

Welcome to the

Environmental Geology Major

in the College of Physical and Mathematical Sciences

College Advisement Center

Website: <https://science.byu.edu/advisement>
Email: science.math.advisement@byu.edu
Phone: 801-422-2674
Office: N-181 ESC

Geological Sciences Department

Website: www.geology.byu.edu
Email: geology@byu.edu
Phone: 801-422-3918
Office: S-389 ESC

Faculty Advisor – Jani Radebaugh*

Email: janirad@byu.edu
Phone: 801-422-9127
Office: S-383 ESC

Internship Coordinator – Keryn Ross

Email: volcano@gmail.com

University Career Services – Anna Kennington

Website: careers.byu.edu (Handshake--see flyer in packet)
Email: anna.kennington@byu.edu
Phone: 801-422-5944 (schedule appointment)
Office: C-106 BNSN

STEM Alliance--Connect with STEM employers, mentors, and clubs: www.stem.byu.edu

Club – Geology Club

Advisor: Ron Harris (ESC S-317)
Email: rharris@byu.edu
Phone: 801-422-9264

AAPG Chapter

Advisor: Sam Hudson (ESC S-337)
Email: sam.hudson@byu.edu
Phone: 801-422-4657



*Please meet with Dr. Jani Radebaugh soon after entering the major for important information about the course sequencing.

Things to Know

Resources for Graduation Planning

- Flow Charts and Major Academic Plans (MAPs) can be found here: <https://science.byu.edu/advisement/explore-majors-and-minors>.
- Academic advisors in N-181 ESC will help you understand course sequencing and help you plan classes to efficiently fill requirements. They can also help you with study skills and initial career exploration as well as connecting you with correct resources.
- Plan and register from your plan on MyMAP. Your academic advisor can help you understand how to best utilize this resource.
- Evaluate your current program. Periodically major programs are updated. An academic advisor would be happy to review the differences between the programs with you to help you determine what would be best for you.
- Consider meeting with a faculty advisor in your department. Contact info is found on the first page of this packet.

Tutoring Resources and Research

- Volunteer peer tutors are available through Y Serve if you need help with a class. Also, if you excel in a subject, consider serving your fellow students by becoming a tutor. Find out more here: <https://tutoring.byu.edu/>.
- Many departments provide TA Tutorial Labs and research opportunities. Check your department for details:
 - Chemistry and Biochemistry: C-100 BNSN, 801-422-3667, <https://www.chem.byu.edu/>
 - Computer Science: 3361 TMCB, 801-422-3027, csoffice@cs.byu.edu
 - Geological Sciences: S-389 ESC, 801-422-3918, geology@byu.edu
 - Mathematics: 275 TMCB, 801-422-2061, office@mathematics.byu.edu
 - Mathematics Education: 167 TMCB, 801-422-1735, office@mathed.byu.edu
 - Physics and Astronomy: N-283 ESC, 801-422-4361, physics_office@byu.edu
 - Statistics: 2152 WVB, 801-422-4505, statsec@stat.byu.edu

Prepare Early for a Career

- Check out Careers & Experiential Learning in 1134 WSC and at <https://ucs.byu.edu/>.
- Consider doing an internship.
 - Attend the STEM and Career Fairs held in fall and winter semesters.
 - Talk to your department about internship opportunities.
 - Use LinkedIn and Handshake (see flyer in this packet) to connect with alumni and apply for jobs/internships. BYU Connect is another great resource for networking (connect.byu.edu).
 - Talk with the college Career Director who can help you search for internships as well as assist you with many other career related strategies (see first page of this packet).
- Consider taking StDev 317 (Career Strategies) your junior year.
- Consider taking either Chem 502, CS 502, Geol 502, Math 502, PHSCS 502, or STAT 502 (1-credit Job Search Class). Class is held for 1 hour each week.

For students entering the degree program during the 2023-2024 curricular year.



