

January 13, 2014

Syllabus: AST 4300, “Planetary Astronomy and Space Science”
Course Reference Number 25317, Section 001

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

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

Class Meetings: Tues., Thurs, 9:35-11:00, room 185 Physics Research Building

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 solar system astronomy or space science.

Required Text: *Physical Processes in the Solar System (First Edition)* by John D. Landstreet. The text is posted on Blackboard and available for class use by arrangement with the author. A supplementary text is *An Introduction to Modern Astrophysics (2nd Edition)* by Bradley W. Carroll and Dale A. Ostlie; Addison-Wesley (July 28, 2006).

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

Homework Exercises and Problems are assigned along with each lecture. Each student is assigned particular exercises or problems for presentation to the class.

Exams. Two exams will be given in class, each covering about half of the course content. The first exam, at mid term, will cover the first half of the course. The second exam, at term end, will cover the other half.

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

Grading. The course grade has the following components:
20% - attendance and class participation; 20% - exercise and problem presentations
20% - Exam 1; 20% - Exam 2; 20% - research report presentation

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 Prof. Karchin before the end of the term.

Policy on Missed Work. To accommodate routine illness and personal contingencies, students can miss up to three classes and one exercise/problem presentation without penalty.

Withdrawal Dates.

Last day to drop with 100% tuition cancellation: Monday 01/26/2015

Last day to drop with no grade reported (no refund): Sunday 02/08/2015

Last day to withdraw: Sunday 03/29/2015

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
Jan. 13, 15	1. A Survey of the Solar System
Jan. 20, 22	3. The Sun and the Astronomical Environment
Jan. 27, 29	4. Formation of Stars and Planetary Systems
Feb. 3, 5	5. Meteors, Impacts, and Meteorites
Feb. 10, 12	6. Asteroids
Feb. 17, 19	supplementary topics
Feb. 24, 26	review, Exam 1
Mar. 3, 5	7. Comets
Mar. 10, 12	8. The Earth
week of Mar. 15	Spring Break
Mar. 31, Apr. 2	9. Other Terrestrial Planets
Apr. 7, 9	10. Terrestrial Planetary Atmospheres
Apr. 14, 16	11. Giant Planets and their Moons
Apr. 21, 23	review, Exam 2
May 4 (M, 8:00)	student report presentations