

San José State University
Department of Physics and Astronomy
ASTR117A: “Astrophysics I – Solar System”
Section 1, Spring 2009

Instructor:	Dr. Michael J. Kaufman
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Office Hours:	M 11:30-12, WF 11:30-12:30, or by appointment
Class Days/Time:	MWF 9:30-10:20
Classroom:	Science 253
Prerequisites:	Physics 70/71/72 (Physics50/51/52/53 may be substituted)

Faculty Web Page and MYSJSU Messaging

Copies of the course materials, including this syllabus, may be found on my faculty web page <http://www.physics.sjsu.edu/mkaufman/ast117a> . Those who wish to consider the Escherian conundrum described by following this link to get the syllabus are free to do so. Be sure that you have an email address registered through the MySJSU messaging site so that I can reach you with important class announcements.

Course Description

A *quantitative* exploration of the solar system and other planetary systems, orbital properties and physical nature of the interiors, surfaces and atmospheres of the planets; moons, rings, asteroids and comets. Application of basic principles from introductory physics (i.e. gravitation, radiation transport, thermodynamics, atomic structure) to a range of solar system problems.

Course Goals and Student Learning Objectives

By the end of this course, you should –

- Understand the basic motions in the sky as seen from Earth, including daily, monthly and yearly cycles, and how planetary motions stand out
- Have an overview of the components of the solar system
- Be familiar the current state of understanding of solar system formation and evolution, not only what we know but how we know it.

- Understand the physical processes that act to control orbital motions, internal and external compositions (including atmospheres) of the planets, and how planetary evolution is traced
- Be familiar with modern astronomical tools and avenues of current research in solar system and extrasolar planet research

Required Texts/Readings

Textbook

Physical Processes in the Solar System, by John Landstreet (2003). See the textbook website at <http://www.astro.uwo.ca/~jlandstr/planets> for updates, corrections and other useful information. In addition, there will be handouts and other supplemental materials. I will provide a topic-appropriate list of additional readings for those who are interested.

Assignments and Grading Policy

The course grade will be determined from a combined score total from two midterm tests, homework/in-class work, a paper, and a final exam. Regardless of your point total, **the final exam must be taken in order to pass the class.** If you do not take the final, you will receive an F grade.

Table 1 Grading Scheme

Tests, etc.	Percentage	Tentative Date
Midterm #1	20%	March 6
Midterm #2	20%	April 24
Final Exam	25%	May 20, 0715-0930
Topics paper	15%	Due May 8 (approved April 10)
Homework and in-class work	20%	Throughout the term

Exams: The exams will test your knowledge and understanding of the material as presented in class. Conceptual *and* quantitative questions will be included in each exam. **No make-up exams are allowed.** If you miss an exam for anything other than a medically verifiable reason, you will receive a zero for that exam.

Homework: Approximately 10 homework sets will be given out during the semester. All homework is due in my office by 5 PM on the due date. **No late homework will be accepted.** Some of the homework problems will require writing, simple computer programming, use of plotting/spreadsheet and other software, and use of astrophysical databases on the Web. We may also pore over data and discuss it during class, and the results of this work may also be graded and included in your homework score.

Paper: Each student will have to write a 5-page paper describing the scientific goals and design of a spacecraft or other investigation of the solar system. Topics will have to be approved by me by several weeks before the due date. Papers will have to be researched using library and Internet resources, and must include a bibliography. I will give more

details later in the semester. The idea of this paper will be to explore a topic in more depth than will be possible in class.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. [Information on add/drops are available at http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-298.html](http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-298.html). [Information about late drop is available at http://www.sjsu.edu/sac/advising/latedrops/policy/](http://www.sjsu.edu/sac/advising/latedrops/policy/). Students should be aware of the current deadlines and penalties for adding and dropping classes.

University Policies

Academic integrity

Students should know that the University's [Academic Integrity Policy is available at http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf](http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf). Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University's integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for [Student Conduct and Ethical Development is available at http://www.sa.sjsu.edu/judicial_affairs/index.html](http://www.sa.sjsu.edu/judicial_affairs/index.html).

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Policy F06-1 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability.

Emergency Response

In the unlikely event of a tsunami, nuclear attack, revolution, etc. that requires that you leave the building, the likely warning of such an occasion will be the sounding of the fire/emergency alarm in the hallway. The "escape route" for such events is posted outside the door to this classroom. For us here in SCI 253, the indicated route is down the stairs at the end of the hall just outside our room.

ASTR 117A Section 1/ Astrophysics I, Spring 2009 Tentative Course Schedule

Week of:	Topics	Reading
1/25/09	Introduction	Chapter 1
1/28/09	Basic Sky Motions, Geocentric vs. Heliocentric, Kepler's Laws & Gravitation	Chapter 1
2/2/09	Matter Structures, The Sun: power, structure, comparison with other stars	Chapter 2,3 and handouts
2/9/09	Star and planet formation	Chapter 4
2/16/09	Solar system fossils: meteorites and asteroids	Chapter 5,6
2/23/09	Solar system fossils: comets and the Kuiper Belt	Chapter 7 and handouts
3/2/09	Earth: interior and surface processes ***EXAM #1, Friday March 6***	Chapter 8
3/9/09	Earth: atmosphere and history	Chapter 8
3/16/09	SPRING BREAK	
3/23/09	The Moon: exploration, physical structure, history	Chapter 9 and handouts
3/30/09	Geology of Mercury, Venus and Mars	Chapter 9 and handouts
4/6/09	History of the terrestrial planets	Chapter 9 and handouts
4/13/09	Planetary atmospheres	Chapter 10
4/20/09	Structure of giant planets ***EXAM #2, April 24***	Chapter 11
4/27/09	Moons and rings of Giant planets	Chapter 11
5/4/09	Solar system history overview ***PAPERS DUE FRIDAY MAY 8***	Handouts
5/11/09	Extrasolar planets	Handouts
5/18/09	***Final Exam: Wednesday, May 20, 0715-0930***	