

Welcome to the  
**Environmental Geology Major**

in the College of Computational, Mathematical, and Physical Sciences

College Advisement Center

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

Geological Sciences Department

Website: [www.geology.byu.edu](http://www.geology.byu.edu)  
Email: [geology@byu.edu](mailto:geology@byu.edu)  
Phone: 801-422-3918  
Office: S-389 ESC

Faculty Advisor – Jani Radebaugh\*

Email: [janirad@byu.edu](mailto:janirad@byu.edu)  
Phone: 801-422-9127  
Office: S-383 ESC

Internship Coordinator – Keryn Ross

Email: [volcano@gmail.com](mailto:volcano@gmail.com)

University Career Services – Anna Kennington

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

Club – Geology Club

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

AAPG Chapter

Advisor: Sam Hudson (ESC S-337)  
Email: [sam.hudson@byu.edu](mailto: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

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## 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.

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## 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-104 BNSN, 801-422-6261, <https://chem.byu.edu/department/faculty/>
  - Computer Science: 3361 TMCB, 801-422-3027, [csoffice@cs.byu.edu](mailto:csoffice@cs.byu.edu)
  - Geological Sciences: S-389 ESC, 801-422-3918, [geology@byu.edu](mailto:geology@byu.edu)
  - Mathematics: 275 TMCB, 801-422-2061, [office@mathematics.byu.edu](mailto:office@mathematics.byu.edu)
  - Mathematics Education: 167 TMCB, 801-422-1735, [office@mathed.byu.edu](mailto:office@mathed.byu.edu)
  - Physics and Astronomy: N-283 ESC, 801-422-4361, [physics\\_office@byu.edu](mailto:physics_office@byu.edu)
  - Statistics: 2152 WVB, 801-422-4505, [statsec@stat.byu.edu](mailto:statsec@stat.byu.edu)

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## 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](http://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 Networking Class). Class is held for 1 hour each week.