University Core and Graduation Requirements				Suggested Sequence of Courses			
University Core Requirements:							
Requirements	#Classes	Hours	Classes				
Religion Cornerstones				FRESHMAN YEAR			
Teachings and Doctrine of The Book of Mormon	1	2.0	REL A 275	<u>1st Semester</u>		<u>5th Semester</u>	
Jesus Christ and the Everlasting Gospel	1	2.0	REL A 250	WRTG 150	3.0	WRTG 316	3.0
Foundations of the Restoration	1	2.0	REL C 225	GEOL 111	4.0	GEOL 491R	0.5
The Eternal Family	1	2.0	REL C 200	CHEM 105 or CHEM 111	4.0	GEOL 435	3.0
The Individual and Society				Religion Cornerstone course	2.0	PHSCS 106	3.0
American Heritage	1-2	3-6.0	from approved list	Total Hours	13.0	GEOL 375	2.0
Global and Cultural Awareness	1	3.0	from approved list	<u>2nd Semester</u>		Religion Cornerstone course	
Skills				American Heritage	3.0	Total Hours	14.5
First Year Writing	1	3.0	from approved list	Social Science GE	3.0	<u>6th Semester</u>	
Advanced Written and Oral Communications	1	3.0	from approved list	CHEM 106 & 107 or CHEM 112	3.0-4.0	GEOL 445	3.0
Quantitative Reasoning	1	4.0	from approved list	MATH 112	4.0	GEOL 491R	0.5
Languages of Learning (Math or Language)	1	4.0	from approved list	Religion Cornerstone course	2.0	Required Environmental Elect 1 (Req 3)	3.0
Arts, Letters, and Sciences				Total Hours	15.0-16.0	STAT 121	3.0
Civilization 1	1	3.0	from approved list	SOPHOMORE YEAR			
Civilization 2	1	3.0	from approved list	<u>3rd Semester</u>		Civilization II GE	3.0
Arts	1	3.0	from approved list	GEOL 210	3.0	Religion Cornerstone course	2.0
Letters	1	3.0	from approved list	GEOL 230	3.0	Total Hours	14.5
Biological Science	1	3.0	from approved list	MATH 113	4.0	<u>Spring/Summer</u>	
Physical Science	1	3.0	from approved list	Biological Science GE	3.0	GEOL 420	2.0
Social Science	1	3.0	from approved list	Religion Cornerstone course	2.0	GEOL 421	2.0
Core Enrichment: Electives				Total Hours	15.0	GEOL 422	2.0
Religion Electives	3-4	6.0	from approved list	<u>4th Semester</u>		Total Hours	6.0
Open Electives	Variable	Variable	personal choice	GEOL 370	3.0	SENIOR YEAR	
Graduation Requirements:				GEOL 550	3.0	<u>7th Semester</u>	
Minimum residence hours required		30.0		PHSCS 105	3.0	Required Environmental Elect 2 (Req 3)	3.0
Minimum hours needed to graduate		120.0		Civilization 1 GE	3.0	Required Environmental Elect 3 (Req 3)	3.0
				Religion Cornerstone course	2.0	GEOL 491R	0.5
				Total Hours	14.0	Global and Cultural Awareness GE	3.0
						Letters GE	3.0
						Religion Cornerstone course	2.0
						Total Hours	14.5
						<u>8th Semester</u>	
						GEOL 535	3.0
						Required Environmental Elect 4 (Req 3)	3.0
						GEOL 491R	0.5
						Arts GE	3.0
						Required Environmental Elect 5 (Req 3)	3.0
						Total Hours	4.0
							13.5

Program Requirements

Licensure: This program meets the educational requirements designed to lead to an occupationally required professional license or certificate in the state of Utah. Students pursuing occupations requiring a license or certificate in a state other than Utah should contact the appropriate BYU academic advisement center as well as the licensing agency in the state where they intend to work to seek information and guidance regarding licensure and certification requirements.

Requirement 1 — Complete 12 Courses

GEOL 111 - Physical Geology 4.0
GEOL 210 - Field Studies 3.0
GEOL 230 - Geological Communications 3.0
GEOL 370 - Sedimentology & Stratigraphy 3.0
GEOL 375 - Structural Geology 3.0
GEOL 420 - Geological Field Methods 2.0
GEOL 421 - Geological Mapping 2.0
GEOL 422 - Geologic Writing 2.0
GEOL 435 - Groundwater 3.0
GEOL 445 - Geochemistry 3.0
GEOL 535 - Contaminant Hydrogeology 3.0
GEOL 550 - Environmental Soil Chemistry 3.0

Requirement 2 — Complete 2 hours

GEOL 491R - Geology Seminar - You may take 4 times 0.5

Requirement 3 — Complete 4 of 24 Courses

Note: PWS lectures and labs (PWS 282 & 283; PWS 305 & 306; PWS 365 & 366) require separate registration and can be taken separately.

