LIFE AND PHYSICAL SCIENCES
STUDENT LEARNING OUTCOME ALIGNMENT FORM

Course Prefix/Number: GEOL 1401
Course Title: Earth Science
Brief Course Description: An introduction to the study of the Earth including the atmosphere, geosphere, hydrosphere, and cryosphere.

Foundational Component Area: Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

*Choose <u>at least</u> one Core SLO from the Core Objective.

Core Objective	ASU SLO	Course SLO	Assignment	Assessment Method
Critical Thinking*	CT1: Gather, analyze, evaluate, and synthesize information relevant to a question or issue.	Describe the fundamental processes that create weather and control climate.	Online discussion posts in which the student will evaluate mainstream articles on climate change.	AACU Critical Thinking VALUE Rubric
Communication*	CS1: Develop, interpret, and express ideas through effective written communication.	Describe the fundamental processes that create weather and control climate.	Online discussion posts in which the student will evaluate mainstream articles on climate change.	AACU Written Communication VALUE Rubric
Empirical & Quantitative Skills	EQS1: Manipulate and analyze numerical data and arrive at an informed conclusion.	Describe the fundamental processes that create weather and control climate.	Using climate models lab, in which students will use online modeling tools to analyze climate data and predictions made by the	AACU Quantitative Literacy VALUE Rubric

			models to form conclusions.	
	EQS2: Manipulate and analyze observable facts and arrive at an informed conclusion.	Describe the structure of the Earth and the materials it is made of.	Activity in which the student must search for rocks in their own environment, identify the rocks, and describe their formation history in a discussion forum.	AACU Quantitative Literacy VALUE Rubric
Teamwork*	TW1: Consider different viewpoints as a member of a team.	Describe how humans use energy and mineral resources in our daily lives, and how these resources form.	Students will read several Scientific American articles about various energy resources, meet twice, virtually, in groups to discuss answers to 5 questions about energy resources, and post as a group in each of 5 online discussion forums. Students will then meet, virtually, a final time in their groups to summarize the information added by their classmates to one of the 5 original questions and produce a video of the summarization.	AACU Teamwork VALUE Rubric
Teamwork*	TW1: Consider different viewpoints as a member of a team.	Describe how plate tectonics shapes the Earth	Students will meet in groups and discuss one of 4 scientific specialty maps showing a dataset that they must observe and define patterns in the data which they will use	Discovering Plate Boundaries Rubric and AACU Teamwork VALUE Rubric

			to come up with 4-5 different types of plate boundaries. They will describe the criteria for each plate boundary they produce and a colored map of the plate boundaries. They will then move to a new group and teach their group about the dataset they had and the plate boundary classification scheme their previous groups developed. The students in the new group will then compare all 4 datasets to create a new set of plate boundaries and classification schemes which they will then use to create a presentation to upload to the LMS.	

*Choose at least one SLO (more than one can be chosen).

CRITICAL THINKING VALUE RUBRIC

for more information, please contact value@aacu.org

Association of American Colleges and Universities

Definition

Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion.

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.

	Capstone	**Milestones**		**Benchmark**
	4	3	2	1
Explanation of issues	Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.	Issue/problem to be considered critically is stated without clarification or description.
Evidence *Selecting and using information to investigate a point of view or conclusion*	Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

WRITTEN COMMUNICATION VALUE RUBRIC

for more information, please contact value@aacu.org

Association of American Colleges and Universities

Definition

Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.

	Capstone 4	**Milestones** 3	2	**Benchmark** 1
Context of and Purpose for Writing *Includes considerations of audience, purpose, and the circumstances surrounding the writing task(s).*	Demonstrates a thorough understanding of context, audience, and purpose that is responsive to the assigned task(s) and focuses all elements of the work.	Demonstrates adequate consideration of context, audience, and purpose and a clear focus on the assigned task(s) (e.g., the task aligns with audience, purpose, and context).	Demonstrates awareness of context, audience, purpose, and to the assigned tasks(s) (e.g., begins to show awareness of audience's perceptions and assumptions).	Demonstrates minimal attention to context, audience, purpose, and to the assigned tasks(s) (e.g., expectation of instructor or self as audience).
Content Development	Uses appropriate, relevant, and compelling content to illustrate mastery of the subject, conveying the writer's understanding, and shaping the whole work.	Uses appropriate, relevant, and compelling content to explore ideas within the context of the discipline and shape the whole work.	Uses appropriate and relevant content to develop and explore ideas through most of the work.	Uses appropriate and relevant content to develop simple ideas in some parts of the work.
Genre and Disciplinary Conventions *Formal and informal rules inherent in the expectations for writing in particular forms and/or academic fields (please see glossary).*	Demonstrates detailed attention to and successful execution of a wide range of conventions particular to a specific discipline and/or writing task (s) including organization, content, presentation, formatting, and stylistic choices	Demonstrates consistent use of important conventions particular to a specific discipline and/or writing task(s), including organization, content, presentation, and stylistic choices	Follows expectations appropriate to a specific discipline and/or writing task(s) for basic organization, content, and presentation	Attempts to use a consistent system for basic organization and presentation.
Sources and Evidence	Demonstrates skillful use of high-quality, credible, relevant sources to develop ideas that are appropriate for the discipline and genre of the writing	Demonstrates consistent use of credible, relevant sources to support ideas that are situated within the discipline and genre of the writing.	Demonstrates an attempt to use credible and/or relevant sources to support ideas that are appropriate for the discipline and genre of the writing.	Demonstrates an attempt to use sources to support ideas in the writing.
Control of Syntax and Mechanics	Uses graceful language that skillfully communicates meaning to readers with clarity and fluency, and is virtually error-free.	Uses straightforward language that generally conveys meaning to readers. The language in the portfolio has few errors.	Uses language that generally conveys meaning to readers with clarity, although writing may include some errors.	Uses language that sometimes impedes meaning because of errors in usage.

