

PHYSICS 109

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Office Hours: 10-11 on Tuesday, 11-12 on Thursday, or by appointment.

Text: *The Essential Cosmic perspective, Fifth Edition*, by Bennett, Donahue, Schneider, and Voit.

Description: Physics 109 is an intensive introductory course in astronomy. Topics covered include the solar system, stars and stellar systems, galaxies and the universe as a whole. Elementary physics and mathematics are used to obtain both a qualitative and a quantitative understanding of astronomy.

Online Homework: To encourage you to keep up with the reading assignments online homework assignments will be given before most classes. **You must have finished the assignment one-half hour before class begins.** Failure to do so will result in a grade of zero for that assignment. You are allowed to use the textbook and your class notes to help you answer the questions and you may ask the instructor about the questions, **but you may not get help from any other person or source.** The homework assignments will be accessed through the web site at www.MasteringAstronomy.com. **You will need to register for this web site.** If you purchased a new copy of the text from the campus bookstore then this will be free. If you purchased a used copy then you can either purchase an access kit from the campus bookstore (which may be slightly less expensive) or you can go online and pay for the registration.

Exams: There will be three in-class exams during the semester and a comprehensive final exam. The in-class exams will be on **Wednesday February 10, Friday March 19, and Monday April 19.** The final exam will be on **Friday April 30 at 2pm.** Calculators may not be used for the exams.

Grading: The online homework assignments count 10% towards your final grade with the lowest three scores dropped. Each in-class exam counts 20%. The final exam counts 10%. However if you get a numerical score on the final which is higher than your lowest in-class exam then the score on that exam will be replaced by a score consisting of 75% of the score on your final exam plus 25% of the score on the original exam. If the numerical score on your final exam is higher than your second-lowest in-class exam then the score on that exam will be replaced by a score consisting of 75% of the score on your final exam plus 25% of the score on the original exam. The lab counts 20% of your final grade. **However, if you receive a final lab grade which, out of a total of 20 points, is less than 12 points you will automatically fail the course.**

Labs: Labs will be held in Room 108, Olin Physical Laboratory. **All students must bring their laptop computers to every lab.** Failure to do so may result in you being sent home to get it.

Lab Manual: The lab manual is available online at the web site given above. **You must print out each of the possible labs that you will do before coming to lab.** If you fail to do so and need to print out a lab when you get there **a fee of \$5.00 will be charged.**

You cannot change your lab section without written permission from me. You may only attend the lab section that you are assigned to.

There will be some outdoor labs and when it is cold outside you should dress **much more warmly** for them than you normally would to travel to and from class. Hats and gloves are strongly recommended. The outdoor labs have priority over the indoor labs so **be prepared to go outside.**

You are expected to attend and complete all twelve of the labs. Your lowest lab grade will be dropped. You are further expected to complete and hand in the work for each lab at the end of that lab session. **If you finish the work at home and hand it in late you will get a zero for that lab.**

Absences: You will receive a grade of **zero** for any exam, homework assignment, or lab for which you do not have an excused absence. Further it is your responsibility to contact me immediately if you miss an exam. **If you miss an exam for some trivial reason such as oversleeping or your car won't start then you must, regardless of your schedule that day, take the exam on the day you missed it. Failure to do so will result in a grade of zero.** Further, if you do not make up the exam before it is gone over in class you will be required to take an oral exam as a make-up. If you miss a homework assignment or a lab because you forgot about it you should contact me immediately or your grade will be zero. Forgetting homework assignments or labs more than once will also result in grades of zero for those assignments or labs.

If you have an excused absence for a lab you must get written permission from me in order to make it up. The TA's do not have the authority to excuse absences! Further you must then go to a lab that is doing the same lab you missed and give the note to the TA. It is your responsibility to do so as soon as possible. **Failure to do so will result in a grade of zero for the lab you missed.**

Examples of **acceptable excuses** include illness, family or other emergency, and participation in certain school functions. Examples of **unacceptable excuses** include studying for an exam, dinner with a family member or friend, **leaving early for Spring Break,** and **any fraternity or sorority function.** If you have already booked a plane ticket (or made some other arrangement) which requires you to leave early for spring break then you should talk with me about changing your lab time. If you book a ticket (or make some other arrangement) requiring you to leave early for spring break after the class begins then you will simply have to either make other arrangements or take a zero for the missed lab.

As soon as you know that you will miss an exam, quiz, or lab you should send me an email message or call 336-758-4992 and let me know what you are going to miss and why. Whenever possible the absence should be excused ahead of time. You may be requested to provide proof of illness, etc.

Tentative Schedule			
Week	Date	Topics	Chapter
1	Wed. Jan. 13	Overview of Course	
	Fri. Jan. 15	Motions of Celestial Objects	2
2	Wed. Jan. 20	Ancient astronomy	2, 3
	Fri. Jan. 22	Copernican revolution	3
3	Mon. Jan. 25	Physics of Motion	4
	Wed. Jan. 27	Energy and gravity	4
	Fri. Jan. 29	Basic properties of light	5
4	Mon. Feb. 1	Spectra	5
	Wed. Feb. 3	Properties of the solar system	6
	Fri. Feb. 5	Formation of the solar system	6
5	Mon. Feb. 8	Formation continued	6
	Wed. Feb. 10	In-class Exam	
	Fri. Feb. 12	Planets Outside of the Solar System	6
6	Mon. Feb. 15	Sun	10
	Wed. Feb. 17	Sun continued	10
	Fri. Feb. 19	Observational properties of stars	11
7	Mon. Feb. 22	Classifying stars	11
	Wed. Feb. 24	Lives of low mass stars	12
	Fri. Feb. 26	Lives of high mass stars	12
8	Mon. March 1	Stellar corpses	13
	Wed. March 3	Black holes and gamma ray bursters	13
	Fri. March 5	Milky Way Galaxy	14
9	Mon. March 15	Milky Way Galaxy cont.	14
	Wed. March 17	Galaxies	15
	Fri. March 19	In-class exam	
10	Mon. March 22	Distances to galaxies	15
	Wed. March 24	Active galaxies	15
	Fri. March 26	Dark matter	16
11	Mon. March 29	Structure formation and fate of the universe	16
	Wed. March 31	Early universe	17
	Fri. April 2	Good Friday	
12	Mon. April 5	Earth	7
	Wed. April 7	Life on Earth	18
	Fri. April 9	Solar system debris and impacts	9
13	Mon. April 12	Moon and Mercury	7
	Wed. April 14	Venus	7
	Fri. April 16	Mars	7
14	Mon. April 19	In-class exam	
	Wed. April 21	Jovian planets	8
	Fri. April 23	Moons of Jovian planets	8
15	Mon. April 26	Rings of Jovian planets	8
	Wed. April 28	Life outside the solar system	18

Tips on How to Study For This Course

In this course there is a large amount of material that you are expected to assimilate. The two things that will help you the most are to **attend all of the lectures** and **keep up with the reading**. It is usually difficult to understand everything in a science course the first time it is presented. Therefore it is important to be exposed to the material a number of times in different ways. When studying it is usually best to **avoid highlighting** parts of the text. This is because science texts tend to be very densely written and you will miss important information. Instead it is best to **take notes** on what you read. This slows you down and gives you a chance to ask yourself whether you really understand the material you are reading.