CCE 341 - Soil Properties 1.5
CE 414 - Engr Applications of GIS 3.0
CE 431 - Hydrology 3.0
CE 451 - Environmental Engineering Proc 3.0
CE 514 - Geospatial Software Dev 3.0
CE 531 - Hydrologic Modeling 3.0
CE 540 - Geo-Environmental Engineering 3.0
CE 547 - Groundwater Modeling 3.0
CE 551 - Water Treatment Fac Design 3.0
CE 555 - Environmental Chemistry 3.0
GEOG 313 - Remote Sensing 1 3.0
GEOG 413 - Remote Sensing 2 3.0
GEOL 330 - Geology for Engineers 3.0
GEOL 351 - Mineralogy 4.0
GEOL 352 - Petrology 3.0
GEOL 405 - GeoMathematics 3.0
GEOL 411 - Geomorphology 3.0
PWS 282 - Soil Science 3.0
PWS 283 - Soil Science Lab 1.0
PWS 305 - Watershed Ecology 3.0
PWS 306 - Watershed Ecology Lab 1.0
PWS 365 - Biogeochem 3.0
PWS 366 - Biogeochem Lab 1.0
PWS 375 - Aquatic Policies & Laws 3.0

Requirement 4 — Complete 1 of 2 Options

Option 4.1

Complete 3 Courses

CHEM 105 - Gen College Chem 1+Lab Integr 4.0
CHEM 106 - General College Chemistry 2 3.0
CHEM 107 - Gen Coll Chem Lab 1.0

Option 4.2

Complete 2 Courses

CHEM 111 - Principles of Chemistry 1 4.0
CHEM 112 - Principles of Chemistry 2 3.0

Requirement 5 — Complete 6 Courses

MATH 112 - Calculus 1 4.0

MATH 113 - Calculus 2 4.0

PHSCS 105 - General Physics 1 3.0

PHSCS 106 - General Physics 2 3.0

STAT 121 - Principles of Statistics 3.0

WRIT 316 - Technical Communication 3.0

Requirement 6 — Obtain confirmation from your advisement center that you have completed the following:

Complete a practice version of the American State Board of Geologists fundamentals of geology exam.

THE DISCIPLINE

Environmental geology deals with the protection and management of groundwater, surface water, and soil systems. Over 22% of the water supply in the United States comes from groundwater. As population grows and climate change proceeds, water resources will be under increased pressure. No less important than water is the understanding of the Critical Zone, the shallow soils with which surface and ground waters interact and upon which most life depends. Study of the Critical Zone is, to a large degree, an undertaking of environmental geology. Understanding the science of environmental geology will enhance students' sense of stewardship for the Earth.

CAREER OPPORTUNITIES

Environmental geology graduates are prepared for employment in industry, environmental consulting firms, government, education, or academia. The program provides training and skills for employment with a bachelor's degree or for continued education in graduate programs to study environmental geology, business, or law. Jobs in geosciences and hydrology are expected to continue to grow over the coming decade. Most environmental geology graduates are employed in the environmental industry, state, or federal governments.

