GEOL 3342.500 Fall 2021

Planetary Geology

Syllabus

Instructor: Wesley Turner
Room 307 Miller Science Building
(936) 468-1049
turnerwl@sfasu.edu

Virtual Office hours: By Student Appointment over Zoom; email through MySFA or D2L to schedule

Department: Geology

Course Description: Three semester hour course covering topics concerning application of geoscience to the astronomical realm. The course material involves solar system and planetary formation, geosphere-atmosphere-hydrosphere interactions, planetary materials, asteroids, meteorites, comets, stellar evolution, and remote sensing. Planetary Geology contains extensive written content that includes the same information students in a face-to-face lecture course receive, requiring students to engage the online modules for at least three hours per week. Primary source readings are woven into the content to support key concepts and provide perspective on geoscience concepts. In addition, students are required to complete quizzes/exams over the course content, participate in weekly discussion forums, and complete multiple writing assignments that evaluate their comprehension of planetary materials and processes. Successful completion of all elements for the course requires at least six hours of additional student work each week. Prerequisites: GEOL 1301 or GOL 1303.

Program Learning Outcomes:

1. Demonstrate knowledge of the fundamental core geologic concepts (Mineralogy, Petrology, Structural Geology, Stratigraphy, Geophysics and Geochemistry). (Concepts)
2. Execute geologic procedures and methods accurately, appropriately and efficiently. (Skills)
3. Apply principles of logic and reasoning to develop and analyze geologic problems. (Logical - Reasoning)
4. Demonstrate competence in using various geologic tools, including technology, to formulate, represent, and solve problems. (Critical thinking - Problem Solving)
5. Demonstrate proficiency in communicating geologic information in an appropriate form to the expected audience. (Communication)

Student Learning Outcomes:

1. Demonstrate understanding of planetary formation and structure of the solar system;
2. Demonstrate ability to analyze and interpret information from remote sensing techniques;
3. Demonstrate understanding of geologic concepts applied to extraterrestrial bodies;
4. Demonstrate competency in critical thinking through effective scientific written reports and oral presentations

General Education Core Curriculum Objectives/Outcomes:

The Texas Higher Education Coordinating Board has identified six core learning objectives: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives. By enrolling in GOL 101 Fundamentals of Earth Science, you are also enrolling in a Core Curriculum Course that seeks to develop the following core objectives established by the THECB:

- Critical Thinking Skills – creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
- Communication Skills – effective development, interpretation and expression of ideas through written, oral and visual communication.
- Empirical and Quantitative Skills – manipulation and analysis of numerical data or observable facts resulting in informed conclusions.
- Teamwork – the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Text and Materials:

No textbook is required for this course. Students are required readings from a variety of published books and current articles in professional journals as PDFs for download. Reading material from space agency websites, covering past and future exploration missions are also used. Recommended Textbook: Planetary Geoscience by McSween, Moersch, et al. ISBN: 1107145384
Course Requirements:

**Quizzes:** Online quizzes covering the module material will be made available through the open period for each module. Quizzes are automatically graded based on correctness.

**Discussion Activities:** Students will be asked to write short discussions concerning topics covered in the modules. Students cannot view other posts until they post their discussion. Discussions should professional and courteous towards other students. Discussion activities are graded based on content and meeting criteria of the individual discussion.

**Assignments:** Assignments will include exercises and worksheets concerning module material and a research paper with presentation. Assignments will be graded based on criteria of individual assignment.

**Exams:** Exams at the end of each unit will gauge understanding of the material covered in that unit's modules. Exams are automatically graded based on correctness.

Grading Policy

Your final grade will be determined by summing the weighted averages of your grades in each of the categories below. Letter grades will be assigned as follows: A (90.0–100), B (80.0–89.9), C (70.0–79.9), D (60.0–69.9), F (< 60.0)

**Quizzes:** 6 Quizzes total of equal weight; 10% of course grade

**Discussion Activities:** 7 Activities total, 6 of equal weight, 1 of double weight; 15% of course grade

**Assignments:** 8 Assignments total, 2 Mapping Assignments worth 3% of the total assignment grade, Research Project Topic worth 2%, Annotated Bibliography worth 5%, Main Body Draft worth 10%, Abstract worth 2%, Final Paper worth 50%, and Presentation worth 25%; 15% of course grade

