

January 9, 2016

Syllabus: AST 4300, “Planetary Astronomy and Space Science”
Course Reference Number 23414, Section 001

Instructor: Paul E. Karchin, Professor
Office: 268 Physics Research Building
Phone: 313-577-5424
Email: karchin@physics.wayne.edu

Class Meetings: Tues., Thurs, 10:00-11:15, room 185 Physics Research Building

Office Hours. Students are welcome to meet with me after class or at another arranged time. I am happy to correspond by e-mail.

Course Description: Cr. 3, Prereq: PHY 2180 and PHY 2181; or consent of instructor. Formation and evolution of the solar system: planetary surfaces, interiors, atmospheres, and magnetospheres; asteroids, comets, planetary satellites, and ring systems. Emphasis on using basic physics to understand observed properties of the solar system.

Course Learning Outcomes: Present & discuss qualitative and quantitative descriptions of solar system phenomena. Solve quantitative problems in orbital dynamics, properties of planetary nebulas, impact and accretion phenomena, comet dissolution, and pressure, density and temperature profiles of planetary bodies and atmospheres. Utilize scientific literature to report on a current research topic in planetary astronomy or space science.

Required Text: *Physical Processes in the Solar System (First Edition)* by John D. Landstreet. The text (and an errata) is posted on Blackboard and available for class use by arrangement with the author.

Attendance and Class Participation. Students are expected to attend regularly and participate in class discussion and problem solving.

Homework consists of 10 sets of exercises, problems, and preparation for a research topic. Each student is assigned particular exercises or problems for presentation to the class.

Exams. Three exams will be given in class, each covering three or four chapters.

Student Report Presentations: Report on a topic of current research culminating in a twenty-minute class presentation during final exam week.

Grading. The course grade has the following components: 10% - attendance; 10% HW and class presentations; 60% - exams; 20% - research report presentation. To accommodate routine illness and personal contingencies, students can miss up to two classes without penalty.

The course grade will be assigned according to the total number of percentage points as follows.

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
90-100	85-89	80-84	75-79	70-74	65-69	60-64	55-59	50-54	45-49	40-44	0-39

Generally, if a student is registered for the course a regular grade will be given. A grade of incomplete (I) will be given only in exceptional cases (to accommodate illness or emergency) after consultation with the instructor before the end of the term.

Drop/Withdrawal Dates.

Last day to drop with 100% tuition cancellation: Monday 01/22

Last day to drop with no grade reported (no refund): Sunday 02/04

Last day to withdraw: Sunday 03/25

Student Disability Services. If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TTY: telecommunication device for the deaf; phone for hearing impaired students only).

AST 4300 Class Schedule (subject to change)

Dates (T,Th)	Chapter/Topic	HW (due)
Jan. 9,11	1. A Survey of the Solar System	
Jan. 16, 18	4. Formation of Stars and Planetary Systems	#1 (1/16)
Jan. 23, 25	4. Formation of Stars and Planetary Systems	#2 (1/23)
Jan. 30, Feb. 1	5. Meteors, Impacts, and Meteorites (4)	#3 (1/30)
Feb. 6, 8	no class (2/6), Exam 1 (2/8)	
Feb. 13, 15	6. Asteroids	#4 (2/13)
Feb. 20, 22	7. Comets	#5 (2/20)
Feb. 27, Mar. 1	8. The Earth	#6 (2/27)
Mar. 6, 8	9. Other Terrestrial Planets	#7 (3/6)
week of Mar. 12	Spring Break	
Mar. 20, 22	review (3/22), Exam 2 (3/24)	
Mar. 27, 29	10. Terrestrial Planetary Atmospheres	#8 (3/27)
Apr. 3, 5	11. Giant Planets and their Moons	#9 (4/3)
Apr. 12, 14	Supplementary Topics	#10 (4/12)
Apr. 17, 19	no class (4/17), Exam 3 (4/19)	
May 1 (8:00-10:00)	presentations of student reports	