MAP DISCLAIMER

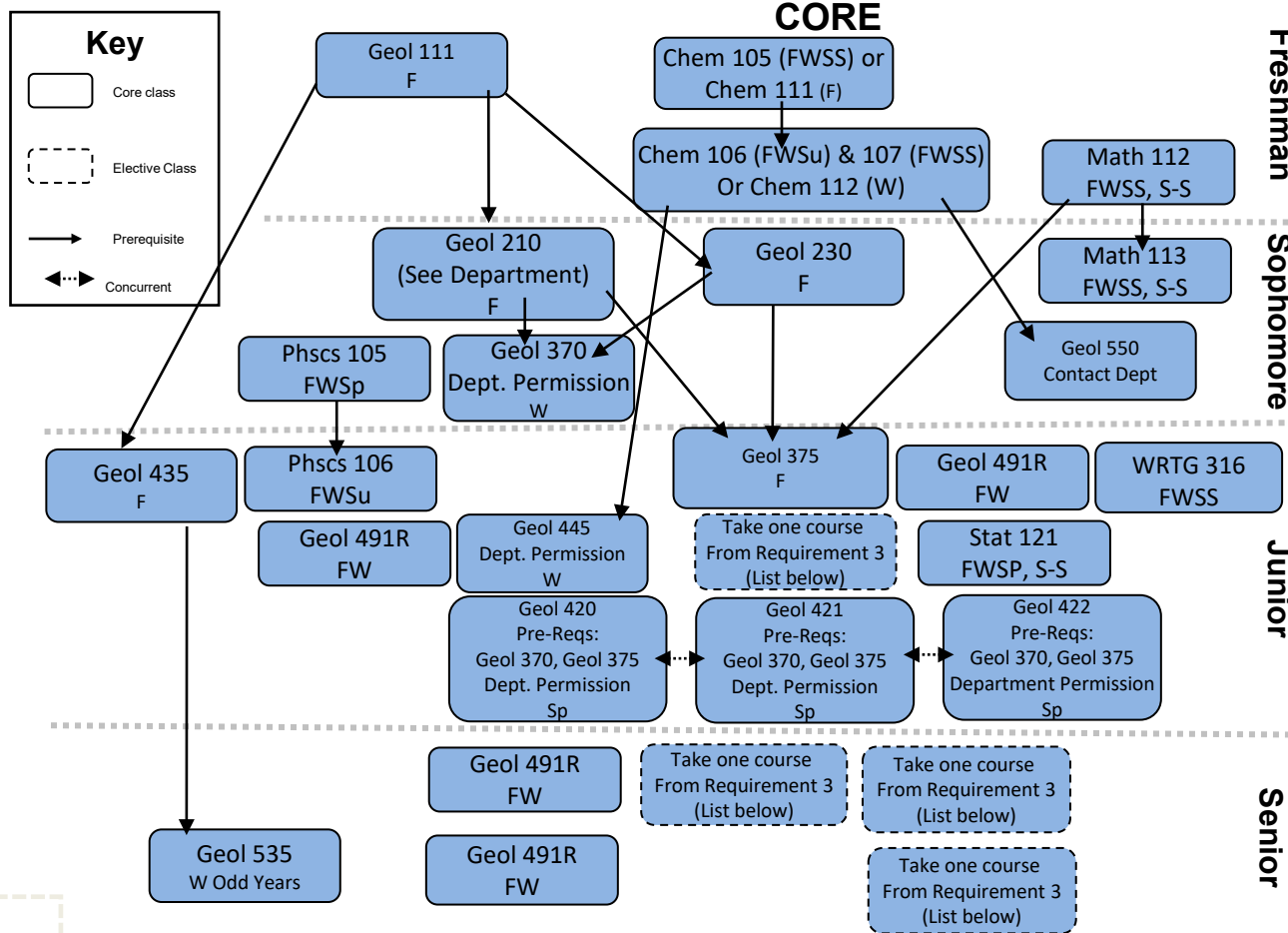
While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

BYU Environmental Geology BS

Requirements / Prerequisites
2023-2024 Academic Year

Major (69-76 hours)

- Complete the following: Geol 111, Geol, Geol 210, Geol 230, Geol 370, Geol 375, Geol 420, Geol 421, Geol 422, Geol 435, Geol 445, Geol 535, Geol 550.
- Complete the following (2 credit hours): Geol 491R
- Complete 4 courses from the following: CE 341, CE 414, CE 431, CE 451, CE 514, CE 531, CE 540, CE 547, CE 551, CE 555, GEOG 313, Geog 413, Geol 330, Geol 351, Geol 352, Geol 405, Geol 411, PWS 282, PWS 283, PWS 305, PWS 306, PWS 365, PWS 366, PWS 375.
- Complete either Chem 105, Chem 106, and Chem 107, or Chem 111 and 112.
- Complete the following: WRTG 316, Math 112, Math 113, Phscs 105, Phscs 106, Stat 121.



Requirement 3 Complete Four Courses

CE 341 Pre-Req: CCE 203 FW	CE 451 Pre-Req: Chem 105 F	CE 540 Pre-Req: CE 342 F	CE 555 Pre-Req: Chem 105 F	Geol 330 Pre-req: None FW	Geol 405 Pre-Req: Math 113 & Geol 111 W	PWS 283 Pre-Req: PWS 282 Or concurrent FW	PWS 365 Pre-Req: PWS 305 Chem 101 or 105 F
CE 414 F	CE 514 Pre-Req: CCE 170 & CE 414 W	CE 547 Pre-req: CE 341 F	Geog 313 Pre-Req: Geog 213 F	Geol 351 Pre-Req: Math 112 & Chem 111 or 105 F	Geol 411 Pre-Req: Geol 111 or Geol 330 F	PWS 305 Pre-Req: PWS 282 Chem 101 or 105, PWS 100 or equiv. W	PWS 366 Pre-Req: PWS 305 Chem 101 or 105 F
CE 431 Pre-Req: CE 332 W	CE 531 Pre-Req: CE 431 F	CE 551 Pre-Req: CE 451 F	Geog 413 Pre-Req: Geog 313 W	Geol 352 Pre-Req: Geol 210, 351 & Chem 111 or 105 W	PWS 282 Pre-Req: PWS 283 Or concurrent FW	PWS 306 Pre-Req: PWS 305 W	PWS 375 W Even Years

Please Note: When Taught is subject to change. Guide only—please consult MyMAP for full requirements.

