

Historical Geology 1304: Earth & Space Science (Dual Credit)
Spring Semester 2022

January 4, 2022

Michelle Bompezzi Phone: 806-705-5368 Email: mbompezzi@frenship.us
Room: 1016 Conference: Blue Day 4th Period & Gold Day 7th Period

Course Description:

This is a yearlong course that will cover physical geology in the fall semester and historical geology in the spring semester. Physical geology will include such topics as mineral identification and use, rock identification, identifying landforms, weathering and erosion, and plate tectonics. Historical geology will include Earth's geologic history, relative and absolute dating of events and objects based on stratigraphy, weather and climate, and Earth's role in the Solar System and Universe.

Course Approach and Expectations:

The majority of work done in this class is project-based with an emphasis on collaboration. It is my goal to create future scientists and leaders who can work well independently and as part of a team. I will provide notes at the beginning of a unit to be used as study material for tests and quizzes. The rest of the work will be done independently or in collaborative groups through Schoology. There will be many projects that have a presentation element as well. I feel this is beneficial because public speaking is a necessary 21st century skill that must be practiced. Students are expected to attend all classes, be on time, bring all necessary materials (laptop, paper, pens/pencils, notebook, etc.), and be ready to work. We will have fun, but we will work hard so your participation and focus will be necessary for your success!

Grading:

90 – 100 = A

80 – 89 = B

70 – 79 = C

69 and below = F

Daily Work – 60%

Assessments – 40%

Final - All students are required to take the final during the **week of May 9th** which will average in toward your final grade. **Exact date to be announced.**

Late work will be accepted within a reasonable amount of time however, you will lose 5 points each day it is late and you forfeit your ability to make corrections or redo the assignment.

Attendance Policy:

Students are required to attend all classes. We will follow FHS attendance policy and procedure. It is your responsibility to ask a classmate about what you missed and make time to come in if necessary to make up assignments. All assignments will be posted in Schoology!

Field Trips:

I am planning two field trips, one each semester. More info to come! Class dues of \$10 will be required before students can attend the trip. It is not mandatory to attend the trip, but class dues must be paid in order to attend.

Course Content:

<p>Unit 7: Earthquakes, Volcanoes, and Mountains (12 blocks) 1/4-2/4 Target Test Date: 2/4</p>	<p>Unit: 8 Geologic Time (9 blocks) 2/7-3/4 Target Test Date: 3/4</p>
<p>10(C) explain how plate tectonics accounts for geologic processes and features, including sea floor spreading, ocean ridges and rift valleys, subduction zones, earthquakes, volcanoes, mountain ranges, hot spots, and hydrothermal vents;</p> <p>10(D) calculate the motion history of tectonic plates using equations relating rate, time, and distance to predict future motions, locations, and resulting geologic features;</p> <p>11(A) compare the roles of erosion and deposition through the actions of water, wind, ice, gravity, and igneous activity by lava in constantly reshaping Earth's surface;</p> <p>11(C) analyze changes in continental plate configurations such as Pangaea and their impact on the biosphere, atmosphere, and hydrosphere through time;</p> <p>11(E) evaluate the impact of changes in Earth's subsystems on humans such as earthquakes, tsunamis, volcanic eruptions, hurricanes, flooding, and storm surges and the impact of humans on Earth's subsystems such as population growth, fossil fuel burning, and use of fresh water.</p>	<p>7(A) evaluate relative dating methods using original horizontality, rock superposition, lateral continuity, cross-cutting relationships, unconformities, index fossils, and biozones based on fossil succession to determine chronological order;</p> <p>7(B) calculate the ages of igneous rocks from Earth and the Moon and meteorites using radiometric dating methods; and</p> <p>7(C) understand how multiple dating methods are used to construct the geologic time scale, which represents Earth's approximate 4.6-billion-year history.</p> <p>8(A) analyze and evaluate a variety of fossil types such as transitional fossils, proposed transitional fossils, fossil lineages, and significant fossil deposits with regard to their appearance, completeness, and alignment with scientific explanations in light of this fossil data;</p> <p>8(B) explain how sedimentation, fossilization, and speciation affect the degree of completeness of the fossil record; and</p> <p>8(C) evaluate the significance of the terminal Permian and Cretaceous mass extinction events, including adaptive radiations of organisms after the events.</p>
<p>Unit: 9 Atmosphere & Weather (7 blocks) 3/8-3/31 Target Test Date: 3/31</p>	<p>Unit: 10 Global Climate (9 blocks) 4/1-27 Target Test Date: 4/27</p>
<p>6(A) analyze the changes of Earth's atmosphere that could have occurred through time from the original hydrogen-helium atmosphere, the carbon dioxide-water vapor-methane atmosphere, and the current nitrogen-oxygen atmosphere;</p> <p>6(B) evaluate the role of volcanic outgassing and impact of water-bearing comets in developing Earth's atmosphere and hydrosphere;</p> <p>6(C) investigate how the formation of atmospheric oxygen and the ozone layer impacted the formation of the geosphere and biosphere;</p> <p>13(B) analyze how global ocean circulation is the result of wind, tides, the Coriolis effect, water density differences, and the shape of the ocean basins;</p> <p>15(D) explain the global carbon cycle, including how carbon exists in different forms within the five subsystems and how these forms affect life; and</p> <p>15(E) analyze recent global ocean temperature data to predict the consequences of changing ocean temperature on evaporation, sea level, algal growth, coral bleaching, hurricane intensity, and biodiversity.</p>	<p>13(C) analyze the empirical relationship between the emissions of carbon dioxide, atmospheric carbon dioxide levels, and the average global temperature trends over the past 150 years;</p> <p>13(D) discuss mechanisms and causes such as selective absorbers, major volcanic eruptions, solar luminance, giant meteorite impacts, and human activities that result in significant changes in Earth's climate;</p> <p>14(A) analyze the uneven distribution of solar energy on Earth's surface, including differences in atmospheric transparency, surface albedo, Earth's tilt, duration of insolation, and differences in atmospheric and surface absorption of energy;</p> <p>14(B) investigate how the atmosphere is heated from Earth's surface due to absorption of solar energy, which is re-radiated as thermal energy and trapped by selective absorbers; and</p> <p>14(C) explain how thermal energy transfer between the ocean and atmosphere drives surface currents, thermohaline currents, and evaporation that influence climate.</p> <p>15(A) describe how changing surface-ocean conditions, including El Niño-Southern Oscillation, affect global weather and climate patterns;</p> <p>15(B) investigate evidence such as ice cores, glacial striations, and fossils for climate variability and its use in developing computer models to explain present and predict future climates;</p>
<p>Unit: 11 The Universe and Solar System (7 blocks) 4/29-5/17 Target Test Date: 5/17</p>	
<p>4(A) evaluate the evidence concerning the Big Bang model such as red shift and cosmic microwave background radiation and current theories of the evolution of the universe, including estimates for the age of the universe;</p>	

<p>4(B) explain how the Sun and other stars transform matter into energy through nuclear fusion; and</p> <p>4(C) investigate the process by which a supernova can lead to the formation of successive generation stars and planets. 5(A) analyze how gravitational condensation of solar nebular gas and dust can lead to the accretion of planetesimals and protoplanets;</p> <p>5(B) investigate thermal energy sources, including kinetic heat of impact accretion, gravitational compression, and radioactive decay, which are thought to allow protoplanet differentiation into layers;</p> <p>5(C) contrast the characteristics of comets, asteroids, and meteoroids and their positions in the solar system, including the orbital regions of the terrestrial planets, the asteroid belt, gas giants, Kuiper Belt, and Oort Cloud;</p> <p>5(D) explore the historical and current hypotheses for the origin of the Moon, including the collision of Earth with a Mars-sized planetesimal;</p> <p>5(E) compare terrestrial planets to gas-giant planets in the solar system, including structure, composition, size, density, orbit, surface features, tectonic activity, temperature, and suitability for life; and</p> <p>5(F) compare extra-solar planets with planets in our solar system and describe how such planets are detected.</p>	
---	--

Student Disability Services:

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.

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:

Ms. Dallas A. Swafford
Director of Student Disability Services
325-942-2047
dallas.swafford@angelo.edu
Houston Harte University Center

Title IX Statement:

Angelo State University is committed to the safety and security of all students. If you or someone you know experience sexual harassment, sexual assault, domestic or dating violence, stalking, or discrimination, you may contact ASU's Title IX Coordinator:

Michelle Nicole Boone, J.D.
Director of Title IX Compliance
Michelle.boone@angelo.edu
325-486-6357
Mayer Administration Building 204

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 for more information.

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 for more information.

Student Conduct Policies:

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.

Plagiarism

Plagiarism is a serious topic covered in ASU's Academic Integrity policy 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 via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center.

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.

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