

PHY 105: “Structure of the Universe”

Fall 2013

Course description: - This is an introductory course in astronomy. We survey phenomena and objects in the Universe, from the very smallest distance scales to the largest objects in the cosmos. To gain a thorough understanding astronomical objects including as planets, stars, galaxies, we will need study the theories of motion, light, and matter (i.e., physics). The course also includes a historical consideration of the developments of modern theories of the physical world.

Instructor: Dr. Robert Thornton

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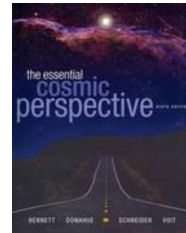
E-mail: rthornton@wcupa.edu

Office hrs: M 3:00-4:00 p.m.; Tu 1:00-2:00 p.m.; Wed 3:00-4:30 p.m.; Fri 3:00 – 4:30 p.m.; also by appt.

Course Requirements: This course has no prerequisites. However, we will be using some basic algebra at the high school math level. I will assume that you have done this sort of math before, though it may be a few years since you've seen it, so you may need to brush up on it. I will be happy to help you if you put forth the effort.

Required Course Materials

- *The Essential Cosmic Perspective*, 6th ed., Bennett et al.
- a scientific calculator that is not part of any device with wireless capability.
- A-B-C-D cards



Course Web page: Syllabus and related material will be on D2L

Grading:

Exam 1, Exam 2, Exam 3 (50% total)

Homework: 25%

Cumulative final exam: 25%

Total: 100%

Attendance: Attendance is an important part of the class, and will be taken on random days. Three unexcused absences are allowed. After you miss more than 3 classes, your final grade in the course will drop from 1/3 of a letter grade (for example from A to A-) with each additional class missed. Excused absences are limited to those due to participation in University-sanctioned events (see policy in the WCU undergraduate catalog) or those accompanied by written confirmation from a doctor, the Dean of Students, etc. If you are sick, you MUST obtain a doctor's note. Finally, whether your absence is excused or unexcused (or if you are late to class), you will be responsible for any material covered and any announcements that were made in class that day.

Homework: There will approximately 8-10 homework assignments throughout the semester. Points will be deducted from assignments handed in late. Homework assignments and due dates are listed tentatively below, but changes may be announced in class. Homework will be accepted only during the first 10 minutes of class on the due date. There will be a penalty for late homeworks. Once assignment solutions are posted, absolutely no assignments will be accepted. If you miss class, you are responsible for finding out what homework was assigned and when it is due.

Reading: Students are expected to keep up with the reading in the book as (and preferably *before*) the associated material is covered in class. If you take the time to do this, things will make more sense in class and

it will improve your performance on homework and exams. Pop-quizzes may be given if it becomes obvious to the instructor that people are not keeping up with the reading.

West Chester University General Education Goals:

This course strives to have students meet the following general education goals:

1. Ability to communicate effectively
2. Ability to employ quantitative concepts and mathematical methods
3. Ability to think critically and analytically

Mid-Semester exam dates and policy:

There will be three tests over the course of the semester. An unexcused absence on the day of a test will result of a grade of zero for that test. Excused absences are limited to those due to participation in University –sanctioned events (see policy in the WCU undergraduate catalog) or those accompanied by written confirmation from a doctor, the Dean of Students, etc. If you are sick, you **MUST** obtain a doctor's note **BEFORE** the day of the test. I do not give make up tests. If you have an excused absence on the day of one of the tests, additional problems on the test material will be put on your final exam. You may only miss one exam due to an excused absence. You are encouraged to bring a calculator to the exams, but the calculator cannot be a part of a cell phone, iPod, etc. (i.e., it must be **ONLY** a calculator). I also reserve the right to check student ID during the exams, so make sure to bring your WCU ID to all exams!

Final Exam (Cumulative):

The final exam is mandatory. Missing the final exam will result in a zero for the exam unless **EXTREME** circumstances apply. Even in that case, extra questions will be added to the make-up final.

Public Safety: All students are encouraged to sign up for the University's free WCU ALERT service, which delivers official WCU emergency text messages directly to your cell phone. For more information and to sign up, visit www.wcupa.edu/wcualert. To report an emergency, call the Department of Public Safety at 610-436-3311.