QUANTITATIVE LITERACY VALUE RUBRIC

for more information, please contact value@aacu.org

Association of American Colleges and Universities

Definition

Quantitative Literacy (QL) – also known as Numeracy or Quantitative Reasoning (QR) – is a "habit of mind," competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.

	Capstone 4	**Milestones** 3	2	**Benchmark** 1
Interpretation *Ability to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words)*	Provides accurate explanations of information presented in mathematical forms. Makes appropriate inferences based on that information. *For example, accurately explains the trend data shown in a graph and makes reasonable predictions regarding what the data suggest about future events.*	Provides accurate explanations of information presented in mathematical forms. *For instance, accurately explains the trend data shown in a graph.*	Provides somewhat accurate explanations of information presented in mathematical forms, but occasionally makes minor errors related to computations or units. *For instance, accurately explains trend data shown in a graph, but may miscalculate the slope of the trend line.*	Attempts to explain information presented in mathematical forms, but draws incorrect conclusions about what the information means. *For example, attempts to explain the trend data shown in a graph, but will frequently misinterpret the nature of that trend, perhaps by confusing positive and negative trends.*
Representation *Ability to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)*	Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding.	Competently converts relevant information into an appropriate and desired mathematical portrayal.	Completes conversion of information but resulting mathematical portrayal is only partially appropriate or accurate.	Completes conversion of information but resulting mathematical portrayal is inappropriate or inaccurate.
Calculation	Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Calculations are also presented elegantly (clearly, concisely, etc.)	Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem.	Calculations attempted are either unsuccessful or represent only a portion of the calculations required to comprehensively solve the problem.	Calculations are attempted but are both unsuccessful and are not comprehensive.
Application / Analysis *Ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis*	Uses the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for competent judgments, drawing reasonable and appropriately qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for workmanlike (without inspiration or nuance, ordinary) judgments, drawing plausible conclusions from this work.	Uses the quantitative analysis of data as the basis for tentative, basic judgments, although is hesitant or uncertain about drawing conclusions from this work.
Assumptions *Ability to make and evaluate important assumptions in estimation, modeling, and data analysis*	Explicitly describes assumptions and provides compelling rationale for why each assumption is appropriate. Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions.	Explicitly describes assumptions and provides compelling rationale for why assumptions are appropriate.	Explicitly describes assumptions.	Attempts to describe assumptions.
Communication *Expressing quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized)*	Uses quantitative information in connection with the argument or purpose of the work, presents it in an effective format, and explicates it with consistently high quality.	Uses quantitative information in connection with the argument or purpose of the work, though data may be presented in a less than completely effective format or some parts of the explication may be uneven.	Uses quantitative information, but does not effectively connect it to the argument or purpose of the work.	Presents an argument for which quantitative evidence is pertinent, but does not provide adequate explicit numerical support. (May use quasi-quantitative words such as "many," "few," "increasing," "small," and the like in place of actual quantities.)

TEAMWORK VALUE RUBRIC

for more information, please contact value@aacu.org

Association of American Colleges and Universities

Definition

Teamwork is behaviors under the control of individual team members (effort they put into team tasks, their manner of interacting with others on team, and the quantity and quality of contributions they make to team discussions.)

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.

	Capstone 4	**Milestones** 3	 2	**Benchmark** 1
Contributes to Team Meetings	Helps the team move forward by articulating the merits of alternative ideas or proposals.	Offers alternative solutions or courses of action that build on the ideas of others.	Offers new suggestions to advance the work of the group.	Shares ideas but does not advance the work of the group.
Facilitates the Contributions of Team Members	Engages team members in ways that facilitate their contributions to meetings by both constructively building upon or synthesizing the contributions of others as well as noticing when someone is not participating and inviting them to engage.	Engages team members in ways that facilitate their contributions to meetings by constructively building upon or synthesizing the contributions of others.	Engages team members in ways that facilitate their contributions to meetings by restating the views of other team members and/or asking questions for clarification.	Engages team members by taking turns and listening to others without interrupting.
Individual Contributions Outside of Team Meetings	Completes all assigned tasks by deadline; work accomplished is thorough, comprehensive, and advances the project. Proactively helps other team members complete their assigned tasks to a similar level of excellence.	Completes all assigned tasks by deadline; work accomplished is thorough, comprehensive, and advances the project.	Completes all assigned tasks by deadline; work accomplished advances the project.	Completes all assigned tasks by deadline.
Fosters Constructive Team Climate	Supports a constructive team climate by doing all of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any three of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any two of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any one of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.
Responds to Conflict	Addresses destructive conflict directly and constructively, helping to manage/resolve it in a way that strengthens overall team cohesiveness and future effectiveness.	Identifies and acknowledges conflict and stays engaged with it.	Redirecting focus toward common ground, toward task at hand (away from conflict).	Passively accepts alternate viewpoints/ideas/opinions.

GEOL 1401	Earth Science (4 credits)	Spring 2018

Section 010 Meets online
Lab Section: 02Z Meets online

Instructor: Dr. Heather L. Lehto
Email: Heather.Lehto@angelo.edu
Office hours: VIN 127, MWF 10-11am and W 2-3pm or by appointment

Prerequisite courses: None

PREREQUISITE SKILLS: Accessing internet web sites, use of ASU Library resources, and proficiency with Microsoft Word and/or PowerPoint are expectations of the Health Science Professions Program. Computer access requirements are further delineated in the Undergraduate Handbook. Tutorials for ASU Library and for Blackboard are available through RamPort. The ASU Undergraduate/Graduate Student Handbook should be reviewed before taking this course.

COURSE DELIVERY: This is an online course offering. The course will be delivered via the Blackboard Learning Management System. The course site can be accessed at http:///blackboard.angelo.edu

BROWSER COMPATIBILITY CHECK: It is the student's responsibility to ensure that the browser used to access course material on his/her computer is compatible with ASU's Blackboard Learning System. The faculty reserve the right to deny additional access to course assignments lost due to compatibility issues. Students are responsible for reviewing the guidelines posted in this course regarding accessing Blackboard assignments. Problems in this area need to be discussed with faculty at the time of occurrence, either via a phone call (preferred) during posted acceptable hours for calling, or via email notification during times outside those posted for calls.

Be sure to perform a browser test. Select the "Support" tab from the Blackboard homepage (http://www.blackboard.angelo.edu) Select "Test your Browser" option.

COURSE DESCRIPTION: An introduction to the study of the Earth including the atmosphere, geosphere, hydrosphere, and cryosphere. The course will cover general overview of topics such as: rocks and minerals, streams, the ocean, groundwater, weather, climate, plate tectonics, and natural hazards.

REQUIRED MATERIALS:

- TEXTBOOK: *Earth Science: The Earth, Atmosphere, and Space, Stephen Marshak and Robert Rauber*
- ASU email account that you check regularly
- Blackboard course site: http://blackboard.angelo.edu
- Computer with MAC or Windows Operating System
- High Speed Internet Access
- Refer to Angelo State University's Distance Education website for further technology requirements: http://www.angelo.edu/distance_education/

STUDENT LEARNING OBJECTIVES: Learning outcomes will be evaluated by online discussions, exams, lab projects, and an IDEA course evaluation.

Student Learning Outcomes By completing this course the student should be able to:	**Assignment(s) or activity(ies) validating outcome achievement:**
Describe the structure of the Earth and the materials it is made of.	Chapters 1, 3, 4, 5, & 6. Smartwork Homework 1, Discussion 2, Minerals Lab, Rocks Lab
Describe how humans use energy and mineral resources in our daily lives, and how these resources form.	Chapter 11, Smartwork Homework 2, Discussion 3, Virtual Energy Gallery Walk
Describe how plate tectonics shapes the Earth.	Chapters 2, 4, 7, & 8, Smartwork Homework 3, Discussion 4 & 5, Discovering Plate Boundaries Activity
Describe how we determine what has occurred over Geologic Time by looking at the rocks.	Chapter 9, Smartwork Homework 4
Describe how water moves around the Earth.	Chapter 13, 15, & 16, Smartwork Homework 5 & 6, Discussion 6 & 7, Hydrologic Cycle Lab, Ocean Currents Lab
Describe the fundamental processes that create weather and control climate.	Chapters 17, 18, 19, & 20, Smartwork Homework 7 & 8, Discussion 8 & 9, Predicting Weather Lab, and Using Climate Models Lab
Describe how the universe and solar system were formed and their current structure.	Chapters 21 & 22, Smartwork Homework 9, Discussion 10, Tracking Moon Phases Lab

CORE CURRICULUM STUDENT LEARNING OUTCOMES: The following list of core curriculum student learning outcomes will be met and measured during this course.

Student Learning Outcome	Assessment Method
1. Gather, analyze, evaluate, and synthesize information relevant to a question or issue.	Discussion 8
2. Develop, interpret, and express ideas through effective written communication.	Discussion 8
3. Manipulate and analyze numerical data and arrive at an informed conclusion	Using Climate Models Lab
4. Manipulate and analyze observable facts and arrive at an informed conclusion	Discussion 2
5. Consider different viewpoints as a member of a team.	Virtual Energy Gallery Walk & Discovering Plate Boundaries

GRADING:

- 10 Discussions (2% each) 20%
- 9 Lab activities (3% each) 27%
- 9 Homework assignments (2% each) 18%
- 3 Exams (5% each) 15%
- 1 Final Exam 20%

GRADING SYSTEM:

- 100-90% A
- 89-80% B
- 79-70% C
- 69-60% D
- 59-0% F

KNOLWEDGE SURVEYS: Knowledge surveys are intended to give you a means of self-assessing your own learning and to serve as a guide for studying. The entire Knowledge Survey for this course is available in pdf format on Blackboard all the time. Knowledge survey items that will be tested on individual exams will be posted on a Blackboard quiz (there are **NO POINTS** for these) at least a week prior to the Exam. Taking the Knowledge Survey quiz will help you categorize the items you need to study based on your confidence in you knowledge of the item. The results of you Knowledge Survey quiz will be shown after clicking "OK" after taking the quiz. If you should need your results again for any reason simply email Dr. Lehto (heather.lehto@angelo.edu).

GENERAL POLICIES RELATED TO THIS COURSE: All students are required to follow the policies and procedures presented in the following documents:

- Angelo State University Student Handbook located on the ASU website http://www.angelo.edu/student-handbook/
- ASU Undergraduate Catalog located on the ASU website https://www.angelo.edu/content/files/16795-201213-undergraduate-catalog

STUDENT RESPONSIBILITY & ATTENDANCE: This class is asynchronous, meaning you do not have to be on-line at a certain time. There are readings which you will have to complete to be able to adequately participate in individual assignments and group discussions. In order to complete this course successfully, you do have to participate in all course activities i.e. discussion boards, lab projects, homework, etc. Students are expected to engage in course activities and submit work by due dates and times. For planning purposes, this class will probably require a minimum of 6-9 study hours per week on average.

COMMUNICATION: Faculty will respond to email and/or telephone messages within 48 hours during working hours Monday through Friday. Weekend messages may not be returned until Monday.

Written communication via Blackboard: It is an expectation of this class that you use formal writing skills giving appropriate credit to the source for your ideas. Follow AMA 10th edition guidelines for referencing.

Written communication via email: All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes.

USE GOOD "NETIQUETTE":

- Check the discussion frequently and respond appropriately and on subject.
- Focus on one subject per message and use pertinent subject titles.
- Capitalize words only to highlight a point or for titles. Otherwise, capitalizing is generally viewed as SHOUTING!
- Be professional and careful with your online interaction. Proper address for faculty is by formal title such as Dr. unless invited by faculty to use a less formal approach.
- Cite all quotes, references, and sources.
- When posting a long message, it is generally considered courteous to warn readers at the beginning of the message that it is a lengthy post.
- It is extremely rude to forward someone else's messages without their permission.
- It is fine to use humor, but use it carefully. The absence of face-to-face cues can cause humor to be misinterpreted as criticism or flaming (angry, antagonistic criticism). Feel free to use emoticons such as J or :) to let others know you are being humorous.

(The "netiquette" guidelines were adapted from Arlene H. Rinald's article, The Net User Guidelines and Netiquette, Florida Atlantic University, 1994, available from Netcom.)

ASSIGNMENT SUBMISSION: In this class, all assignments need to be submitted through the Assignments link in the Blackboard course site. This is for grading purposes. Issues with technology use arise from time to time. If a technology issue does occur regarding an assignment submission, email me at heather.lehto@angelo.edu and attach a copy of what you are trying to submit. This lets your faculty know you completed the assignment on time and are just having problems with the online submission feature in Blackboard. Once the problem is resolved, submit your assignment through the appropriate link. This process will document the problem and establish a timeline. Be sure to keep a backup of all work.

LATE WORK OR MISSED ASSIGNMENTS POLICY: The course is set up based on 1-3 week long modules. The week begins on Monday and ends on Sunday. Assignment due dates are shown on the calendar/schedule or posted within Blackboard. Late assignments are not accepted without prior approval of faculty. Faculty reserve the right to deduct points for late assignments that are accepted past the original due date.

ACADEMIC HONESTY: Academic honesty is expected on all work. Students are expected to maintain complete honesty and integrity in their online experiences. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The **Department of Physics and Geosciences** adheres to the academic honesty statement as set forth in the Angelo State University Student Handbook (2011-2012) http://www.angelo.edu/student-handbook/code-of-student-conduct/misconduct.php. The University "faculty expects all students to engage in all academic pursuits in a manner that is above reproach and to maintain complete honesty and integrity in the academic experience both in and out of the classroom setting and may initiate disciplinary proceedings against a student accused of any form of academic dishonesty, including but not limited to, cheating on an examination or other academic work, plagiarism, collusion, and the abuse of resource materials."

PLAGIARISM: Plagiarism at ASU is a serious topic. The Angelo State University's Honor Code gives specific details on plagiarism and what it encompasses. 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 assignments, it is unacceptable to copy word for word without quotation marks and the source of the quotation. We use the APA Style Manual of the American Psychological Association as a guide for all writing assignments. Quotes should be used sparingly. 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 via Bb Safe Assignment or Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center http://www.angelo.edu/dept/writing_center/academic_honesty.php.

STUDENTS WITH DISABILITIES:
1. "Angelo State University 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 Act of 2008 (ADAAA), and subsequent legislation."

2. The Office of Student Affairs is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student's responsibility to initiate such a request by contacting the Office of Student Affairs, University Center, Room 112 at (325) 942-2047 or (325) 942-2211(TDD/FAX) or by e-mail at studentservices@angelo.edu to begin the process. The Office of Student Affairs will establish the particular documentation requirements necessary for the various types of disabilities.

Reasonable accommodations will be made for students determined to be disabled or who have documented disabilities.

INCOMPLETE GRADE POLICY: (OP 10.11 Grading Procedures)
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.

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." Please see ASU Operating Policy 10.19.

COPYRIGHT POLICY: Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

SYLLABUS CHANGES: 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.

GEOLOGIC EXHIBITION ORGANIZATION (GEO):

GEO, the student organization of all interested in geology (not just majors/minors), meets almost every Wednesday @ 6:00PM. GEO is a student chapter of the American Association of petroleum Geologists (www.aapg.org). Sigma Gamma Epsilon, the national honor society of the earth sciences is related to GEO.

YOU CAN MAJOR OR MINOR IN GEOLOGY @ ASU! See the BS in Geoscience requirements at https://www.angelo.edu/physics/geoscience_degree.php. A Geology Minor requires 18 hours of geology courses. Good and rewarding careers exist for geologists, geophysicists, hydrogeologists, secondary science teachers, and petroleum engineers. Talk to your professor and read http://www.angelo.edu/dept/physics/Geosciences/geoscience_careers.php.

SCHEDULE: All information is subject to change.

Week of	Lecture Topic	Reading
August 29	Earth Structure Module	Ch 4, 5, and 6
September 5	Earth Structure Module	
September 12	Earth Structure Module **Exam 1**	
September 19	Energy Resources Module	Ch 11
September 26	Plate Tectonics Module	
October 3	Plate Tectonics Module	Ch 2
October 10	Geologic Time Module **Exam 2**	Ch 9
October 17	Surface and Groundwater Module	Ch 12, 13, 15, & 16
October 24	Surface and Groundwater Module	
October 31	Surface and Groundwater Module	
November 7	Weather and Climate Change Module	Ch 17, 18, 19, & 20
November 14	Weather and Climate Change Module	
November 21	Weather and Climate Change Module **Exam 3**	
November 28	Universe and Solar System Module	Ch 1, 21, 22, & 23
December 5	Universe and Solar System Module	Ch 22 & 23
December 12	**Final Exam**	

Virtual Energy Gallery Walk

Energy affects every aspect of our lives, from powering our homes and cars to running our smartphones and tablets. However, the sources of energy can run the gamut from CO_2 producing fossils fuels, such as oil and coal, to greener options, such as wind and solar power. There are pros and cons to every energy resource we use, and it is important to understand those pros and cons to pick the right mix of energy sources for powering our devices, homes, and communities.

In this assignment we will team up to explore some aspects of different energy resources by doing a modified, virtual gallery walk. Each of you will be assigned a set of articles from Scientific American on different energy topics (conventional energy, alternative energy, energy and environmental issues, geopolitics of energy, consumer energy information, etc…). You must read these articles and the information in the textbook before the gallery walk begins.

You will have two weeks to complete this activity. During this time you will be required to meet in our groups a minimum of **3 times** to discuss and post answers, comments, or questions to the forums for each of 5 questions about energy resources. During the last meeting you will return to one of the question, which I will assign to you, to review all of the comments from your fellow classmates. As a group you will then synthesize the information and produce a video in which you summarize the answer to the question. This video will be uploaded to Blackboard. Below is a more detailed list of the procedures for this assignment.

Procedure:

Task 1. Read the list of articles assigned to you and the chapter on energy in the textbook.

Task 2. Schedule a time for your group to meet early in the first week to meet using Blackboard Collaborate (See instructions for how to use Blackboard Collaborate, all Collaborate sessions will be recorded and reviewed by your instructor to evaluate your teamwork as part of your grade).

Task 3. During your group's first meeting you will have a discussion on each of 5 questions posted in the discussion forum for this assignment. You will be expected to enlighten your group members on your point of view based on the articles you read as to the best answers to these questions. The answers are not the 'look-it-up-in-the-book' type answers. You will be expected to communicate at the college level, and sound intelligent and educated during the gallery walk. For each question one member of the group should post the group's answer, thoughts, and comments about the question in the forum on Blackboard. Take turns being the "recorder" for the group.

