

## “The Solar System”

(Geol. 1307)

### An Introduction to Planetary Geology

June Term in Taos 2019

Three credit hour class

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**Course Description:** Introduction to Planetary Geology is a 3-credit hour 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, and, if needed, 1 make-up lab. At least one 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 Participation Quizzes: 15%

**Class Assignment/Reading/Lab Schedule:**

**June 5<sup>th</sup> (Wednesday):** Lecture 1: The Universe, Big Bang, and introduction to the Scientific Method.  
**Assignment:** Read pp. 1-85 in text.

**June 6<sup>th</sup> (Thursday):** Lecture 2: Spectroscopic techniques, the E&M spectrum, and age dating methods will also be covered.

**Lab 1 (Night): Using Parallax to measure shooting star elevation.**

**June 7<sup>th</sup> (Friday):** Lecture 3: Stellar formation, Stellar evolution. Our Sun, past, present future.  
**Assignment:** Read pp. 87-166.

**Lab 2 (day): Observing Sun spots and estimating solar rotation.**

**June 10<sup>th</sup> (Monday):** Lecture 4: 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 (night) Crater Counting--The moon in first quarter.**

**June 11<sup>th</sup> (Tuesday):** Lecture 5: Finish Plate tectonics.

**Lab 4 (day): Understanding and identifying the Rocks of the Earth**

**Assignment:** Read Chapter 9

**June 12<sup>th</sup> (Wednesday):** Lecture 6: The formation and Evolution of the Moon. The Space Race, and Future Lunar Exploration.

**June 13<sup>th</sup> (Thursday):** MID-TERM EXAM: Covers all Lectures and labs to this point

**Assignment:** Read chapters 10-11.

**June 14<sup>th</sup> (Friday):** Lecture 7: Mercury and Venus. Interior, structure, age, tectonics.

**Lab 5 (day): Field trip to Rio Grande Gorge and volcanics to see different Earth, "Moon" and "Mars" Rocks.**

**Assignment:** Read chapter 12.

**June 17<sup>th</sup> (Monday):** Lecture 8: Mars. Interior, structure, age, tectonics. The possibility of future habitation.

**Lab 6 (day): Crater counting the moon vs. venus, mercury, mars.**

**Assignment:** Read chapter 14 & 16.

**June 18<sup>th</sup> (Tuesday):** Lecture 7: Jupiter and Saturn.  
**Assignment:** Read chapters 18 & 19.

**June 19<sup>th</sup> (Wednesday):** **Lab 7 (night): Full moon, Mars sets 1.5 hrs after Sun, Jupiter at opposition, Saturn rising 1hr after sun.**

**June 20<sup>th</sup> (Thursday):** Lecture 8: Neptune and Uranus and their moons.  
**Assignment:** Read chapters 15 & 17.

**June 21<sup>st</sup> (Friday):** Lecture 9: Worlds within Worlds--large Satellites of Jupiter and Saturn.

**June 24<sup>th</sup> (Monday):** **Lab 8: Tracking Jupiter's moons and calculating their densities.**  
Assignment: Read chapter 13

**June 25<sup>th</sup> (Tuesday):** Asteroids and the Asteroid Belt.

**June 26<sup>th</sup> (Wednesday):** Ceres: first asteroid and first dwarf planet?  
**Lab 9 (night): Tracking Ceres and Searching for Jupiter/Saturn's smaller moons.**  
**Assignment:** Read chapters 20, 21 & 22.

**June 27<sup>th</sup> (Thursday):** Pluto & Charon

**June 28<sup>th</sup> (Friday):** the Kuiper Belt and comets.  
**Make-up Lab: Seeking Pluto.**

**July 1st, (Monday):** Review Session for classes and lab, turn in all remaining labs.  
Assignment: Study for the final exam.

July 2<sup>nd</sup>, (Tuesday, Last day): **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](tel:214-768-1470) or visit <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).