC 3000 Educational Psychology 3.0
- EDSC 3050 Foundations of American Education 2.0
- EDSC 445G Multicultural Instruction ESL 2.0
- EDSC 4440 Content Area Reading and Writing 3.0
- EDSC 4550 Secondary Curriculum Instruction and Assessment 4.0
- EDSC 3250 Instructional Media 2.0
- EDSC 4200 Classroom Management I 1.0
- EDSC 4250 Classroom Management II 1.0
- EDSC 4850 Student Teaching--Secondary (4.0) 8.0

Elective Requirements: 10 Credits

Any 10 credit hours of the student's choosing. 10.0

Graduation Requirements:

- 1 Completion of a minimum of 121 semester credits.
- 2 Overall grade point average of 2.0 (C) or above. (Departments may require a higher GPA.)
- 3 Residency hours -- minimum of 20 credit hours through course attendance at UVU.
- 4 Completion of GE and specified departmental requirements.
- 5 Grade of C- or higher in all GEO, BIOL, and METO courses.
- 6 Students completing a bachelor degree following the 2008 or later catalog must complete one course that meets the Global/Intercultural Requirement, indicated by a course number ending in G. For a complete listing, see page 25.

Note: *This requirement is fulfilled with the core requirements.

Minor in Earth Science 23 CREDITS

Matriculation Requirements:

- 1 Admitted to a bachelor degree program at UVU.

Discipline Core Requirements: 23 Credits

- GEO 1010 Introduction to Geology 3.0
 - and GEO 1015 Introduction to Geology Laboratory 1.0
 - and GEO 3080 Earth Materials 4.0
- Complete two from: 7.0
- GEO 1020 Prehistoric Life (3.0)
 - or GEO 1080 Introduction to Oceanography (3.0)
 - and GEO 1085 Introduction to Oceanography Laboratory (1.0)
 - or METO 1010 Introduction to Meteorology (3.0)

- and METO 1020 Introduction to Meteorology Laboratory (1.0) 8.0
- Complete two from: 8.0
- GEO 3200 Geologic Hazards (4.0)
 - GEO 3210 Environmental Geology (4.0)
 - GEO 3700 Structure and Tectonics (4.0)
 - GEO 4500 Sedimentary Geology (4.0)
 - GEO 4510 Paleontology (4.0)

BA/BS in Integrated Studies 123 CREDITS

The following Integrated Studies Emphasis is available (see the Integrated Studies section of this catalog for complete degree requirement listings.)

Emphasis in Earth Science 18 Credits

Emphasis Requirements: 18 Credits

- Earth Science Emphasis:
- GEO 1010 Introduction to Geology 3.0
 - GEO 1015 Introduction to Geology Laboratory (highly recommended) (1.0)
- Complete one of the following sets (lab is highly recommended) 3.0
- GEO 1220 Historical Geology (3.0)
 - and GEO 1225 Historical Geology Laboratory (1.0)
 - or GEO 1080 Introduction to Oceanography (3.0)
 - and GEO 1085 Introduction to Oceanography Laboratory (1.0)
 - or METO 1010 Introduction to Meteorology (3.0)
 - and METO 1020 Introduction to Meteorology Laboratory (1.0)
- Complete three courses from the following: 12.0
- METO 3100 Climate and the Earth System (3.0)
 - and METO 1020 Introduction to Meteorology Laboratory (1.0)
 - or GEO 1015 Introduction to Geology Laboratory (1.0)
 - or GEO 1225 Historical Geology Laboratory (1.0)
 - GEO 3080 Earth Materials (4.0)
 - GEO 3200 Geologic Hazards (4.0)
 - GEO 3210 Environmental Geology (4.0)
 - GEO 3700 Structure and Tectonics (4.0)
 - GEO 4500 Sedimentary Geology (4.0)
 - GEO 4510 Paleontology (4.0)

See Course Descriptions section of the catalog for detailed course information. This department manages the following course prefixes:

- ENVT, Environmental Management
- GEO, Geology
- METO, Meteorology