# BS in Environmental Geology (694030) MAP Sheet

Physical and Mathematical Sciences, Geological Sciences

For students entering the degree program during the 2024-2025 curricular year

| University Core and Graduation Requirements                       |                  |              |                    | Suggested Sequence of Courses |                    |                               |              |
|---|------------------|--------------|--------------------|-------------------------------|--------------------|-------------------------------|--------------|
| <b>University Core Requirements:</b>                              |                  |              |                    | <b>FRESHMAN YEAR</b>          |                    | <b>JUNIOR YEAR</b>            |              |
| <b>Requirements</b>   | <b># Classes</b> | <b>Hours</b> | <b>Classes</b>     | <u>1st Semester</u>           |                    | <u>5th Semester</u>           |              |
| <b>Religion Cornerstones</b>                                      |                  |              |                    | UNIV 101                      | 2.00               | WR TG 316                     | 3.00         |
| Teachings and Doctrines of the Book of Mormon                     | 1                | 2.00         | REL A 275          | First Year Writing            | 3.00               | GEOL 491R                     | 0.50         |
| Jesus Christ and the Everlasting Gospel                           | 1                | 2.00         | REL A 250          | GEOL 111                      | 4.00               | GEOL 435                      | 3.00         |
| Foundations of the Restoration                                    | 1                | 2.00         | REL C 225          | CHEM 105 or CHEM 111          | 4.00               | PHSCS 106                     | 3.00         |
| The Eternal Family  | 1                | 2.00         | REL C 200          | Religion Cornerstone Class    | 2.00               | GEOL 375                      | 3.00         |
| <b>BYU Foundations for Student Success</b>                        |                  |              |                    | <b>Total Hours:</b>           | <b>15.00</b>       | GE Religion                   | 2.00         |
| Foundations for Student Success                                   | 1                | 2.00         | UNIV 101           |                               |                    | <b>Total Hours:</b>           | <b>14.50</b> |
| <b>The Individual and Society</b>                                 |                  |              |                    | <u>2nd Semester</u>           |                    | <u>6th Semester</u>           |              |
| American Heritage   | 1 to 2           | 3.00-6.00    | from approved list | American Heritage             | 3.00               | GEOL 445                      | 3.00         |
| Global and Cultural Awareness                                     | 1                | 3.00         | from approved list | CHEM 106 & 107 or CHEM 112    | 3.00-4.00          | GEOL 491R                     | 0.50         |
| <b>Skills</b>   |                  |              |                    | MATH 112                      | 4.00               | GEOL 550                      | 3.00         |
| First Year Writing  | 1                | 3.00         | from approved list | GE Arts, Letters, Sciences    | 3.00               | STAT 121                      | 3.00         |
| Advanced Written and Oral Communications                          | 1                | 3.00         | WR TG 316*         | Religion Cornerstone Class    | 2.00               | Open Elective                 | 2.00         |
| Quantitative Reasoning  | 1                | 4.00         | MATH 112*          | <b>Total Hours:</b>           | <b>15.00-16.00</b> | GE Religion                   | 2.00         |
| Languages of Learning (Math of Language)                          | 1                | 4.00         | MATH 112*          |                               |                    | <b>Total Hours:</b>           | <b>13.50</b> |
| <b>Arts, Letters and Sciences (Complete 6 of 7)</b>               |                  |              |                    | <b>SOPHMORE YEAR</b>          |                    | <u>SPRING/SUMMER</u>          |              |
| Civilization 1  | 1                | 3.00         | from approved list | <u>3rd Semester</u>           |                    | GEOL 420                      | 2.00         |
| Civilization 2  | 1                | 3.00         | from approved list | GEOL 210                      | 3.00               | GEOL 421                      | 2.00         |
| Arts  | 1                | 3.00         | from approved list | GEOL 230                      | 3.00               | GEOL 422                      | 2.00         |
| Letters   | 1                | 3.00         | from approved list | MATH 113                      | 4.00               | <b>Total Hours:</b>           | <b>6.00</b>  |
| Biological Science  | 1                | 3.00-4.00    | from approved list | GE Arts, Letters, Sciences    | 3.00               |                               |              |
| Physical Science  | 2                | 3.00         | from approved list | Religion Cornerstone Class    | 2.00               |                               |              |
| Social Science  | 1                | 3.00         | from approved list | <b>Total Hours:</b>           | <b>15.00</b>       |                               |              |
| <b>Core Enrichment: Electives</b>                                 |                  |              |                    |                               |                    | <b>SENIOR YEAR</b>            |              |
| Religion Electives  | 3 to 4           | 6.00         | from approved list | <u>4th Semester</u>           |                    | <u>7th Semester</u>           |              |
| Open Electives  | Variable         | Variable     | personal choice    | GEOL 370                      | 3.00               | Environmental Elective 2      | 3.00         |
| <b>Graduation Requirements:</b>                                   |                  |              |                    | Environmental Elective 1      | 3.00               | Environmental Elective 3      | 3.00         |
| Minimum residence hours required                                  |                  | 30.00        |                    | PHSCS 105                     | 3.00               | GEOL 491R                     | 0.50         |
| Minimum hours needed to graduate                                  |                  | 120.00       |                    | GE Arts, Letters, Sciences    | 3.00               | Global and Cultural Awareness | 3.00         |
|   |                  |              |                    | Religion Cornerstone Class    | 2.00               | GE Arts, Letters, Sciences    | 3.00         |
|   |                  |              |                    | <b>Total Hours:</b>           | <b>14.00</b>       | GE Religion                   | 2.00         |
|   |                  |              |                    |                               |                    | <b>Total Hours:</b>           | <b>14.50</b> |
|   |                  |              |                    |                               |                    | <u>8th Semester</u>           |              |
|   |                  |              |                    |                               |                    | GEOL 535R                     | 3.00         |
|   |                  |              |                    |                               |                    | Environmental Elective 4      | 3.00         |
|   |                  |              |                    |                               |                    | GEOL 491R                     | 0.50         |
|   |                  |              |                    |                               |                    | GE Arts, Letters, Sciences    | 3.00         |
|   |                  |              |                    |                               |                    | GE Arts, Letters, Sciences    | 3.00         |
|   |                  |              |                    |                               |                    | <b>Total Hours:</b>           | <b>12.50</b> |
| *These classes fill both university core and program requirements |                  |              |                    |                               |                    |                               |              |

**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 Courses**

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

CE 341 - Soil Mechanics 3.0  
 CE 414 - Engr Applications of GIS 3.0  
 CE 331 - 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 - Intro to Stat Data Analysis 3.0  
 WRTG 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.

