

# GEOL 34003 FALL 2021

## MINERALOGY AND PETROLOGY



**Instructor: Dr. Elizabeth C. Koeman-Shields**

Email: [ekoemanshields@angelo.edu](mailto:ekoemanshields@angelo.edu)

Office Phone: 325-486-6767

Cell phone: 616-446-6145

Office: VIN 124

**Virtual Office Hours (via Collaborate; hours subject to change):** MW 2:00 pm-4:00 pm; TR 10:30 am-12:00 pm; or by appointment (in-person meetings can be scheduled)

## Course Information

### Course Description

Classification, description, and interpretation of igneous and metamorphic rocks, including identifying common minerals. Interpretations include tectonic setting, processes of formation, and pressure- temperature conditions. Laboratory work consists of hand sample description, examination of thin sections under a petrographic microscope, and field trips. Prerequisite: GEOL 1303 or 1304.

### Student Learning Outcomes

Learning objectives will be evaluated by exams and assignments.

1. To study in more detail topics introduced in Physical and Historical Geology, such as rock types erupted from volcanoes (for example Davis Mountains trachytes, Big Bend pyroclastic flow deposits) and the pressure - temperature conditions at which different facies of metamorphic rocks form.
2. To get hands-on experience in describing and interpreting rocks so that you will have a solid background you could use when taking summer field camp, a 5-week field course (GEOL 3600), when working on your own research project (GEOL 4391), and when taking geology courses in graduate school. The ultimate goal is that you have a good working knowledge of how to describe and interpret whatever igneous and metamorphic rocks you encounter anywhere in the world. We will emphasize what you can do with outcrops and hand samples and thin sections in the field/lab.
3. To practice using the basic terms of igneous and metamorphic rocks so that you can compete and work with Geology Majors at other schools at field camp or in graduate school.

4. To learn how to use geology tools in the field and the lab (hand lenses, hardness kits, maps, aerial photos, and polarizing microscopes).

### Required Texts and Materials

- Textbook: Winter, J.D., 2010, Principles of Igneous and Metamorphic Petrology, Second Edition, Prentice Hall
- Lab Manual: Perkins, D., and Henke, K.R., 2004, Minerals in Thin Section, Second Edition: Pearson Education

Note: You are not required to purchase the book or online homework platform through the ASU Bookstore.

### Course Delivery

This is a face-to-face course with online components that students are expected to access in [Blackboard](#).<sup>1</sup>

### Communication

**Written communication via email:** All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes. In your emails, include the course name and section number in your subject line. I will respond to email and/or telephone messages within 24 hours during working hours Monday through Friday. Weekend messages may not be returned until Monday.

## Grading

### Evaluation and Grades

Course grades will be determined as indicated in the table below.

Assessment	Percent of Total Grade
Lab Assignments (9)	40
Lab Final	10
Reading Assignments	15
Lecture Exams	20
Final Exam (cumulative)	15
Total	100%

- **Lab Assignments:** Lab meets every Tuesday from 2-5pm. The lab topics cover identifying minerals, igneous rocks, and metamorphic rocks in hand sample and thin section. Each lab will require a lab report to be handed in. Lab assignments are generally due one to two weeks after they are assigned. See schedule for dates. Late labs are accepted but points will be deducted.
- **Lab Final:** The lab final covers mineral and rock identification. See schedule for date.

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<sup>1</sup> <https://blackboard.angelo.edu/>

- **Reading Assignments:** In Blackboard, there will be quizzes, journals, and different types of assignments that will check your understanding on certain topics and assigned readings from the book. These are not listed in the syllabus schedule, but all are posted within the topic folders that are posted each week (under course content in Blackboard). The due dates will be listed on Blackboard but you will generally have one week to complete an assignment once it is assigned. There is also one group project (worth 5%) that will include a presentation on an assigned chapter in the book. More information on this project will be given in class. See schedule for dates.
- **Lecture Exams:** There will be 2 midterms throughout the course (see schedule for dates). They will be in class exams.
- **Final Exam:** The final exam is cumulative and in class. See schedule for date and time.

### Grading System

Course grades will be dependent upon completing course requirements and meeting the student learning outcomes. The following grading scale is in use for this course:

- A = 90.00-100%
- B = 80.00-89.99%
- C = 70.00-79.99%
- D = 60.00-69.99%
- F = 0-59.99%

### Attendance and Assignment Policy

In-class attendance is not required. However, you are expected to read and complete each assignment posted in Blackboard (if you come to class or not). Although showing up for class is not directly part of your grade (see Grading section above), you will find it extremely difficult to pass this class if you do not attend regularly and participate (but stay home if you are sick)! Lab attendance is required; it is your responsibility to read the lab materials and to talk to peers about what you missed. Missed assignments, quizzes, projects, and other assignments cannot be made up. Drop date for the fall 2021 semester is November 22. NOTE: You are NOT automatically dropped if you stop completing assignments or stop coming to class.