Intellectual Property Statement:

The instructor for this course utilizes copyrighted materials under the "Freedom and Innovation Revitalizing United States Entrepreneurship Act of 2007" (Fair Use Act). Apart from such copyrighted materials, all other intellectual property associated with this course is owned and copyright protected by the instructor, including, but not limited to, lectures, course discussions, course notes and supplementary materials posted or provided to students authored by the instructor, assessment instruments such as quizzes and exams, and Power Point presentations. No recording, copying, storage in a retrieval system, or dissemination in any form, whether electronic or other format, by any means of the intellectual property of the instructor, either in whole or in part, is permitted without the prior written permission of the instructor. When such permission is granted, it must specify the utilization of the intellectual property and all such permissions and waivers shall terminate on the last day of finals in the semester in which this course is held.

Links and references to on-line resources provided by the instructor may lead to other sites. The instructor does not sponsor, endorse or otherwise approve of any information appearing in those sites, nor is responsible for the availability of, or the content located on or through, external sites. Apart from materials used in accordance with the Fair Use Act, the instructor takes no responsibility for material that is otherwise offered at web sites and makes no warranty that such material does not infringe any third party rights. However, should any of this type of material be present and this fact is brought to the attention of the instructor, they will remove references to it from course materials.

Course Schedule (Tentative!!)

Class	Date	Chapter	Topic	HW
1	Aug 27	1	Intro, Scales, and Units	HW1 OUT
2	Aug 29	1 & 2	Units & Motions in the sky	
3	Sep 3	2	Motions and angles in the sky	HW1 DUE; HW2 OUT
4	Sep 5	2	Seasons & Moon	
5	Sep 10	3	History and Kepler's Laws	HW2 DUE; HW3 OUT
6	Sep 12	4	Newton's Laws of Motion & Gravity	
7	Sep 17	4	Gravity	HW3 DUE; HW4 OUT
8	Sep 19		TEST #1 (Ch 1 - 3)	
9	Sep 24	5	Electromagnetic Spectrum	HW4 DUE; HW5 OUT
10	Sep 26	5	Color & temperature	
11	Oct 1	5	Spectra & Doppler shift	
12	Oct 3	5 & 6	Telescopes, SS Intro (ang mom)	HW5 DUE; HW6 OUT
	Oct 8		FALL BREAK	
13	Oct 10	6	Exoplanets	
14	Oct 15	10	The Sun	HW6 DUE
15	Oct 17	10	The Sun	
16	Oct 22		TEST #2 (Ch 4 -6)	
17	Oct 24	11	Properties of Stars	HW7 OUT
18	Oct 29	11	Properties of Stars	
19	Oct 31	12	Star Clusters & Stellar Evolution	HW7 DUE; HW8 OUT
20	Nov 5	13	SN, NS, WD	
21	Nov 7		Black holes & relativity	HW8 DUE
22	Nov 12	14	The Milky Way	HW9 OUT
23	Nov 14		TEST #3 (Ch 6-10)	
24	Nov 19	15	Galaxies & Distance Ladder	
25	Nov 21	15	Distance Ladder	HW9 DUE
	Nov 26		THANKSGIVING	
26	Nov 28		Big Bang	HW10 OUT
27	Dec 3	16	Dark Energy & Dark Matter	
28	Dec 5		Course review	HW10 DUE on Fri. Dec 6
xx	Dec 12		FINAL EXAM 10:30 a.m. – 12:30 p.m.	All done!

Disability: West Chester University is committed to making accommodations for persons with disabilities. Please make your needs known by contacting your instructor and the Office of Students with Disabilities. Sufficient notice is needed in order to make the accommodations possible. The University desires to comply with the ADA of 1990.

Other Policy: For questions regarding Academic Dishonesty, the No-Grade Policy, Sexual Harassment, or the Student Code of Conduct, students are encouraged to refer to their major department's handbook, the Undergraduate Course Catalogue, the Rams Eye View, or the University Web Site. Please understand that improper conduct in any of these areas will not be tolerated and may result in immediate ejection from the class.