

Sedimentology and Stratigraphy GEOL 3326 and GEOL 3126

Syllabus Version 2 Updated November 6, 2021

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Catch me in person Office Hours M-W 10:30-11:30, and by appt.
Call me on the Phone 915-747-5968 any time from 8 AM to 6 PM.
Zoom help by arrangement offline

TEACHING ASSISTANT David Mendoza Office Hours: TBA Contact- dmendoza14@miners.utep.edu

NOTE: This syllabus is subject to change. This will be a challenging semester and covid continues to fluctuate in intensity. Schedules and materials may be altered. However, notice will be provided at least 1 week in advance for changes in reading, tests, or labs.

IMPORTANT for Safe Social Distancing Fall 2021

Please stay home if you (1) have been diagnosed with COVID-19, or (2) are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, and alternatives will be provided. 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. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org. Students who are considered high risk according to CDC guidelines and/or those who live with individuals who are considered high risk may contact [Center for Accommodations and Support Services](#) (CASS) to discuss temporary accommodations for on-campus courses and activities.

This fall semester Structural Geology and Sedimentology and Stratigraphy will be in person, and we may adjust meetings as we go along. Your safety is our primary concern. We will meet on Monday and Wednesday from 8:30 to 9:30. Below is our current detailed schedule, but this is likely to change. Six of the Fridays will be field days, we will meet at 8:30 at locations with lots of parking and good rocks. Luckily El Paso has some great places. We'll be spending our Fridays actually looking at rocks in their natural habitat (Weather Permitting).

In order to accomplish this, you will need to be prepared for both learning and being out in the elements all day, so please make sure you come to Friday class with all of the following.

- 1) First, a safe and socially distant way of getting to the study site. If you can drive your own car, that will be best, PLEASE LET ME KNOW IF YOU WILL HAVE TROUBLE GETTING TO ANY OF OUR AREAS, so that we can figure something out.
- 2) Most important LOTS OF WATER.
- 3) Lunch, as we usually won't return until mid-afternoon
- 4) A hat and sunscreen so you won't be burned.
- 5) Good shoes. These can be anything that you are comfortable walking in in rough terrain.
- 6) Something to take notes in and with. A field notebook is weather resistant and small enough to transport. Realize that these will be your class notes as well as your data from the field. If you are using a pen, have spares as they always stop working when you need them most.
- 7) A map board or clipboard to draw maps on.

- 8) A protractor and 2 rulers with cm scale divisions.
- 9) A mask, so we can get closer than 6 ft if necessary
- 10) Personal sanitizing supplies. We will try to have gloves and hand sanitizer available for you, but we are not sure what the University will be able to supply.

You should probably make yourself a safety kit to carry with you at all times. This might include hand sanitizer, a spare mask, maybe some disinfecting wipes.

Required Technology -- These are both free, and we will cover download and use in class

QGIS – Quantum GIS version 3.10 or higher. (use whichever is the current stable version)

Plugins for QGIS Qgsurf, and Qprof

Strabospot, which is on itunes and Google Play store. You can use it to create an account on Strabospot.org. We will be creating a class account for you to upload to, so don't worry too much about that.

Require Text Boggs: Principles of Sedimentology and Stratigraphy (5th Edition). *Third and Fourth editions are acceptable as is the International Edition.*

Goals: On completion of the class, I want you to be able to look at a sedimentary rock and correctly identify it and describe it. I want you to be able to measure and draw a stratigraphic section and understand how this describes changes in an environment.

Specifically, you should be able to:

- 1) Identify and describe sedimentary rocks in field and hand specimen,
- 2) Describe a stratigraphic section, correlate stratigraphy both in outcrop and the subsurface,
- 3) Interpret depositional processes and depositional environments.
- 4) You should have a thorough understanding of the physics of sediment transport and how this is reflected in sedimentary rocks.
- 5) You should be able to interpret depositional environments from rocks.
- 6) You should be able to correlate and map strata in the subsurface.

I want you to be able to look at a rock and interpret the processes active based on the sedimentary structures, then interpret the environment based on the processes you infer.

Methods: This is a flipped course. Reading and lectures will be done at home along with homework practice. Class time will be devoted to answering your questions, solving problems and taking quizzes. The importance of this is that 1) YOU MUST GET AND USE A BOOK (digital is fine). THIS IS ACTUALLY TRUE FOR ANY CLASS. 2) YOU MUST DO LECTURES AND HOMEWORK BEFORE YOU COME TO THE CLASS. THESE WILL INCLUDE ASSIGNMENTS FROM THE TEXT.

INTERNALIZE!!! – Many students have developed the habit of learning material for a test and then forgetting it as soon as the class ends. **Don't do it.** If you are going to have a career in geology, you will have to internalize (permanently memorize the material in your geology courses. If you haven't already, start here. Everything we learn will come back again and again throughout your career. Make sure you know it.

