Introduction to Planetary Geology (Geol. 1307)

June Term in Taos 2019
Time: 9:00 am – 9:50 am, MWF
Dedman Life Science Building, Rm 131

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Office hours: by appointment (just email me)

Course Description: Introduction to Planetary Geology is a 4-credit hour (3-hour lecture, 1 hour lab) class that studies the formation and evolution of the solar system. The class is specifically designed for first/second year and non-science major SMU students interested in learning more about the Earth, Moon, sun, and other solar system planetary bodies. Labs for the class are hands-on, and often involve field-trips and evening studies using telescopes to observe, analysis, and interpret different planetary bodies.

Reading/Assignments: Assignments for this class focus primarily on reading and understanding course material and completing lab exercises. The primary textbook for the course is Introduction to Planetary Science: The Geological Perspective, by Faure & Mensing, however there will be a significant amount of material presented in class from other sources.

Exams: There will be two exams. The exams will usually be multiple choice or short answer and cover material you read as well as any additional material I present or discuss in class. Exams will be cumulative and can include any material covered.

Labs: Laboratory experiment and study are fundamental to this class. Labs represent a significant (50%) portion of the class grade. The course includes 9 labs. At least two will involve outdoor field trips, and several others will involve evening observation/photography through a telescope.

Classroom Policies PLEASE READ: I ask that all cell phones or other two-way transmitting devices be turned off during class. Laptops are allowed during lectures for notetaking only. During exams, NO electronic material (phones laptops, ipads, calculators etc.) are allowed in the classroom. I expect the SMU honor code to be strictly adhered to and make no exceptions. Please contact me as soon as possible if you will miss class for any university-approved reasons. There will be no make-up assignments, extra credit, or additional class projects offered at the end of the class for poor performance. It is therefore wise to prepare and perform well throughout the semester to ensure success.

Grade weighting:

Mid-term Exam: 15%
Final Exam: 20%
Labs: 50%
In-Class Quizzes: 15%
Class Assignment/Reading/Lab Schedule:

**June 5th (Wednesday).** Lecture 1: The Universe, Big Bang, and introduction to the Scientific Method. Spectroscopic techniques, the E&M spectrum, and age dating methods will also be covered.
**Assignment:** Read pp. 1-85 in text.

**June 6th (Thursday).** Lecture 2: Stellar formation, Stellar evolution. Our Sun, past, present future.
- **Lab 1 (day):** Observing Sun spots and estimating solar rotation.
- **Lab 2 (Night):** Using Parallax to measure shooting star elevation.
**Assignment:** Read pp. 87-166.

**June 7th (Friday).** Lecture 3: Solar System Formation, characteristics of our Solar System, and planet Building. An Introduction to Earth formation. The History Earth and Earth’s Plate Tectonics.
- **Lab 3 (day):** Understanding the Unique Rocks of the Earth and completing Lab 2 calculations.
**Assignment:** Study for Exam.

**June 10th (Monday).** Lecture 4: The formation and Evolution of the Moon. The Space Race, and Future Lunar Exploration.
**MID-TERM EXAM #1:** Covers Lectures 1-3, reading, and Labs.
- **Lab 4 (night):** Crater Counting--The moon in first quarter.
**Assignment:** Read chapters 9 -10.

**June 11th (Tuesday).** Lecture 5: Mercury and Venus. Interior, structure, age, tectonics.
- **Lab 5 (day):** Complete Crater Counting from pictures collected previous night.
**Assignment:** Read chapter 11-12.

**June 12th (Wednesday).** Lecture 6: Mars. Interior, structure, age, tectonics. The possibility of future habitation.
- **Lab 6 (day):** Field trip to Rio Grande Gorge and volcanics to see different Earth, “Moon” and “Mars” Rocks.
**Assignment:** Read chapter 14 & 16.

**June 13th (Thursday).** Lecture 7: Jupiter and Saturn.
- **Lab 7 (night):** Mars sets 1.5 hrs after Sun, Jupiter at opposition, Saturn rising 1hr after sun.
**Assignment:** Read chapters 18 & 19.
June 14th (Friday). Lecture 8: Neptune and Uranus and their moons.
**Assignment:** Read chapters 15 & 17.

**Lab 8 (night): Tracking Ceres and Searching for Jupiter’s smaller moons.**
**Assignment:** Read chapter 13.

June 18th (Tuesday): Asteroids and the Asteroid Belt.
**Lab 9 (day): Identifying, calculating, and reporting asteroid positions to Harvard MPC.**
**Assignment:** Read chapters 20, 21 & 22.

June 19th (Wednesday): Pluto Charon, and the Kuiper Belt.
**Assignment:** study for final.

June 20th (Thursday). **Final Exam.**

**Other Important Information:**

Disability Accommodations: Students needing academic accommodations for a disability must first be registered with Disability Accommodations & Success Strategies (DASS) to verify the disability and to establish eligibility for accommodations. Students may call 214-768-1470 or visit [http://www.smu.edu/alec/dass.asp](http://www.smu.edu/alec/dass.asp) to begin the process. Once registered, students should then schedule an appointment with the professor to make appropriate arrangements.

- **Religious Observance:** Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

- **Excused Absences for University Extracurricular Activities:** Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to
any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue).