GEOL 4304 Introduction to Volcanology (3 credits)
Fall 2019
Section 010 MWF 11-11:50am
ROOM: VIN 146

Instructor: Dr. Heather L. Lehto
Email: Heather.Lehto@angelo.edu
Office hours: VIN 127, TBD

REQUIRED TEXTBOOKS
• Volcanoes, Global Perspectives, Lockwood and Hazlett

COURSE OBJECTIVES
At the end of this course, you should be able to:
• Describe where volcanoes form in relation to plate boundaries and what those volcanoes might look and how they might behave.
• Describe the formation of magma, including the composition, viscosity, and style of eruption.
• Describe magma rheology and how it relates to viscosity, including how magma can change rheology. Describe what triggers a volcanic eruption.
• Identify the different volcano types and describe how each formed.
• Describe and identify lava flow features and structures and explain how they were formed.
• Describe the process that leads to explosive eruptions and the products of those eruptions.
• Describe and identify the different styles of eruption. Describe how the VEI index works. Discuss the good and bad aspects of eruption classification schemes.
• Evaluate an area for volcanic hazards.
• Interpret volcanic monitoring data and use it to forecast an impending eruption.

Assessment of the above listed objectives will be accomplished through assignments, midterm, final exam, and final project.

WORKLOAD
This is senior level course which means you will be given more complicated material and activities and you will be expected to prepare for EACH class!! It is generally agreed upon that students spend one to two hours studying and preparing for each one hour spent in class. As this is a 3 hour course, that means you should be spending 3-6 hours per week studying for this course.

We will NOT be covering every bit of material from each Chapter in class, however it MAY show up on your Exam. This means you are responsible for reading each chapter and studying the material on your own in order to earn an average or better grade. Do NOT underestimate the workload for this course. Stay on top of your reading, ask questions, and participate in class and it will give you the best chance of passing this course.

ATTENDANCE
Attendance is highly recommended as we will be covering a large amount of material in lecture as well as frequent in-class activities, which will be part of your grade. The field trip is optional, but highly recommended.
MY EXPECTATIONS FOR YOU
- Be prepared for lecture (do the reading prior to class, print off any relevant materials)
- Actively participate in lecture
- Take responsibility for your own learning (seek help if you are having a hard time)
- Be familiar with the course policies in the syllabus
- Do NOT use cellphones in class (they must be turned OFF, NOT silent when you are in class)
- Be respectful of all persons in this classroom (arriving late, leaving early, or talking during class is distracting and discourteous)

WHAT YOU CAN EXPECT FROM ME
- Be enthusiastic and knowledgeable about the course material
- Present course material in an organized way
- Start and end lectures on time
- Set high standards for the class and help you meet those standards
- Treat you with fairness and respect

COURSE WEBPAGE
Blackboard contains class outlines, web links to scenic areas mentioned in class, practice problems, answers to lab assignments, and your official grades.

CELL PHONES AND OTHER ELECTRONIC DEVICES
Cell phones must be turned off while in class. In addition, it is unacceptable to engage in text messaging during the class meeting time. If you are using any electronic devices other than a calculator (not your phone in calculator mode), a voice recorder, or a laptop computer to take notes, you may be asked by the instructor to leave the classroom for the remainder of the class period. The use of any electronic device not authorized by the instructor during a test may result in the forfeiture of your grade for that test. All electronic devices should be turned off and stored out of sight during tests.

GRADING

<table>
<thead>
<tr>
<th>Number of Items</th>
<th>Name of item</th>
<th>Percent of grade per item</th>
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<tr>
<td>10</td>
<td>Assignments</td>
<td>4% each</td>
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<tr>
<td>4</td>
<td>Exams</td>
<td>5% each</td>
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<tr>
<td>1</td>
<td>Volcano Project</td>
<td>25%</td>
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<tr>
<td>1</td>
<td>Final Exam</td>
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GRADING SYSTEM

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<th>Percent of grade</th>
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<td>100-90%</td>
<td>A</td>
</tr>
<tr>
<td>89-80%</td>
<td>B</td>
</tr>
<tr>
<td>79-70%</td>
<td>C</td>
</tr>
<tr>
<td>69-60%</td>
<td>D</td>
</tr>
<tr>
<td>59-0%</td>
<td>F</td>
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FIELD TRIP
There will be an optional 3-4 day field trip to a volcanic location to be determined. The field trip will replace one of your test grades. There will be more information on this soon.
LIFE HAPPENS CLAUSE
Life happens to all of us. Despite our best efforts, some days nothing seems to go right. Your car breaks down on the way to school, you run out of the house without something and have to go back despite the fact that you were already running late, your boss calls you into work, or your child is sick and you have to go pick them up from daycare/school. Or, you get so overwhelmed that everything seems too much to deal with.

If this happens to you, please email me. We will figure out what to do to keep you on track in the course. Whether that means extra tutoring sessions, deadline extensions, or something else. Please don’t suffer in silence. I want to help out, you just need to let me know what is going on.

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
- Angelo State University Catalog

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.