### General Policies Related to This Course

All students are required to follow the policies and procedures presented in these documents:

- [Angelo State University Student Handbook](#)<sup>2</sup>
- [Angelo State University Catalog](#)<sup>3</sup>

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<sup>2</sup> <https://www.angelo.edu/student-handbook/>

<sup>3</sup> <https://www.angelo.edu/catalogs/>

## **Academic Integrity**

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's [Statement of Academic Integrity](#).<sup>4</sup>

## **Accommodations for Students with Disabilities**

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at [ADA@angelo.edu](mailto:ADA@angelo.edu). For more information about the application process and requirements, visit the [Student Disability Services website](#).<sup>5</sup> The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dallas Swafford  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047  
[dallas.swafford@angelo.edu](mailto:dallas.swafford@angelo.edu)  
Houston Harte University Center, Room 112

## **Incomplete Grade Policy**

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 [Grading Procedures](#)<sup>6</sup> for more information.

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<sup>4</sup> <https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php>

<sup>5</sup> <https://www.angelo.edu/services/disability-services/>

<sup>6</sup> <https://www.angelo.edu/content/files/14197-op-1011-grading-procedures>

## **Plagiarism**

Plagiarism is a serious topic covered in ASU's [Academic Integrity policy](#)<sup>7</sup> in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list. I encourage you to work together on homework assignments and to study together for exams. However, anything you turn in must be in your own words.

Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the [ASU Writing Center](#).<sup>8</sup>

## **Student Absence for Observance of Religious Holy Days**

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for [Observance of Religious Holy Day](#)<sup>9</sup> for more information.

## **Title IX at Angelo State University**

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: [Incident Reporting Form](#)<sup>10</sup>

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<sup>7</sup> <https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php>

<sup>8</sup> [https://www.angelo.edu/dept/writing\\_center/academic\\_honesty.php](https://www.angelo.edu/dept/writing_center/academic_honesty.php)

<sup>9</sup> <https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of>

<sup>10</sup> <https://www.angelo.edu/incident-form>

Face to Face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: [michelle.miller@angelo.edu](mailto:michelle.miller@angelo.edu)

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171). For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the [Title IX website](#).<sup>11</sup>

### **Information about COVID-19**

Please refer to ASU's COVID-19 (Coronavirus) Updates web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

### **Modifications to the Syllabus**

This syllabus, including grade evaluation and course schedule, is subject to modification on potentially short notice based on developing circumstances.

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<sup>11</sup> <https://www.angelo.edu/title-ix>

## Course Schedule (subject to change)

Week	Topics	Assigned Reading	Lab
#1: 8/23-8/27	Syllabus Minerals Basic Petrology Techniques	Lab Manual	1: Igneous Minerals in Hand Sample (due 8/31)
#2: 8/30-9/3	Microscope Theory Fundamental Concepts of Igneous Rock Classification	Lab Manual Chapter 1 Chapter 2	2: Identifying Felsic Igneous Minerals in Thin Section (rough draft due 9/7)
#3: 9/6-9/10	No class Monday (Labor Day) Textures of Igneous Rocks	Chapter 3	3: Identifying Mafic Igneous Minerals in Thin Section (rough draft due 9/14)
#4: 9/13-9/17	Igneous Structures Pluton Types Volcanic and Pyroclastic Rocks	Chapter 4	4: More Petrographic Techniques (due 9/28)
#5: 9/20-9/24	Magma Generation Magma Localities Presentations Friday	Chapter 10 Chapters 12-17	Complete labs 2-4 (final drafts due 9/28)
#6: 9/27-10/1	The Phase Rule Phase Diagrams	Chapter 5 Chapter 6	5: Magma Chamber Modeling (due 10/5)
#7: 10/4-10/8	Major and Trace Elements	Chapters 8 & 9	6: Intrusive Igneous Rocks in HS and TS (due 10/19)
#8: 10/11-10/15	Introduction to Metamorphism <b>10/15 Exam #1</b>	Chapter 21	Finish lab 6
#9: 10/18-10/22	<b>No Class 10/18</b> Classification of Meta Rocks Metamorphic Textures	Chapter 22 Chapter 23	7: Extrusive Igneous Rocks in HS and TS (due 11/2)
#10: 10/25-10/29	Interpreting Histories of Metamorphism and Deformation	Chapter 23 Chapter 24	Finish lab 7
#11: 11/1-11/5	Metamorphic Minerals in HS Metamorphic Mineral Assemblages	Chapter 24 Chapter 25	8: Metamorphic Minerals in Thin Section (due 11/9)
#12: 11/8-11/12	Shear Sense Project Metamorphic Facies	Chapter 25	9: Metamorphic Rocks in HS and TS (due 11/22)
#13: 11/15-11/19	Metamorphic Reactions Metamorphism of Sediments and Certain Rocks <b>11/19 Exam #2</b>	Chapter 26 Chapters 28-30	Finish lab 9
#14: 11/22-11/26	Review <b>No Classes 11/24-11/26</b>		
#15: 11/29-12/3	Mon: Review for Lab Final Wed/Fri: Review for Final Exam		Lab Final: Minerals and Rocks in HS
#16: 12/6-12/10	Final Exam (cumulative)	12/8 (W) at 8am	