Geol 4315 / Geol 5361 / Geol 6315 Plate Tectonics
CRN 16120 / CRN 16432 / CRN 17428
Fall 2022

Contact Information
Professor:
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Phone: 915-747-5413
Office: Geology Room 307
Office hours: MW 1:00-2:00pm (or by appointment, including Zoom)
Weekly schedule:
• Class meetings will be MW 10:30-11:50 in Geology Room 404.
• Most weeks, you will be assigned a lab on Wednesday, and it will be due the following Wednesday by the end of the day (11:59pm) and uploaded through Blackboard.

Overview: The application of geological and geophysical data to the description and evolution of motion between the lithospheric plates. Topics include: relative velocities between plates, triple junctions, plate rotations, seismicity and plate boundaries, marine magnetic anomalies, paleomagnetism, plate driving mechanisms, relationship of plate tectonic processes to the geologic evolution of the western United States.

Class Objectives: Develop a thorough background in the basic geophysical and geologic characteristics of plate boundaries. Emphasis is on tectonic processes and implication of plate boundary processes to development of geologic systems. By the end of this class students should be able to:
• Understand and apply the concepts of relative plate motion on planes and spheres
• Use seismicity and focal mechanisms to analyze active fault kinematics and their relationships to plate boundary processes
• Understand how different data sets are used to analyze both present day and past plate motions
• Recognize the different definitions of lithosphere vs asthenosphere and the importance of variations in these characterizations of the system
• Understand the distinctive rock and structural associations that characterize different plate boundaries
• Be able to use lithologic and structural associations to synthesize geologic and geophysical data into a coherent tectonic history of ancient plate margins
• Analyze diverse geologic and geophysical data sets to solve large-scale problems, recognizing inconsistencies and ambiguities in interpretations of data

Activities: This class will have videos, reading assignments, activities, and in-class interaction, but a large amount of your learning comes from assignments. These assignments tend to be a lot of work, but a practical application that will help you learn the material. Do not get behind on these assignments, as they are key part of your learning in the class. You can think of these assignments as lab assignments that aren’t done in a specific lab setting, but are time consuming, problem solving assignments.

Prerequisite: graduate standing OR approval. That means class members are expected to have course work in geology equivalent to an undergraduate senior geology major. Class members
should also be comfortable with basic sophomore level physics and with math equivalent to at least the first semester of calculus.  
ALL undergraduates registering to take this course must have approval by the instructor. Please talk to the instructor if you aren’t sure you have the background.  

Textbook:

![Global Tectonics](image)


![PLATE TECTONICS How It Works](image)

Supplementary reading (will be provided by pdf): Cox and Hart, 1986, *Plate Tectonics, How it works* + supplements

We’ll also be doing readings from the scientific literature. Reading is important in this class!  

**Grading:**  
20% midterm exam  
20% final exam  
10% quizzes and participation/ attendance  
50% assignments (10 total assignments, drop lowest grade)
**Undergraduate vs Graduate Student Assessment:** I will have higher expectations for homework assignments submitted by graduate students compared to undergraduates due to the difference in experience and available time. Homework assignments will be assessed with a different scale for undergraduates vs. graduate students. Exams will be set up differently as well. All students will be given the same exam, except graduate students will get extra question(s) which may include a take home question on exams.

**Late assignments:** You have one “2-day-late assignment pass”. That means that you can choose one assignment to turn in no more than 48 hours late for no penalty. After you have used the pass, assignments are 5% off per day that they are late, unless you talk to the instructor.

**Technology Requirements:**
Course content is delivered via the Internet through the Blackboard learning management system. Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need to have access to a computer/laptop, scanner. If you do not have a word-processing software, you can download Word and other Microsoft Office programs (including Excel, PowerPoint, Outlook and more) for free via UTEP’s Microsoft Office Portal.

**IMPORTANT:** If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP Help Desk as they are trained specifically in assisting with technological needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you!

**Course Communication: How we will stay in contact with each other:**
In addition to class meetings and office hours, there are a number of ways we can keep the communication channels open:

- **Email:** UTEP e-mail is the best way to contact me. I will make every attempt to respond to your e-mail within 24-48 hours of receipt.
- **Discussion Board:** If you have a question that you believe other students may also have, please post it in the Help Board of the discussion boards inside of Blackboard. Please respond to other students’ questions if you have a helpful response.
- **Announcements:** Check the Blackboard announcements and your email frequently for any updates, deadlines, or other important messages.

**Accomodations Policy:**
The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at cass@utep.edu, or apply for accommodations online via the CASS portal.
Scholastic Integrity
Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as one's own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

Course Resources: Where you can go for assistance.
Technology Resources
• Help Desk: Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

Academic Resources
• UTEP Library: Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
• University Writing Center (UWC): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
• Math Tutoring Center (MaRCS): Ask a tutor for help and explore other available math resources.
• History Tutoring Center (HTC): Receive assistance with writing history papers, get help from a tutor and explore other history resources.
• RefWorks: A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.

Individual Resources
• Military Student Success Center: Assists personnel in any branch of service to reach their educational goals.
• Center for Accommodations and Support Services: Assists students with ADA-related accommodations for coursework, housing, and internships.
• Counseling and Psychological Services: Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.

Notes on Homework assignments:
This class is a lot of work. You will be doing both a lot of reading and take home assignments. You will get a series of homework assignments that are exercises meant to give you feedback on things we are discussing in class and all of them have real world applications.

Most of these exercises will emphasize the geophysical aspects of PT--plate motion problems, lithospheric cooling problems, magnetic stripes, seismology, etc. The last two or three exercises, however, will emphasize geologic applications.

COVID-19 Precautions: Please stay home if you have tested positive for COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let your TA and me know as soon as possible, so that we can work on appropriate accommodations. If you have tested
positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID 19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.