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. For more information about the application process and requirements, visit the Student Disability Services website. 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
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\textsuperscript{vi} for more information.

**PLAGIARISM**
Plagiarism is a serious topic covered in ASU’s Academic Integrity policy\textsuperscript{vii} 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.

Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the ASU Writing Center\textsuperscript{viii}.

**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\textsuperscript{ix} for more information.

**TITLE IX AT ANGELO STATE UNIVERSITY**
The University prohibits discrimination based on sex, which includes pregnancy, sexual orientation, gender identity, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination including: sexual assault, sex-based discrimination, sexual exploitation, sexual harassment, public indecency, interpersonal violence (domestic violence and/or dating violence), and stalking. As a faculty member, I am a Responsible Employee meaning that I am obligated by law and ASU policy to report any allegations I am notified of to the Office of Title IX Compliance.

Students are encouraged to report any incidents of sexual misconduct directly to ASU’s Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator at:

Michelle Miller, J.D.
Special Assistant to the President and Title IX Coordinator
Mayer Administration Building, Room 210
325-486-6357
michelle.boone@angelo.edu

You may also file a report online 24/7 at www.angelo.edu/incident-form.

If you are wishing to speak to someone about an incident in confidence you may contact the University Health Clinic and Counseling Center at 325-942-2173 or the ASU Crisis Helpline at 325-486-6345.

For more information about Title IX in general you may visit www.angelo.edu/title-ix.

**MODIFICATIONS TO THE SYLLABUS**
This syllabus, including grade evaluation and course schedule, is subject to modification. The faculty member reserves the option to make changes as necessary to this syllabus and the course content. If changes become necessary during this course, the faculty will notify students of such changes by email,
course announcements and/or via a discussion board announcement. It is the student’s responsibility to look for such communications about the course on a daily basis.

**COURSE EVALUATION:**
Students are provided the opportunity and are strongly encouraged to participate in a course evaluation at the end of the semester.

**FINAL NOTE:**
This course will require a lot of work, however if you work diligently on studying and preparing for class there is no reason why you would not do well. My goal is to teach you SOME of the real-world information and skills you will need to use as a geophysicist in the field. There is a lot more information out there and I encourage you to seek it out if you are interested in this field.
<table>
<thead>
<tr>
<th>Week of</th>
<th>Topics</th>
<th>Reading</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>August 23</td>
<td>Syllabus, Plate Tectonics</td>
<td>Chapters 1 &amp; 2</td>
<td>Volcanoes and Plate Tectonics</td>
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<tr>
<td>August 30</td>
<td>Volcanic Rocks</td>
<td>Materials provided</td>
<td>Volcanic Rock ID</td>
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<tr>
<td>September 6&lt;br&gt;Holiday, Sept 6</td>
<td>Magma Formation</td>
<td>Chapter 3</td>
<td>Magma Formation</td>
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<td>September 13</td>
<td>Physical Properties of Magma</td>
<td>Chapter 4</td>
<td>Eruption Style and Viscosity</td>
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<td>September 20</td>
<td><strong>Exam 1: Chapters 1-4,</strong></td>
<td>Chapter 6</td>
<td>Effusive Eruptions Paper Discussion – in class</td>
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<td>September 27</td>
<td>Explosive Eruptions</td>
<td>Chapter 7 &amp; 8</td>
<td>Isopach Maps</td>
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<td>October 4</td>
<td><strong>Exam 2: Chapters 6-8,</strong> Volcano Types</td>
<td>Chapter 9 &amp; 10</td>
<td>Volcano Tour</td>
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<td>October 11</td>
<td>GSA/Field Trip</td>
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<td>October 18</td>
<td>Classification Schemes</td>
<td>Chapter 5</td>
<td>Classifying Eruptions Paper Discussion – in class</td>
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<td>October 25</td>
<td><strong>Exam 3: Chapters 5, 9, &amp; 10,</strong> Volcanic Hazards and Risk</td>
<td>Chapter 11 &amp; 14</td>
<td>Volcanic Hazard Map</td>
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<td>November 1</td>
<td>Volcanic Hazards and Risk (con’t)</td>
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<td>November 8</td>
<td>Volcano Monitoring</td>
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<td>November 15</td>
<td>Volcano Project Presentations, Exam 4: Chapters 11, 14, &amp; Volcano Monitoring</td>
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<td>TBD, No class W or F</td>
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<td>November 29</td>
<td>Eruption! Activity</td>
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<td>December 6</td>
<td>Final Exam: W December 8, 10:30am-12:30pm</td>
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i [https://angelo.blackboard.edu/](https://angelo.blackboard.edu/)

ii [https://www.angelo.edu/current-students/student-handbook/](https://www.angelo.edu/current-students/student-handbook/)

iii [https://www.angelo.edu/academics/catalog/](https://www.angelo.edu/academics/catalog/)


v [https://www.angelo.edu/current-students/disability-services/](https://www.angelo.edu/current-students/disability-services/)

vi [https://www.angelo.edu/content/files/14197-op-1011-grading-procedures](https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=96)


viii [https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of](https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of)