Task 4. Schedule a second meeting towards the end of the first week or beginning of the second week of the assignment to meet using Blackboard Collaborate (See instructions for how

to use Blackboard Collaborate, all Collaborate sessions will be recorded and reviewed by your instructor to evaluate your teamwork as part of your grade).

Task 5. Return to each of the 5 questions, review the information added by your other classmates, and discuss how this new information. What new information was added? How does this new information shape your understanding of the topic? Do any of the posts make you change your original opinion? How so? For each question one member of the group should post the group's answer, thoughts, and comments about the question in light of the new information in the forum on Blackboard. Take turns being the "recorder" for the group.

Task 6. Schedule a final meeting near the end of the second week to meet using Blackboard Collaborate (See instructions for how to use Blackboard Collaborate, all Collaborate sessions will be recorded and reviewed by your instructor to evaluate your teamwork as part of your grade).

Task 7. During your final meeting you will focus on only one question, which will be assigned to the group by your instructor. For your question look over everything that has been added to the question by all of your classmates and synthesize this material into a cohesive answer to the question. You will then produce a video of your answer and post it to the forum on Blackboard.

Tangible products of this assignment:

1. A minimum of 2 posts to each of 5 forums that are the result of group discussion of each question. One at the beginning of the assignment and one in the middle of the assignment.
2. A video from the group giving an answer to one question that sums up the contributions of the entire class.

The grading rubric used to asses this assignment is the AACU Teamwork VALUE Rubric included below.

TEAMWORK VALUE RUBRIC

for more information, please contact value@aacu.org

Association of American Colleges and Universities

Definition

Teamwork is behaviors under the control of individual team members (effort they put into team tasks, their manner of interacting with others on team, and the quantity and quality of contributions they make to team discussions.)

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.

	Capstone 4	**Milestones** 3	 2	**Benchmark** 1
Contributes to Team Meetings	Helps the team move forward by articulating the merits of alternative ideas or proposals.	Offers alternative solutions or courses of action that build on the ideas of others.	Offers new suggestions to advance the work of the group.	Shares ideas but does not advance the work of the group.
Facilitates the Contributions of Team Members	Engages team members in ways that facilitate their contributions to meetings by both constructively building upon or synthesizing the contributions of others as well as noticing when someone is not participating and inviting them to engage.	Engages team members in ways that facilitate their contributions to meetings by constructively building upon or synthesizing the contributions of others.	Engages team members in ways that facilitate their contributions to meetings by restating the views of other team members and/or asking questions for clarification.	Engages team members by taking turns and listening to others without interrupting.
Individual Contributions Outside of Team Meetings	Completes all assigned tasks by deadline; work accomplished is thorough, comprehensive, and advances the project. Proactively helps other team members complete their assigned tasks to a similar level of excellence.	Completes all assigned tasks by deadline; work accomplished is thorough, comprehensive, and advances the project.	Completes all assigned tasks by deadline; work accomplished advances the project.	Completes all assigned tasks by deadline.
Fosters Constructive Team Climate	Supports a constructive team climate by doing all of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any three of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any two of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any one of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.
Responds to Conflict	Addresses destructive conflict directly and constructively, helping to manage/resolve it in a way that strengthens overall team cohesiveness and future effectiveness.	Identifies and acknowledges conflict and stays engaged with it.	Redirecting focus toward common ground, toward task at hand (away from conflict).	Passively accepts alternate viewpoints/ideas/opinions.

Discovering Plate Boundaries

You have been (or will be) assigned to one of four Scientific Specialties and to one of ten Plates or Plate Groupings.

The Scientific Specialties are:

A. Seismology
B. Volcanology
C. Geography
D. Geochronology

The Plates or Plate Groupings are:

A. North American Plate
B. Pacific Plate
C. African Plate
D. South American Plate
E. Eurasian Plate
F. Cocos/Nazca/Caribbean Plates
G. Australian Plate
H. Antarctic Plate
I. Indian Plate
J. Arabian Plate

Each Scientific Specialty group has been provided a world map showing data relevant to locating plate boundaries and understanding plate boundary processes. Each student will need two Plate Boundary Maps. You will mark these as described below and submit them at the end of the exercise.

Part 1: Scientific Specialty groups

Task 1. Schedule a time to meet with your group online using collaborate. (See instructions on how to meet using collaborate in Blackboard, all Collaborate sessions will be recorded and reviewed by your instructor to evaluate your teamwork as part of your grade.) When you meet you will need to have your Scientific Specialty map and a Plate Boundary map available to use. You may want to print out a copy of the Plate Boundary map to mark on during this part of the assignment if you are not comfortable using Adobe Pro, Paint, or another program to draw on the map on your PC. If you print your map you will need to scan or take a picture of the map to submit it online via Blackboard.

