

# *Physics 102 – Fall 2006*

## *Astronomy of the Planets*

Professor                      Phone              E-mail  
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Office: AHON 126 (Appleton Hall of Numbers)

Class meeting  
MWF 2:30 – 3:50 pm AHON 117

Office Hours  
Tuesday 9:00 am – 12:00 pm  
(and by prior appointment)

Texts  
“The Cosmic Perspective: The Solar System” by Bennett et al. (4th edition;  
Addison Wesley, 2005)  
Additional readings to be handed out.

### Goals

1. What is science? How does it work?
  - Why is science different from philosophy or religion?
  - Why is a scientific “theory” different from a conspiracy “theory?”
2. Learn about the Scientific Method through study of Astronomy:
  - How do we know there are planets around other stars?
  - Is there life on Mars?
  - What is the astronomical evidence for global warming?
  - Impact hazards: Will the world end with a bang?

Class Web Site  
[http://bulldog2.redlands.edu/fac/tyler\\_nordgren/astro102/index.html](http://bulldog2.redlands.edu/fac/tyler_nordgren/astro102/index.html)

## Organization

**Lectures, labs, and Discussions:** Class is Monday, Wednesday and Friday. Each class will contain some elements of lecture and discussion. Reading assignments will be given at the end of each class over the material to be covered in the next class. This format insures that you will come to class prepared to take part in discussions and to ask questions. Because science is a process and not a collection of facts, a large number of classes will also involve demonstrations and experiments done together, in small groups, and individually. The purpose of these labs is to give you experience using the scientific method and understanding its power and limitations.

**As you can see, it is very important to attend class.**

**Typical Class Overview:** Each day a reading and homework set is assigned which will be due at 9:30 am on the date of the next class. This assignment is on reading material that will be covered in class the day the homework is due. This insures that you will come to class having read the material and thought about the subject. Since the homework is due at 9:30 am and the class is at 2:30 pm, this gives me the opportunity to tailor the class discussion to areas where I see people are having difficulties. During class I will regularly pose conceptual questions to the class. You will then break into groups to discuss these concepts. At the end of class a new homework assignment is given out to be due at 9:30 am of the next class day, and the cycle continues.

Powerpoint lecture notes will be placed on the class website a day or two prior to each class. Since I will be fine tuning lectures before class, depending upon your homework results, the notes on the website may differ slightly from those in class. You should therefore be prepared to pay attention in class.

**Homework:** As stated above, there will be homework assignments due each day of class. These will be due in my office by 9:30am the day of class. If I am not in my office, or the door is closed, please slip paper assignments into my box or under my door. I do not accept late homework.

Each homework will consist of two or three short answer questions on the reading assigned for that day. In addition, at the end of each homework you **MUST** include *a description of at least one thing you did not understand about that day's reading or assignment*. This is your chance to affect what we talk about in class that day, so be honest.

Homework is graded on a check, check-plus, check-minus, or zero scale.

Check: Homework answers generally correct; ok.

Check-plus: Demonstration of a mastery of the concepts.

All homework answers completely correct; excellent.

Check-minus: Some, possibly many mistakes. Little evidence of understanding the concepts; need to improve.

Zero: Failure to do any problem (even if those that are done are correct).

Failure to include a topic of confusion will result in a zero regardless of the correctness of the rest of the assignment. No late homework is accepted.

**Exams:** Four exams will be given during the course of the semester, the last one is the day and time listed for the final. Each exam carries equal weight and is over the material covered since the previous exam. As scientific knowledge builds upon itself, a mastery of material later in the semester requires that you understand the material from earlier in the semester. Of the four exams, the lowest grade is dropped. This includes the exam on the day of the final. We all have bad days. Just make sure you don't have more than one. The date and time of every exam, including the "final," is set and cannot be changed by me. Don't even ask. If you cannot make one of these exams, then that will be the exam you drop.

**Class Citizenship:** This is a measure of the respect with which you treat your fellow classmates and myself. Showing up late to a class with a lab so that your lab partners have to explain what we are doing is rude to them. The same is true for failing to do the reading so that you are unable to contribute to in-class group problems. These will be noticed.

**"Optional" Activities:** There are seven "optional" activities scheduled throughout the semester. You are required to attend at least three (3) of these. An excellent student attends more. In order to accommodate your class or work schedule I have made sure that these activities are spread over the course of the week and the semester.

## Grading

Homework	20%
In-Class Labs	15%
"Optional" activities	10%
Class citizenship	5%
Exams	50%

## Exam Dates

Exam #1: October 2

Exam #2: October 25

Exam #3: November 15

Exam #4: December 13, 6:00pm AHON 116

“Optional” Activities (must participate in at least 3)

Activity	Date
1. Dark sky telescopic observing: 7:00pm (Mill Creek picnic area 15 minutes east on Hwy 38)	Thursday, Sept 28
2. Division of Planetary Sciences Public Talk: 7:30pm <i>Will provide shuttle to Pasadena.</i>	Monday, Oct 9
3. Roving Mars IMAX, Reuben H. Fleet Science Center <i>Will provide shuttle to San Diego (time TBA)</i>	Saturday, Oct 28
4. An Inconvenient Truth, (on campus, time TBA)	TBA
5. Al Gore Centennial Lecture (Chapel, time TBA) <i>Must attend at least one of Activity 4 or 5.</i>	Tuesday, Nov 7
6. Leonid Meteor Shower overnight in Joshua Tree <i>See me for camping details.</i>	Sat, Nov 18 – Nov 19
7. Lunar telescopic observations (Astrodeck, time TBA)	Wednesday, Nov 29