

ASTR 8850: Planetary Sciences

Fall 2026 ★ Tue/Thu 11:00 AM – 12:15 PM ★ 25 Park Place / Room 628

Instructor: Professor Todd Henry

25 Park Place / Room 618

email: thenry88@gsu.edu

research: nearby stars, stellar masses, exoplanets, astrobiology

Office Hours: by appointment

Prerequisite: ASTR 6000 or equivalent

Textbook: *Planetary Sciences* by de Pater and Lissauer (1st or 2nd edition, recommended)

Course Objectives: To expose graduate students to the study of Planetary Sciences. Topics will include Solar System formation, dynamics, planetary atmospheres, surfaces, and interiors, energy sources, and life in the Universe. Special emphasis will be placed on Earth, Mars, Europa, Enceladus, and Titan, and relatively new classes of objects — Trans-Neptunian Objects and extrasolar planets. The nascent field of Astrobiology, the search for and study of extraterrestrial life forms, will be explored.

Grades (approximate):

Research Paper	40%
Presentation	20%
Homework Assignments	20%
In-Class Participation	20%

How to Do Well in This Class: The following are highly recommended: (1) showing up to class on time, (2) being an active participant during class, (3) doing the homework, and (4) getting an early start on the primary component of the course, the research paper. Students are expected to do their own work. Certainly, discussions of more difficult problems with other students is acceptable (and encouraged), but work that is turned in must be your own. Under no circumstances will duplication on assignments or plagiarism in the research paper be tolerated. **Furthermore, do not rely on AI to develop or write your research paper.**

Academic Integrity: Academic dishonesty is a serious violation of trust that undermines the success of the University. Cheating and plagiarism can result in a poor grade and University penalties, damage your relationships with mentors and peers, and hinder the development of habits essential to your future career. The University's policy on academic (dis)honesty, which covers cheating, plagiarism, etc., is published in the Student Code of Conduct:

<https://catalogs.gsu.edu/content.php?catoid=49&navoid=6205> (click on “Code of Conduct”)

Violations will result in a grade of 'F' for the primary assignment or the entire course. If you have any questions or are unsure whether something constitutes academic dishonesty, please ask.

Lecture Topics: The following is an approximate list of topics for the course. Changes will likely occur, but this is the map for our quest across the Solar System ... and beyond ...

Dates	Lecture Topics	Chapters	Project
AUG 25	Solar System Overview I	1	
AUG 27	Solar System Overview II	1	
SEP 01	Solar System Overview III	1	
SEP 03	Solar System Formation I	13	Level 0: topics
SEP 08	Solar System Formation II	13	
SEP 10	Dynamics I	2	
SEP 15	Dynamics II	2	
SEP 17	Solar Heating	3	
SEP 22	Energy Transport	3	
SEP 24	Atmospheres I	4	Level 1: outline
SEP 29	Atmospheres II	4	
OCT 01	Atmospheres III	4	
OCT 06	Weather	4	
OCT 08	Surfaces I	5	
OCT 13	Surfaces II	5	
OCT 15	Surfaces III	5	
OCT 20	Interiors I	6	
OCT 22	Interiors II	6	Level 2: draft
OCT 27	Minor Bodies Out To Jupiter	9	
OCT 29	Minor Bodies Beyond Jupiter	9, 10	
NOV 03	Titan, Earth, Europa, Enceladus, Mars I	various	
NOV 05	Titan, Earth, Europa, Enceladus, Mars II	various	
NOV 10	Life on Earth	—	
NOV 12	Exoplanets / Life Beyond Earth	—	
NOV 17	Student Presentations	—	
NOV 19	Student Presentations	—	
NOV 24	TURKEY BREAK	no class	
NOV 26	TURKEY BREAK	no class	
DEC 01	Solar System Explorers Finale (remote)	—	
DEC 03	RESEARCH PAPERS DUE (Thursday)	—	Final Paper
DEC 08	REVIEWS DUE (Tuesday)	—	