Task 2. Look at your group's Scientific Specialty map and determine what type of data you are looking at by examining the map title and legend. Now look at the data on the map and describe what you see in the data. For the point data (volcanoes and earthquakes) you are looking for distribution patterns (e.g., are the

data lined up or clustered in any way). For surface data (topography and seafloor age) you are looking for where the surface is high and where it is low, where it is old and where it is young. Work as a group. Let everyone talk about what they see. During this meeting concentrate on the whole world.

Task 3. Now focus your attention on the plate boundaries. Identify the nature of your data near the plate boundaries. Is it high or low, symmetric or asymmetric, missing or not missing, varying along the boundary or constant along the boundary, etc. As a group, classify the plate boundaries based on your observations of your group's data. Restrict yourselves to about 4-5 boundary types. At this point, do not try to explain the data; just observe! For example, imagine your group decides that you will have 4 different types of plate boundaries; you will begin by describing what data fits which plate boundary. So, along Plate Boundary A there are lots of deep earthquakes/line of volcanoes/deep ocean floor, old crust. Do the same for all of the plate boundaries you propose.

Task 4. Assign a color to each boundary type in your classification scheme. Color your first Plate Boundary Map to locate your group's boundary types. If the data are asymmetric at a particular boundary type, devise a way of indicating that on your plate boundary map. Each person should mark the boundary types identified by the group on their own map. Each person should write down descriptions of the group's plate boundary classifications. These maps and descriptions will be submitted via Blackboard at the end of the exercise.

Part 2: Plate groups

Task 1. Schedule a time to meet with your NEW group online using collaborate. (See instructions on how to meet using collaborate in Blackboard, all Collaborate sessions will be recorded and reviewed by your instructor to evaluate your teamwork as part of your grade.) When you meet you will need to have your Scientific Specialty maps and another Plate Boundary map available to use. You may want to print out a copy of the Plate Boundary map to mark on during this part of the assignment if you are not comfortable using Adobe Pro, Paint, or another program to draw on the map on your PC. If you print your map you will need to scan or take a picture of the map to submit it online via Blackboard.

Task 2. Each person should make a brief presentation to the rest of their group about their Scientific Specialty's data and classification scheme.

Task 3. Compare the classification schemes of boundary types for **your plate only** based on the 4 different types of data. Are there commonalities (along the boundaries) between the different classifications? Can your plate group come up with a new classification scheme that now includes data from all four Scientific Specialties? As above, assign a color to each of your plate boundary types. If a boundary is asymmetric, be sure to devise a way to represent the asymmetry. Mark the boundaries of your plate or plate grouping using your color scheme on your second Plate Boundary Map. Also write a description of the plate boundary classes you have used. The map and description should be submitted through Blackboard at the end of the exercise.

Task 4. Your Plate Group must now make a presentation to post to Blackboard. The presentation must include information about their group's plate boundary classification scheme describing how they classified the boundaries of their plate. You must also include a final map showing the plate boundaries around each group's plate and including a legend. The presentation can be in the form of powerpoint slides, a wiki, video, etc. Be creative, just make sure the final product can be uploaded to Blackboard.

Tangible products of this assignment:

1. One colored Plate Boundary Map **per person** showing plate boundaries determined using data from your assigned scientific specialty from Part 1. Descriptions of the plate boundary classifications devised by your specialty group should be included.

2. One colored Plate Boundary Map **per person** with your assigned plate's boundaries classified using data from all four scientific specialties that you completed in Part 2. Descriptions of the plate boundary classifications devised by your plate group should be included.

3. One presentation **per plate group** uploaded to Blackboard that includes a map of the plate boundaries surrounding your group's plate and descriptions of your plate boundary classification scheme.

See the grading rubric below for information on how this assignment will be assessed.

Discovering Plate Boundaries Grading Rubric

Student Name:_____ Grade:_____/18

Criteria	Exceeds Expectations (3)	Meets Expectations (2)	Needs Improvement (1)	Inadequate (0)
Plate Boundary map and description of classification scheme for Scientific Specialty groups (Part 1)	Plate boundaries are clearly marked using different colors. A clear legend is provided. Descriptions of plate boundary scheme is detailed, clear and logical. No scientifically accepted plate boundaries have been missed on map and in descriptions. Map is clear and easy to read. Map includes a title.	Plate boundaries are clearly marked using different colors. A clear legend is provided. Descriptions of plate boundary scheme is detailed and clear and, for the most part, logical. Majority of scientifically accepted plate boundaries have been included on map and in descriptions. Map is clear and easy to read.	Plate boundaries are not clearly marked or the plate boundaries are not marked using different colors. A legend is provided but it is messy or does not include all pertinent information. Descriptions of plate boundary scheme is not detailed, clear, or logical. Many of scientifically accepted plate boundaries have been missed on map and in descriptions. Map is not clear or easy to read.	Plate boundaries are not marked using different colors or at all. A legend is not provided. Descriptions of plate boundary scheme is either absent or does not use sound logic. Most scientifically accepted plate boundaries have been missed on map and in descriptions. Map is clear and easy to read.
Plate Boundary map and description of classification scheme for plate groups. (Part 2, Task 3)	Plate boundaries are clearly marked using different colors. A clear legend is provided. Descriptions of plate boundary scheme is detailed, clear and logical. No scientifically accepted plate boundaries have been missed on map and in descriptions. Map is clear and easy to read. Map includes a title.	Plate boundaries are clearly marked using different colors. A clear legend is provided. Descriptions of plate boundary scheme is detailed and clear and, for the most part, logical. Majority of scientifically accepted plate boundaries have been included on map and in descriptions. Map is clear and easy to read.	Plate boundaries are not clearly marked or the plate boundaries are not marked using different colors. A legend is provided but it is messy or does not include all pertinent information. Descriptions of plate boundary scheme is not detailed, clear, or logical. Many of scientifically accepted plate boundaries have been missed on map and in descriptions. Map is not clear or easy to read.	Plate boundaries are not marked using different colors or at all. A legend is not provided. Descriptions of plate boundary scheme is either absent or does not use sound logic. Most scientifically accepted plate boundaries have been missed on map and in descriptions. Map is clear and easy to read.

