GEOLOGY 3310
Geology and Astronomy

Fall 2025
Time: 6:00-8:45 PM
Day: Monday Ratliffe South 02024
Final: December 8th. Regular Class Time.

Instructor Information:

Michael Odell, Ph.D.

Office:	HPR 263A
Office Hours:	Office Hours: 4:30-5:30 Mondays Zoom by Appointment Phone by appointment Note: If my door is open I am available.
Telephone:	office (903) 566-7132
Email:	*modell@uttyler.edu* (best way to contact)

Course Description:
This course consists of an introduction to astronomy (25%) and physical geology (75%). Astronomy is the study of the universe, and how the Earth relates to other objects in space. Observations of stars, asteroids, and other astronomical bodies help scientists develop an understanding of the Earth's formation. Geology is the study of the Earth, as well as its history. This course will explore Earth processes, natural resources, and how the Earth has changed throughout geologic time. There are no prerequisites.

Schedule (**See Schedule in Canvas).** All assignments, quizzes, and due dates can be found in Canvas.
Module 1: Overview of Earth and Space Sciences
Module 2: Minerals
Module 3: Igneous Rocks and Processes
Module 4: Sedimentary Rocks and Processes
Module 5: Sedimentary Structures
Module 6: Metamorphic Rocks and Processes
Module 7: Geologic Time
Module 8: Earth History
Module 9: Coastal Processes
Module 10: Sun, Earth, Moon System
Module 11: Inner Solar System
Module 12: Outer Solar System and Beyond

Materials: The course use Open Education Resources including a fee online text and everything you need is in Canvas PowerPoint slides, papers, videos, and other materials will be distributed throughout the semester via Canvas.

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Student Learning Outcomes:

After successful completion of this course, students will be able to:

1) Discuss the history of modern astronomy and how scientists study space. (Critical Thinking, Communication Skills, Empirical and Quantitative Skills)
2) Differentiate between various astronomical bodies and how they form. (Critical Thinking)
3) Classify different types of natural resources, including minerals, rocks, and energy resources. (Critical Thinking, Empirical and Quantitative Skills)
4) Collaborate with classmates on geologic problem-solving activities. (Critical Thinking, Communication, Empirical and Quantitative Skills, Teamwork)
5) Describe changes to the Earth System throughout geologic history. (Critical Thinking, Communication)
6) Differentiate between processes sculpting Earth's surface, including plate tectonics, weathering, gravity, etc. (Critical Thinking, Empirical and Quantitative Skills)

Attendance: Attendance is required. Some nights will be in person. Some will be synchronously online via zoom. All course materials and assignments will be housed in Canvas.

Grading: All grades will be updated throughout the semester in Canvas. If you would like to meet with me to discuss your grade in detail, I am always happy to do so! Final grades will be calculated as follows:

- 3 Exams (45%) (Includes Final)
- 10 Quizzes (15%) (Canvas)
- Canvas Discussions (10%)
- In-class activities (10%)
- Project (20% total)

Project **(20% of final grade):** Each student will complete an individual project that will consist of a 10-minute presentation, including a slide presentation, over a geology or astronomy topic of the students' choosing based on the Instructor Topic List. Each student should create their presentation, content should be written in their own words. Copying and pasting from preexisting sources is considered plagiarism and will earn a 0 for the presentation portion of the grade. Topics must be approved by the instructor. Deadline for topic approval and submission of the final project can be found in Canvas.

General Course Policies:

- All students may make up a missed exam with instructor permission.
- Officially excused absences include university -related travel, illness, death in the family, or other situations that will be considered on a case-by-case basis.
- Class assignments should be completed by the assigned deadlines. No late work will be submitted without approved documentation.

Resources

FREE Open Resource Texts:

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Introduction to Earth Science: **https://open.umn.edu/opentextbooks/textbooks/introduction-to-earth-science**

Open Stax Astronomy: **https://openstax.org/details/books/astronomy-2e**

Videos: The Earth Revealed: **https://www.learner.org/series/earth-revealed/**

Websites:

NASA Guide to the Solar System: **https://solarsystem.nasa.gov/solar-system/our-solar-system/overview/**

NASA Guide to the 2023 Eclipse: **https://solarsystem.nasa.gov/eclipses/2023/oct-14-annular/where-when/**

PBS Crash Course Astronomy: **https://opb.pbslearningmedia.org/collection/crash-course/t/crash-course-astronomy/**

Geology for Engineers:

https://www.geologypage.com/2019/04/engineering-geology.html

https://www.colorado.edu/faculty/amadei/sites/default/files/attached-files/intro_0.pdf

https://serc.carleton.edu/integrate/workshops/engineering2013/essays/ferriz.html

Earth Science for Teachers:

https://www.khanacademy.org/science/middle-school-earth-and-space-science

TEKS: **https://tea.texas.gov/academics/curriculum-standards/teks-review/science-teks-review**

University Student Resources:

Resources to assist you in this course

- UT Tyler Student Accessibility and Resource (SAR) OfficeLinks to an external site. (provides needed accommodations to students with document needs related to access and learning)
- UT Tyler Writing CenterLinks to an external site.
- The Mathematics Learning CenterLinks to an external site.
- UT Tyler PASS Tutoring CenterLinks to an external site.
- UT Tyler Supplemental InstructionLinks to an external site.
- Upswing (24/7 online tutoring) - covers nearly all undergraduate course areasLinks to an external site.Links to an external site.

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- Robert Muntz LibraryLinks to an external site. and Library LiaisonLinks to an external site.
- Canvas 101 (learn to use Canvas, proctoring, Unicheck, and other software)
- LIB 422 -- Computer Lab where students can take a proctored exam
- The Career Success CenterLinks to an external site.
- UT Tyler Testing CenterLinks to an external site.
- Office of Research & Scholarship Design and Data Analysis LabLinks to an external site.

Resources available to UT Tyler Students

- UT Tyler Counseling Center Links to an external site.(available to all students)
- My SSP AppLinks to an external site. (24/7 access to Student Support Program counseling through phone or chat and online wellness resources available in a variety of languages)
- Student Assistance and Advocacy CenterLinks to an external site.
- Military and Veterans Success Center Links to an external site.(supports for all of our military-affiliated students)
- UT Tyler Patriot Food PantryLinks to an external site.
- UT Tyler Financial Aid and ScholarshipsLinks to an external site.
- UT Tyler Student Business ServicesLinks to an external site. (pay or set up payment plans, etc.)
- UT Tyler Registrar's OfficeLinks to an external site.
- Office of International ProgramsLinks to an external site.
- Title IX ReportingLinks to an external site.
- Patriots EngageLinks to an external site. (available to all students. Get engaged at UT Tyler.)

UNIVERSITY POLICIES: https://docs.google.com/document/d/e/2PACX-1vQXRlbySwSUh3-Ow_8tVR0BoV9Ck3bKN1yTVExKtxygUWZgQ1c1LGttITyN6DpgDVN_ucMP9O12M50G/pub

UT Tyler Honor Code

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.