**Exams:** 3 Exams worth equal weight; 60% of course grade
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<tr>
<th>Week</th>
<th>Module</th>
<th>Assignments (all times are CST)</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Module 1: Getting Started</td>
<td>Read syllabus, semester calendar</td>
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<tr>
<td>8/23-8/27</td>
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<td>Complete Discussion Activity: Student Introduction by 8/27 at 11:59 PM</td>
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<tr>
<td>Week 2</td>
<td>Module 2: Geologic Processes Pt. 1</td>
<td>Read week's content</td>
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<td>8/30-9/3</td>
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<td>Complete Discussion Activity: Core Comparison by 9/3 at 11:59 PM</td>
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<td></td>
<td></td>
<td>Complete Quiz #1 by 9/3 at 11:59 PM</td>
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<tr>
<td>Week 3</td>
<td>Module 3: Geologic Processes Pt. 2</td>
<td>Read week's content</td>
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<td>9/6-9/10</td>
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<td>Complete Discussion Activity: Cryovolcanoes by 9/10 at 11:59 PM</td>
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<td>Complete Quiz #2 by 9/10 at 11:59 PM</td>
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<td>Week 4</td>
<td>Module 4: Water on Earth and Elsewhere</td>
<td>Read week's content</td>
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<td>9/13-9/17</td>
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<td>Complete Discussion Activity: Importance of the Hydrosphere by 9/17 at 11:59 PM</td>
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<td>Week 5</td>
<td>Module 5: Exploration</td>
<td>Read week's content</td>
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<td>9/20-9/24</td>
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<td>Complete Quiz #3 by 9/24 at 11:59 PM</td>
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<td>Exploration Research Paper Topic due by 9/24 at 11:59 PM</td>
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<td>Week 6</td>
<td>Unit 1 Review</td>
<td>Complete Exam 1 for Unit 1 by 10/1 at 11:59 PM</td>
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<td>9/27-10/1</td>
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<td>Week 7</td>
<td>Module 1: Introduction to Spectroscopy</td>
<td>Read week's content</td>
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<td>10/4-10/8</td>
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**Unit 2: Toolkit of the Planetary Geologist**

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<th>Week</th>
<th>Module</th>
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<tr>
<td>Week 1</td>
<td>Module 1: Introduction to Spectroscopy</td>
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| Week 8 | 10/11-10/15 | Module 2: Planetary Stratigraphy | Complete Quiz #4 by 10/8 at 11:59 PM  
Complete Discussion Activity: The Right Tool for the Job by 10/8 at 11:59 PM  
Read week's content  
Complete Discussion Activity: Defining Map Units by 10/15 at 11:59 PM  
Annotated Bibliography is due by 10/15 at 11:59 PM |
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<tr>
<td>Week 9</td>
<td>10/18-10/22</td>
<td>Module 3: Surface Mapping Exercise</td>
<td>Complete Exercise: Surface Mapping Exercises by 10/22 at 11:59 PM</td>
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<td>Week 10</td>
<td>10/25-10/29</td>
<td>Unit 2 Review</td>
<td>Complete Exam 2 for Unit 2 by 10/29 at 11:59 PM</td>
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**Unit 3: Planetary Materials, Evolution, and Processes**

| Week 11 | 11/1-11/5 | Module 1: Solar System Raw Materials | Read week's content  
Complete Quiz #5 by 11/5 at 11:59 PM  
Research Paper Main Body Draft Due 11/5 at 11:59 PM |
|---------|-----------|-------------------------------------|---------------------------------------------------------------------|
| Week 12 | 11/8-11/12| Module 2: Assembling Planets and Planetesimals | Read week's content  
Complete Quiz #6 by 11/12 at 11:59 PM                                  |
| Week 13 | 11/15-11/19| Module 3: Impact Cratering as a Geologic Process | Read week's content  
Complete Discussion Activity: Crater Comparison by 11/19 at 11:59 PM  
Research Paper Abstract Due by 11/19 at 11:59 PM |
| Week 14 | 11/22-11/26| Thanksgiving | Enjoy the holiday!                                                |
| Week 15 | 11/29-12/3 | Unit 3 Review | Complete Exam 3 for Unit 3 by 12/3 at 11:59 PM                    |
**Week 16 12/6-12/10**

**Finalize Research Paper and Presentation**

Research Paper Final Draft and Presentation due by 12/9 at midnight

Extra Credit Survey due by 12/9 at midnight

**Modules open each week on Saturdays at 12:01 AM and end the following Friday at 11:59 PM.**

**Missed Quizzes or Exams**

Missed quizzes and exams must be made up at least one week after the original due date without an excused absence. Students must contact Mr. Turner in order to schedule reopening of material. Extra consideration is made for excused absences.

**Technical Support**

If at any point during the course you experience technical difficulties in Brightspace, please let your instructor know immediately.

You will also need to contact the SFASU Brightspace Support Team by email (d2l@sfasu.edu) or phone (936.468.1919) for technical help.

**Academic Integrity**

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

**Definition of Academic Dishonesty**

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one’s own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one’s paper without giving the author due credit. Please read the complete policy at [http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf](http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf).

**Withheld Grades Semester Grades Policy 5.5)**

Please copy and paste the following information regarding Withheld Grades into your syllabus. Add additional information as needed to meet your departmental or course needs.

Ordinarily, at the discretion of the instructor of record and with the approval of the academic
chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. For additional information, go to http://www.sfasu.edu/policies/course-grades-5.5.pdf.

Students with Disabilities
Please copy and paste the following statement and place in your course syllabus.

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

SFASU values students' mental health and the role it plays in academic and overall student success. SF A provides a variety of resources to support student's mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:
SF ASU Counseling Services
www.sfasu.edu/counselingservices
3rd Floor Rusk Building
936-468-2401

SFASU Human Services Counseling Clinic
www.sfasu.edu/humanservices/139.asp
Human Services Room 202
936-468-1041

Crisis Resources:
Burke 24-hour crisis line 1(800) 392-8343
Suicide Prevention Lifeline 1(800) 273-TALK (8255)
Crisis Text Line: Text HELLO to 741-741