Group presentation of plate boundary maps and classification schemes for plate boundary. (Part 2, Task 4)	A plate boundary map of the group's plate is included in the presentation. Descriptions of the classification schemes are included in the presentation. The presentation is clear and does not include many grammatical errors. Presentation is engaging and fun to read/watch. There is a clear attention to detail in the presentation.	A plate boundary map of the group's plate is included in the presentation. Descriptions of the classification schemes are included in the presentation. The presentation is clear and does not include many grammatical errors. Presentation is easy to follow.	A plate boundary map of the group's plate is included in the presentation but it is hard to see. Descriptions of the classification schemes is included in the presentation but may not be very clear. The presentation is not clear and/or includes many grammatical errors. Presentation is not easy to follow.	A plate boundary map of the group's plate is or the descriptions of the classification schemes are not included in the presentation. The presentation is not clear and/or includes so many grammatical errors that the audience is confused or frustrated. Presentation is messy.
Presentation of Scientific Specialty data to plate group.	Presenter is clear and explains their dataset and plate boundary scheme so that everyone in the group can understand. Presenter explains the logic behind the plate boundary scheme. Presentation includes a copy of the plate boundary map to which the presenter refers. Presenter answers questions clearly and concisely.	Presenter is clear and explains their dataset and plate boundary scheme so that most people in the group can understand. Presenter explains the logic behind the plate boundary scheme. Presentation includes a copy of the plate boundary map, but presenter does not refer to the map at all. Presenter may not be able to answer all questions.	Presenter is not clear and/or does explains their dataset and plate boundary scheme so that most people in the group can understand. Presenter does not explain the logic behind the plate boundary scheme. Presentation does not include a copy of the plate boundary map. Presenter is not be able to answer any questions.	Presenter cannot explain their map, dataset or logic behind the plate boundary scheme at all. Presentation does not include a copy of the plate boundary map. Presenter is not be able to answer any questions. Or presenter does not show up to the meeting.

Teamwork will be evaluated using the AACU Teamwork VALUE Rubric included below.

TEAMWORK VALUE RUBRIC

for more information, please contact value@aacu.org

Association of American Colleges and Universities

Definition

Teamwork is behaviors under the control of individual team members (effort they put into team tasks, their manner of interacting with others on team, and the quantity and quality of contributions they make to team discussions.)

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.

	Capstone 4	**Milestones** 3	 2	**Benchmark** 1
Contributes to Team Meetings	Helps the team move forward by articulating the merits of alternative ideas or proposals.	Offers alternative solutions or courses of action that build on the ideas of others.	Offers new suggestions to advance the work of the group.	Shares ideas but does not advance the work of the group.
Facilitates the Contributions of Team Members	Engages team members in ways that facilitate their contributions to meetings by both constructively building upon or synthesizing the contributions of others as well as noticing when someone is not participating and inviting them to engage.	Engages team members in ways that facilitate their contributions to meetings by constructively building upon or synthesizing the contributions of others.	Engages team members in ways that facilitate their contributions to meetings by restating the views of other team members and/or asking questions for clarification.	Engages team members by taking turns and listening to others without interrupting.
Individual Contributions Outside of Team Meetings	Completes all assigned tasks by deadline; work accomplished is thorough, comprehensive, and advances the project. Proactively helps other team members complete their assigned tasks to a similar level of excellence.	Completes all assigned tasks by deadline; work accomplished is thorough, comprehensive, and advances the project.	Completes all assigned tasks by deadline; work accomplished advances the project.	Completes all assigned tasks by deadline.
Fosters Constructive Team Climate	Supports a constructive team climate by doing all of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any three of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any two of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any one of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.
Responds to Conflict	Addresses destructive conflict directly and constructively, helping to manage/resolve it in a way that strengthens overall team cohesiveness and future effectiveness.	Identifies and acknowledges conflict and stays engaged with it.	Redirecting focus toward common ground, toward task at hand (away from conflict).	Passively accepts alternate viewpoints/ideas/opinions.