



PH262U & SCI316U: General Astronomy II

Stellar, Galactic, and Extra-galactic Astronomy

Instructor: Chris Butenhoff

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Office hours: W, 9:30-11:30h, or by appointment.
If this time does not work for you, please contact me to arrange a meeting.

TAs Doaa Teama, dteama@pdx.edu

Text: 21st Century Astronomy, 2nd edition.
Hester et al., W.W. Norton & Company

Term: Spring 2008

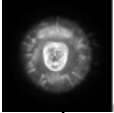
Room: Cramer Hall 183

Class Meeting: TR, 10:00-11:50h

Class website (Blackboard):

<http://bb.pdx.edu> . If you are registered for the class, you are automatically added to the site, otherwise email me your ODIN username.

WELCOME!



Astronomy is among the oldest of sciences but also perhaps the most modern, as rapid advancements in telescopes and instruments take us deeper and farther into the Universe with eyes that can probe all wavelengths and with more clarity than ever before. From both new and ancient light we are learning more everyday about how stars live, galaxies evolve, and what the ultimate fate of the universe may be. It's a good time to take an interest in astronomy!

This is the second class in the two-term astronomy sequence. As such we will skip over some of the opening chapters that were covered in the first term (PH261/SCI315), most importantly those chapters covering the Solar System and planets. Instead our emphasis will be primarily on stars, galaxies, and the universe at large --- cosmology. These are large enough topics on their own, so we will be forced to skip over some sections throughout the chapters. Though I encourage you to read all sections, only those specified in the reading list (see Blackboard) will be required for quizzes and exams.

This course will use mathematics at the algebra level. No previous knowledge of physics is assumed. Homework problems will be a mixture of qualitative and quantitative questions.

Some goals of this course include:

- To understand the patterns and motions of the sky.
- To understand how we use light to learn about stars and galaxies.
- To better appreciate the richness and beauty of the Universe.
- To gain experience using real astronomical data.
- To understand how distances to astronomical objects are determined.
- To understand how stars evolve from birth to death.
- To appreciate the connections between the elements in our body and the physical processes in the stars.
- To have a basic understanding of the evolution of the Universe.
- To learn and to use physical laws to solve mathematical problems.
- To familiarize yourself with the night sky.
- To incorporate what we know about the Universe into your own worldview.



Homework sets - Homework is varied in content, being a mixture of textbook problems, StarryNight Pro exercises, and projects based on Sloan Digital Sky Survey data. StarryNight Pro is a fun and educational planetarium software that can dramatically aid your understanding of the night sky. If you didn't get a copy of the software with your book, I will have some copies available so you can install it on your computer. Homework sets are collected every other week and late homework *is not accepted*. I will drop your lowest homework score. Feel free to use the *Discussion* page on Blackboard for hints and tips from fellow classmates, but please do not post solutions.

Quizzes - There will be short (ten multiple-choice questions) quizzes every Tuesday. These will keep you up-to-date with the material and will help me assess how well the class is comprehending the material. The quizzes also alleviate some of the weight and the accompanying stress of the midterm and final. The quizzes test on material presented in the lectures and textbook since the previous quiz. Please use Scantrons (available at the bookstore) to help ease the grading burden. The quizzes are given promptly at the beginning of class and no allowance will be made for late arrivals. I will drop your two lowest quiz scores.

Exams – There will be one midterm and the final. Exams will contain both multiple-choice and short answer questions. The final will be comprehensive with an emphasis on the material covered after the midterm. You are allowed to use one sheet of notes --- front and back --- for the exams and a calculator.

Observations - Weather permitting, you'll have the chance to look at stars, planets, nebulae, clusters, and perhaps galaxies with the department's 8-inch reflecting telescope. Most observing will take place at 9 pm on the top floor of Parking Structure #3 on campus. On one occasion we may go to an area park for better observing conditions. You are required to attend at least one observing session and write a brief summary of ten objects that you observed either with your naked eye or through the telescope. Guidelines for this report can be found on Blackboard. I'll announce observing nights in class and on Blackboard.