Course Content: There are three parts to this class. (1) Learning about sedimentology and stratigraphy in the lecture part of the class. (2) Learning practical field and laboratory skills. You must demonstrate a complete knowledge of sedimentary rocks and how to describe them. Much of this will be graded as pass-fail, either you do it or you don't. (3) Application of class material and practical skills to solve field problems. We will have several short field-lab projects that will together constitute 15% of your grade. We will also include discussion points, which will be included in the homework part of the class. You will be required to **contribute ideas and feedback** to you class or group and to me. **Points, up to 10% of the class grade will be provided based on your contributions.**

Grading – IMPORTANT -- THE LAB AND CLASS ARE INTEGRATED AND YOU WILL RECEIVE THE SAME

GRADE FOR BOTH. **Four Exams 50%; Quizzes, Labs and homework 35% Final Exam 15%**

Graduate Student Requirements – Graduate students are required to complete all of the assignments required of undergraduates and in addition must – 1) write 3 reports on field laboratory studies written in the style of professional journals and that include references from recent articles on the type of deposit studied. They are required to demonstrate a greater degree of understanding on the midterm and final exams and will be expected to score 5 points higher than the undergraduates for a comparable grade on each exam.

Class Projects and Final Exam --

The Final Exam will be Monday December 6 at 10:00 AM. If you do better on a part of the final than you did in that exam during the semester, it will also replace any missed or bad grade. It's a comprehensive exam and includes everything back to the beginning of the class.

Date	Topic / Laboratory	Assigned Reading
Section 1 Sediments and sedimentary rocks		
Week 1	Intro to Class, What is sedimentology? Sedimentary particles and textures, Lab 1 – Sediment Textures <i>Description of Sed Rocks, Describing a Strat Section</i> Lab 1 Sedimentary Textures and Grain Size.	Chapter 3 Sedimentary Textures
Week 2	Sedimentary Structures Siliciclastic Sediments Lab 2, Sedimentary Rocks and Sed Structures Field Trip 1.	Chpt. 4, Sedimentary Structures
Week 3	Labor Day Monday September 6 No Class Clastic Sediments Descriptions Lab 3 Clastic Sedimentary Rocks	Chapter 5 Clastic Rocks Chpt 6 Carbonate Rocks first part
Week 4	Carbonate Rocks and Environments Lab 4 Carbonate and other Sedimentary Rocks Project 1 due Field Trip 2 Describing Sedimentary rocks	Chpt 6 Carbonate Rocks cont. Chpt. 7, Other Rocks
Section 2 Physics of Sedimentation		
Week 5	Test on Sedimentary Fabrics and Structures and Clastic Sedimentary Rocks The Physics of flow and particle movement, bed load and suspended load in class transport Stokes Law, Bernoulli's eqn. Lab 5 Physics of Flow Field Trip 3.	Chapter 2 Transport and Deposition and Handouts
Week 6	Drag Forces and Resistance to flow Homework problems and in class problems	.
Week 7	Current flow and sed structures ripples, dunes, antidunes	
Section 3 Depositional Environments		
Week 8	Rock and Sedimentary Structure Identification Depositional Environments Second Exam	<i>Chapter 8 Fluvial and Eolian Deposition</i>
Week 9	Coastal Depositional Environments Project 2 Due Overnight Trip 1 on October 22 and 23.	Chpt 9, to p. 306 Chpt. 10, 11 to p. 398
Week 10	Deep sea and Carbonate deposition	Chpt 11 p. 398 to end, Chpt 12
Section 4 Stratigraphy		
Week 11	Lithostratigraphy Field Trip 4 on Friday, Project 3 --Due WELL LOG LAB 1	Chpt 12
Week 12	Exam 3 on depositional Environments Well Log Lab 2 and 3 Weekend Field Trip 2. November 12 13	Chpt 13
Week 13	Seismic Stratigraphy LAB 5 Seismic Stratigraphy Lab	Chpt 13, 15, 16 first section
Week 14	Seismic Stratigraphy Cont., Basin Analysis Thanksgiving Holiday, no lab	Chpt. 16 finish
Week 15	Last Exam ---Final Project Due Dead Day Friday Dec 6	
Final Exam Monday, December 6 th 10:00 am – 12:45 pm		

Supplies Needed

Colored Pencils	Water bottles
Calculator	Hammer
2 protractors	Hand Lens
2 rulers with a metric scale	Marking Pen
Field notebook	

UTEP and Course Policies

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. If you have technical problems, 1) update your browser, 2) make sure it is blackboard compatible (most are), 3) clear your cache, finally 4) try switching to another browser.

You will need to have access to a computer/laptop, and a cellular phone. You will need to download or update the following software: a **word processing software** like Microsoft Office, Adobe Acrobat Reader, a Media Player, QuickTime, Excel, and Powerpoint, and Google Earth. Check that your computer hardware and software are up-to-date and able to access all parts of the course. We will also use some specialized software for this course that is free and open source. Install QGIS 3.10 or newer and make sure it works on your computer. You might also install Strabospot on your phone.

