



# INTRODUCTION TO GEOSCIENCES

Welcome to GeoFORCE Family!

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# Mission of GeoFORCE Family

- Support GeoFORCE Texas's mission to increase number and diversity of students pursuing STEM degrees and careers
- Provide equitable access of college readiness resources to families
- Encourage families to support and engage with students' education
- Prepare students for success when pursuing a geoscience education and careers







### WHAT IS GEOSCIENCE?



### Geoscience is...

- ✓ Geoscience is the study of the earth
- Geoscientists study earth processes, ecosystem interactions, and the earth resources we use
- Geoscience uses tools from other scientific disciplines, such as chemistry, physics, biology, and math
- ✓ The study of what the Earth is made of, how the Earth was formed, and the processes that shape how the Earth interacts and affects us





#### Q Women in UT Geology

BY MONICA KORTSHA

From independent oil finders, to pioneering micropaleontologists, to academic leaders, UT women have been making history since the beginning.



# WHAT IS THE ROLE OF A GEOSCIENTIST?



## Geoscientists...

- Discover and develop natural resources such as oil, natural gas, minerals, metals, and groundwater
- Advise decision makers on the future of energy and energy policy
- Work with other scientists to help preserve our environmental resources, such as water
- Help save lives by predicting and protecting people from natural disasters like floods, landslides, earthquakes, and tsunamis





### WHAT MAKES THE GEOSCIENCES UNIQUE?











#### Geoscience will lead to...

- Doing field work to collect data for research
- Field work anywhere in the world to study the physical earth, such as mountain ranges, deserts, active volcanoes, rivers, glaciers, the bottom of the ocean, and more



### Geoscience will lead to...



- Conducting research in labs, to support field work
- Once field work is completed, geoscientists spend time in labs analyzing samples and conducting research on rocks
- Labs provide tools to take a deeper look at samples



# What types of labs exist at UT?

 Aqueous Geochemistry Lab, Electron Microprobe, Scanning Electron Microscope, Faceting Lab, High Temp. Stable Isotope Lab, Mass Spectrometry Lab, and MANY more...





### Geoscience at UT

UT offers a wide range of geology classes for their students, which include...

- Earth Materials
- Energy Exploration
- Physical and Structural Geology
- Life Through Time
- Gems and Gem Minerals
- Volcanology
- GIS & GPS Applications in Earth Science

- Climate Change
- Geochemistry
- Marine Tectonics
- Physics of the Earth
- Intro to Physical and Chemical Hydrology
- Ecohydrology and Biometeorology
- Isotope Geology





#### **Geoscience at UT**

- As an undergraduate, **geology students at UT** participate in field work... in Austin and across the United States
- Field Camp is a six-week summer course that takes students to New Mexico, Wyoming, and Montana to study geology



#### Geoscience at UT

- Over 50 faculty members and 100 research scientists, who are considered leaders in their field, are passionate about sharing their knowledge with UT students
- Geoscience students travel the country doing field work, conduct research in world renowned labs, help protect the environment, create energy solutions, study climate, natural hazards, and more!







Get a glimpse into the geoscience community at UT through the <u>Science Y'all</u> Blog!





#### Interested in learning more about geoscience? Check out UT's "Hot Science - Cool Talks"

Hot Science – Cool Talks provides a front row seat to world-class research. Presented by the Environmental Science Institute (ESI), this nationally recognized series allows leading researchers from The University of Texas and other prominent universities to share their passion about science, technology, engineering and math with the general public. Events are held six times a year (on-campus or virtually).



# Geoscientific Disciplines



### TEXAS Geosciences

The University of Texas at Austin Jackson School of Geosciences



- Geoscience disciplines include the study of the...
  - Atmospheric science
  - Environmental science
  - Geography
  - Oceanography
  - Geology
  - Geophysics
  - Space science
  - Soil science



#### **Careers in Geoscience...**





### **Careers in Geoscience**

- Engineering Geologist
- Hydrologist
- Gemologist
- Petroleum Geoscientist
- Archeologist
- Seismologist
- Meteorologist
- Volcanologist
- Oceanographer
- Research Scientist
- Geochemist
- Environmental Engineer

- Professor
- Environmental Consultant
- Minerals Surveyor
- Mud-logger
- Geographer
- Soil Scientist
- Ecologist
- Park Ranger
- Cartographer
- Emergency Management
- Seismic Interpreter
- Paleontologist



# Future Challenges for Geoscience

- Climate change
- Energy
- Food and water security
- Tourism and conservation issues
- Sustainable development