In addition SCI316 students are required to do one naked-eye observing project (PH262 students are welcome to do one for extra-credit). There are three possible projects, the analemma, phases of the moon, and progression of the constellations. Details can be found on Blackboard. The purpose of the exercise is to gain experience looking at the motion of the sky, a hobby that will hopefully stay with you after the course is finished. Note that two of the projects require observations spread out throughout the term, so the sooner you get started the better.

In-class participation – Throughout the lectures, I will periodically ask you questions on topics related to the lecture material. You are to write your answers on a sheet of paper and turn this in at the end of the class. Your answers are not graded. This is more of an attempt to involve you in the class and to give you credit for participating.

Lecture notes: Should be available soon after each lecture on Blackboard.

Extra Credit –

Presentation (3pts) – About a 10-minute presentation on a topic of your choice at the beginning of the class. If you choose to do this, please consider doing it early in the term to prevent a log-jam of presentations at the end of the term. Inform me of your presentation at least one lecture period in advance. Follow the guidelines for presentations that are found on Blackboard.

Online discussion (2 pts) – Throughout the term I'll post a number of questions on the Blackboard discussion boards. To get full extra credit marks, post at least ten responses to the questions. Responses must add information to the discussion and not be simple rhetorical statements.

Observation project (5 pts, PH262 only) – As mentioned above.

Absences - To establish a fair make-up policy, only officially excused absences will be allowed the opportunity to do missed work. These include doctor-excused illnesses, family emergencies, and university-sanctioned events. Missing an assignment due to work or other conflicting appointments are not valid absences. If you think you will be missing significant amount of class due to work, please be aware of this policy.

Contact: Though you are welcome to contact me through my normal email, please utilize the Blackboard mail system when possible. .

TENTATIVE SCHEDULE - We will likely get off track. See Blackboard for up-to-date schedule

Week of	Quiz/Exam	Readings	Due
31-Mar		Intro (Ch 1). Motions and patterns in the sky (Ch 2)	
7-Apr	Quiz 1 (T)	Motions and patterns (Ch 2)	
		Light (Ch 4)	
14-Apr	Quiz 2 (T)	Light (Ch 4)	HW1 (T)
		Star properties (Ch 13)	
21-Apr	Quiz 3 (T)	Star properties (Ch 13)	
		The Sun (Ch 14)	
28-Apr	Quiz 4(T)	Star Formation (Ch 15)	HW2 (T)
		Low mass stars (Ch 16)	
5-May	Midterm (T)	Low mass stars (Ch 16)	
12-May	No quiz	High mass stars (Ch 17)	HW3 (T)
19-May	Quiz 5 (T)	Galaxies (Ch 18)	
26-May	Quiz 6 (T)	Milky Way (Ch 19)	HW4 (T)
2-Jun	Quiz 7 (T)	Cosmology (Ch 20)	
		Life in the Universe (Ch 21)	HW5 (R)
			Observations(R)
10-Jun	Final Exam , 1015-1205 (T)		

T = Tuesday
R = Thursday

Point Distribution	PH262U	SCI316U	
Midterm	20	20	
Final Exam	25	20	
Homework (drop one)	20	20	
Quizzes (drop two)	20	20	
Telescope observing	5	5	(2.5 for attendance, 2.5 for paper)
Participation	10	10	
Observation project	---	5	
<i>Extra Credit</i>			
Presentation	3	3	
Online discussion__	2	2	
Observation project	5	---	

Grading:

100-90	A
80-89	B
70-79	C
60-69	D
<60	F

“+” for top three percentages in each range

“-” for bottom three percentages in each range

NOTE: If the class average is less than a middle C (75) (before extra credit is considered), all scores will be adjusted upwards to meet this criterion.

Important dates:

Apr 6:	Last day to drop class for 100% refund.
Apr 27:	Last day to drop class (class does not show up on transcript)
May 18:	Last day to change grading option.
Jun 10 :	Final Exam, 1015-1205, Same room