

# *Physics 103 – Fall 2004*

## *General Astronomy*

Professor	Phone	E-mail
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### Class meeting

Lecture: MWF 2:30 – 3:50 pm Duke 102

Lab: Tuesday 9:30 am – 12:20 pm or 1:00 pm – 3:50 pm Duke 113

### Office Hours

Monday 10:00 am – 12:00 pm

(and by prior appointment with instructor)

### Texts

“Stars, Galaxies, & Cosmology: The Cosmic Perspective” by Bennett et al. (3rd edition; Addison Wesley, 2002)

“Universe Down to Earth” by Neil de Grasse Tyson (Columbia University Press, 1994)

### 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?
  - How are stars and planets born, live, and die?
  - What are black holes?
  - Where did the Universe come from and where is it going?
  - Are we alone in the Universe?

### **Final Exam**

**The final exam will be Thursday, December 16, 3:00 pm – 6:00 pm.**

### Class Web Site

[http://bulldog2.redlands.edu/fac/tyler\\_nordgren/astronomy/index.html](http://bulldog2.redlands.edu/fac/tyler_nordgren/astronomy/index.html)

## Organization

**General Overview:** Each class day a 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 there will be a short quiz covering the information and concepts in the homework that was due and the discussions that were held. A new homework assignment is then given out, to be due at 9:30 am of the next class day, and the cycle continues.

**Homework:** As stated above, there will be homework assignments due each day of class (usually not including lab days). These will be due by 9:30 am the day of class. I will accept homework either by email or in paper. If homework is submitted by email ***I will accept MSWord, PDF, or ascii text files (i.e., you typed your answer directly into the email window) only.*** If I am not in my office, or the door is closed, please slip paper assignments 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) or failure to include a topic of confusion.

In order to qualify for any grade for a homework, you must include a topic of confusion. No late homework is accepted.

**Lectures:** "Lectures" are Monday, Wednesday and Friday. I put this word in quotes because ideally little more than half of the class should involve me lecturing. Based upon the homework you turned in that morning and the topics

of confusion you describe, class will consist of a 30 minute lecture, followed by group work on various conceptual problems. At the end of class will be a brief 15 minute quiz over the material covered in the homework and that class. **As you can see, it is very important to attend class.**

Lecture notes will be placed on the website prior to each lecture. 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.

**Labs:** Labs are Tuesday mornings or afternoon. They are each week. Lab will be spent working in small groups exploring some deeper aspect of the material presented in class. **Always bring a calculator and be sure you know how to use it.**

Twice during the semester we will travel to the mountains the night of lab to observe with the telescopes in a dark location. You are required to attend one of these. If you cannot make one of these nights, drop the course now. Since we obviously cannot observe if the weather is cloudy, there is a designated back-up date for the first night. See the schedule below and on the class web page.

On the class web page there are driving directions and instructions on appropriate clothing to wear. It is cold in the mountains. If you are not dressed appropriately you will be sent home and receive no credit for that night.

**Observing Project:** During the semester you will be conducting a scientific experiment with respect to the sun, moon, stars, or planets. Using a watch, compass, and protractor you will record observations of astronomical positions and times in *a separate spiral bound notebook*. You will update it daily. We will discuss these observations in labs, but the vast majority of this work will be done outside of classroom. With these observations you will develop a scientific theory that you will test and present to the class at the end of the semester.

**Exams:** Three exams will be given during the course of the semester. Your lowest grade is dropped. We all have bad days. Just make sure you don't have more than one. Each exam covers only the material covered in class between it and the previous exam. The final exam is inclusive of the whole semester. The date of the final is set and cannot be changed by me. Don't even ask.

**Class Citizenship:** This is a measure of the respect with which you treat your fellow classmates and myself. Showing up late to 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.

## Grading

Homework	10%
Quizzes	20%
Labs	10%
Observing project	15%
Class citizenship	5%
Exams	20%
Final Exam	20%

## Exam Dates

Exam #1: Oct 1

Exam #2: Oct 27

Exam #3: Nov 22

Final Exam: Dec 16, 3:00 pm

## Observing Labs

<b>Obs. Night</b>	<b>Back-up Night</b>
Oct 5	Oct 19
Dec 7	None