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. Click the following link for more information about [Microsoft Office 365](#) and follow the instructions.

IMPORTANT: If you encounter technical difficulties beyond your scope of troubleshooting with standard software, please contact the UTEP [Help Desk](#) as they are trained in assisting with technological needs of students. If you need help with Strabospot or QGIS, please contact me for help.

Online Etiquette

As we know, sometimes communication online can be challenging. It's possible to miscommunicate what we mean or to misunderstand what our classmates mean given the lack of body language and immediate feedback. Therefore, please keep these netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.

- Always consider audience. This is a college-level course; therefore, all communication should reflect polite consideration of other's ideas.
- Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings will be tolerated.
- When reacting to someone else's message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space.

Make-up Policy

If you are going to be absent for a field trip or exam, let your instructors know well in advance and we will do everything we can to make an accommodation. If you miss an exam or field trip without notice, or a documented excuse (e.g. illness) no makeup will be allowed. Note, if you are feeling ill, don't come to class or campus. But do call me before class and we can discuss how to take your exam or complete your assignment.

Alternate Means of Submitting Assignments in Case there are Technical Issues

I strongly suggest that you submit your work with time to spare in the event that you have a problem with the internet or the UTEP blackboard or your computer. **SAVE YOUR WORK.** Onedrive is a good system for making sure your work doesn't disappear, and if you successfully upload to Blackboard it is good at not losing anything. This way, you will have evidence that you completed the work and will not lose credit. If you are experiencing difficulties submitting your work through the course website, please contact the UTEP Help Desk. You can call or email me your work as a last resort.

Academic Integrity and Disruptive Behavior

Students are encouraged to collaborate in class and on class assignments. You are also strongly encouraged to form study groups and make this class a team effort. However, academic dishonesty (plagiarism, copying, etc.) will not be tolerated. Students will adhere to UTEP's academic integrity policy:

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 ones' 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](http://academics.utep.edu/Default.aspx?tabid=23785).
<http://academics.utep.edu/Default.aspx?tabid=23785>

Civility

This class requires group interactions in both labs and field trips, and you are expected to participate in class when called on. This does not give you permission to talk in class, use you cell phone, etc. Use common sense for group interactions!

Students with Disabilities Accommodations

If you think you have a disability or if you are experiencing some learning difficulties, please contact the Center for Accommodation and Support Services (CASS) at 915-747-5148, or see them in person in Union East Room 106. They will provide any necessary accommodations. You should also meet with your instructor in order to facilitate your needs. Please provide proper documentation of your disability and needs.

Military Service: If you are in the military and service or training may take you out of town, please advise the instructor and we'll work out an accommodation if at all possible, but you'll need to let the instructor know well in advance.

Course Drop Policy – According to UTEP Curriculum and Classroom Policies, “When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of “W” before the course drop deadline and with a grade of “F” after the course drop deadline.” **If you are not active in the first five weeks of the class and in my judgement you are unable to complete the course with a passing grade, I will drop you from the course. However, otherwise I will not drop you from the course.** However, if you feel that you are unable to complete the course successfully, please let me know and then contact the [Registrar's Office](#) to initiate the drop process. If you do not, you are at risk of receiving an “F” for the course. I will do my best to make sure that you have a good understanding of your progress and grade in the class..

Copyright Statement for Course Materials

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated.

Covid-19 Precautions

You must STAY AT HOME and REPORT if you (1) have been diagnosed with COVID-19, (2) are experiencing COVID-19 symptoms, or (3) have had recent contact with a person who has received a positive coronavirus test. Reports should be made at screening.utep.edu. If you know of anyone who should report any of these three criteria, you should encourage them to report. If the individual cannot report, you can report on their behalf by sending an email to COVIDaction@utep.edu.

For each day that you attend campus—for any reason—you must complete the questions on the UTEP screening website (screening.utep.edu) prior to arriving on campus. The website will verify if you are permitted to come to campus. Under no circumstances should anyone come to class when feeling ill or exhibiting any of the known COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, and alternative instruction will be provided. Students are advised to minimize the number of encounters with others to avoid infection. Wear face coverings when in common areas of campus or when others are present. You must wear a face covering over your nose and mouth at all times in this class. If you choose not to wear a face covering, you may not enter the classroom. If you remove your face covering, you will be asked to put it on or leave the classroom. Students who refuse to wear a face covering and follow preventive COVID-19 guidelines will be dismissed from the class and will be subject to disciplinary action according to Section 1.2.3 *Health and Safety* and Section 1.2.2.5 *Disruptions* in the UTEP Handbook of Operating Procedures.

(classes with on-campus meetings) Please note that if COVID-19 conditions deteriorate in the City of El Paso, all course and lab activities may be transitioned to remote delivery.

Resources for Students

If you have with any facet of this class, you can always come to me, or you can try some of the many resources that UTEP provides .

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.
- Zotero is a free equivalent you can download.