**ADVISEMENT CENTER INFORMATION**

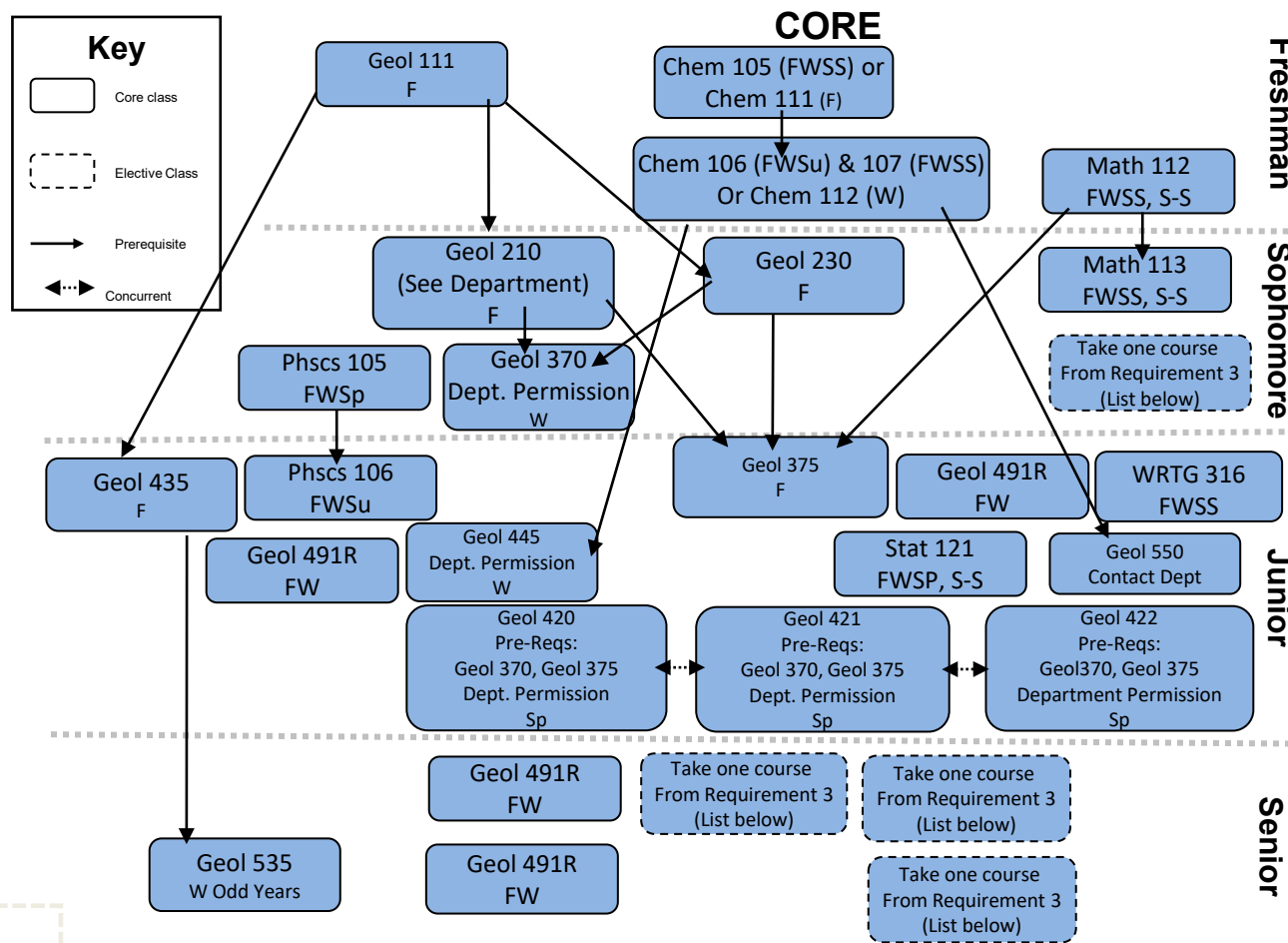
Computational, Mathematical, & Physical Sciences College Advisement Center Brigham Young University  
 N-181 ESC  
 Provo, UT 84602  
 Telephone: (801) 422-2674

# BYU Environmental Geology BS

Requirements / Prerequisites  
2024-2025 Academic Year

## Major (69-76 hours)

1. 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.
2. Complete the following (2 credit hours): Geol 491R
3. Complete 4 courses from the following: CE 341, CE 414, CE 331, 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.
4. Complete either Chem 105, Chem 106, and Chem 107, or Chem 111 and 112.
5. Complete the following: WRTG 316, Math 112, Math 113, Phscs 105, Phscs 106, Stat 121.



### Requirement 3 Complete Four Courses

|  |  |                                |                                    |  |  |  |   |
|--|--|--------------------------------|------------------------------------|--|--|--|---|
| CE 341<br>Pre-Req: CCE 203,<br>CCE 270, & CE 232<br>FW | CE 451<br>Pre-Req: Chem 105<br>F         | CE 540<br>Pre-Req: CE 341<br>F | CE 555<br>Pre-Req: Chem 105<br>F   | Geol 330<br>Pre-req: None<br>FW                              | Geol 405<br>Pre-Req: Math 113 &<br>Geol 111<br>W   | PWS 283<br>Pre-Req: PWS 282<br>Or concurrent<br>FW | PWS 365<br>Pre-Req: PWS 305<br>F                    |
| CE 414<br>F  | CE 514<br>Pre-Req: CCE 170 & CE 414<br>W | CE 547<br>Pre-req: CE 341<br>F | Geog 313<br>Pre-Req: Geog 213<br>F | Geol 351<br>Pre-Req: Math 112 &<br>Chem 111 or 105<br>F      | Geol 411<br>Pre-Req: Geol 111 or<br>Geol 330<br>F  | PWS 305<br>Pre-Req: PWS 282<br>W                   | PWS 366<br>Pre-Req: PWS 305<br>Chem 101 or 105<br>F |
| CE 331<br>Pre-Req: CE 332 &<br>CCE 170<br>W            | CE 531<br>Pre-Req: CE 331<br>F           | CE 551<br>Pre-Req: CE 351<br>F | Geog 413<br>Pre-Req: Geog 313<br>W | Geol 352<br>Pre-Req: Geol 210, 351<br>& Chem 111 or 105<br>W | PWS 282<br>Pre-Req: PWS 283<br>Or concurrent<br>FW | PWS 306<br>Pre-Req: PWS 305<br>W                   | PWS 375<br>W Even Years                             |

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

Updated 7/17/2024

## 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](https://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](mailto: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](http://www.agiweb.org/workforce/brochure.html)*