Updated 12/18/2023

handshake

BYU's own job board. Employers who want to hire BYU graduates or offer internships to current students post job openings to this website and students apply. Just like LinkedIn, employers can view student profiles and students can network as they apply for jobs and internships

Login to handshake.byu.edu >>> BYU Net ID

**you do not need to create an account, just sign in with you BYU information*



HOW TO MAKE THE MOST OUT OF HANDSHAKE:

1. COMPLETE YOUR PROFILE

- Upload your resume and it will auto-fill in your profile
- Completed profiles tailor your Handshake experience
- Information from your transcript is already uploaded
- Fill in the Summary/Bio section
- Fill in your past jobs and experiences, including all the bullet points you use on your resume
- Add a professional headshot and background photo

Remember: every word in your profile will be searchable by students and employers

4. EXPLORE FELLOW STUDENTS

- “Students” tab
- Search for fellow BYU students to view their profiles and job positions (Facebook stalking... “networking”)

5. ATTEND EVENTS

- The “Events” tab will be your key to attending info sessions, interviews, and Career Fairs
- The “Calendar” tab under “Events” will show you what events are coming soon
- Make sure to save events you are interested in or RSVP so you do not forget to attend
- Spread the word to your friends on social media

6. DOWNLOAD HANDSHAKE APP

- Search: “Handshake” not “Handshake Career Services”
- Input your BYU e-mail address: netID@byu.edu (it will forward emails to the e-mail you have on file with BYU)
- Handshake will send you a link via e-mail to enable your account in the app
- Navigate the app to perform all the functions of the website that have been previously mentioned

7. VISIT THE CAREER STUDIO

- Freshen up your resume, cover letter, or LinkedIn
- Receive networking help
- Practice interviewing with a mock interview
- Meet with a full-time Career Counselor in your field

8. GET A JOB, RING THE BELL

- Once you're hired, stop by the Career Studio to ring our Victory Bell and get a picture for the Victory Board



employers are
5X MORE LIKELY
to view a profile that has
at least one job/skill/organization

2. APPLY FOR JOBS

- Search for job titles, employers, or skills
- Apply for interesting jobs that meet your skill set

3. RESEARCH COMPANIES

- Under the “Jobs” Tab there is an “Employers” Tab
- Search for keywords or locations to find companies that are the right fit for you
- Plan to attend their info sessions on BYU Campus, connect with them at Career Fairs, or set up informational interviews to learn more

Remember: when looking at companies or jobs, Handshake will tell you what other BYU students have worked there. Use this resource to network and discover more information!

Geology Careers

There are many career opportunities for you in the geological sciences! While many of these jobs allow you to be outside and exploring the Earth, there are also careers that allow you to work in a lab, in an office, on a computer, even in your home. Many of these jobs require a graduate degree, but not all – many of our undergraduates have moved immediately into good jobs. Below are some ideas listed alphabetically; we can help you sort these by location, theme, potential pay, etc. as you move through the major.

Economic geologist: explore and recover metallic and nonmetallic deposits
Engineering geologist: geological data applied to structures, ground water, etc.
Environmental geologist: solve pollution, waste, urban, and hazards problems
Geochemist: nature and distribution of elements in ground water and earth materials
Geochronologist: determine ages and sequences of events in Earth's history
Geologist: materials, processes, products, and history of Earth
Geomorphologist: landforms as related to geologic and climactic processes
Geophysicist: using physics to study Earth's interior and its magnetic, electric, & gravity fields
Glacial geologist: properties and movement of glacier plus records of past climates
Hydrologist: Earth's water, from precipitation to surficial movement to groundwater.
Marine geologist: Ocean floor, ocean basins, and coastal environments
Mineralogist: mineral formation, composition, and properties
Oceanographer: physical, chemical, biological, and dynamics of oceans
Paleoecologist: distribution of ancient organisms and ancient environments
Paleontologist: study ancient life, its evolution and impacts on Earth
Petroleum geologist: exploration and production of hydrocarbons
Petrologist: origin and history of rocks
Planetary geologist: study of planets and moons and development of solar systems
Professor: teaching and research at the university level
Sedimentologist: origin, distribution of sediments, usually in relation to oil, gas, and coal
Seismologist: earthquakes, behavior and interpretation of earth's structure
Soil scientist: soils, their properties and distribution related to agriculture
Stratigrapher: time and space relations of rocks on large scales
Structural geologist: deformation, fracturing, and folding of Earth's crust
Earth Science Teacher: secondary and junior colleges
Volcanologist: volcanoes and their phenomena to predict natural hazards and nature of Earth

*Modified from the American Geological Institute Careers in Geosciences:
www.agiweb.org/workforce/brochure.html*