PHYS 160 Astronomy Syllabus (Revised 8/25/17)
Fall 2017

Lecture: MWF 1:10-2:00 MCREY 115

Instructor: Dr. Ann Wright
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Office Hours: MWF 9-10, TR 10-11 or stop by my office as needed.

Course Goals

- To provide science and non-science students with an introduction to the methodology of Astronomy and the major models developed to understand our universe.
- To provide students with a grasp of the historical development of models of the physical world, the experimental basis of these models, and how these models have impacted how humanity views the physical world.
- To provide a brief introduction to the objects in our solar system and beyond.
- To better understand the impact of human behavior on the Earth's physical systems.
- To study the evolution and structure of the universe as a whole.

Textbook: Discovering the Essential Universe, sixth edition by Neil Comins ISBN: 978-1-4641-8170-2

Course Materials:
The course syllabus and gradebook will be available on the class Moodle page. The address is http://moodle.hendrix.edu/course/view.php?id=16318 . Daily material, including course schedule and assignments, will be located at the course website at http://www2.hendrix.edu/astronomy/

Observing materials:
No special equipment is required for this course. However, the following items will be useful if you have them: a compass, astronomy apps on your phone or tablet such as Astronomy Picture of the Day (APOD), Sky Safari, Star Walk. I am happy to help if you have your own telescope or binoculars or if you wish to purchase one. The physics department has telescopes and binoculars that we will use during the class.

Grading:
15% Homework
15% Observational assignments
50% Test average
5% Poster presentation and evaluation
15% Final Exam*

* If the average score for all tests is above 90.00, the student may elect to not take the final exam. The test average will be used as the final exam grade. This option does not guarantee the student an 'A' in the class.

Homework

- Assignments will be announced in class and on the course website.
- Each HW problem is graded for completion on a 0-2pt scale. Solutions will be posted. No late homework will be accepted past 5pm of the day it is due.

- Students with excused absences can either turn in homework early or after they return if prior arrangement is made.

Quizzes:
Quizzes will be given with clickers in the first 5 minutes in class. There will be three questions: 1. Are you present today? 2. A question about something learned in the previous class, and 3. A question about something from the reading assignment for the current class. The questions will be multiple choice or true/false and will represent typical questions that appear on tests.

Observational Assignments:
There will be several observational assignments. These assignments will include outdoor naked-eye observations, and virtual/simulated observations using computer programs or internet resources. In addition, there will be 5 independent observations chosen by each student. Opportunities such as eclipse viewing, telescope nights, and public star parties will be plentiful, and suggestions will be given in most classes. Instructions for the independent observations will be given on the class web page.

Test Information:
Three tests, given during lecture time. Test dates will be decided at least 1 week prior to each test. Cell phones, or any other electronic device except your calculator, are not allowed within view during tests. You may not use your cell phone as a calculator or timer during tests.

Poster Presentation
Students will select a research topic in astronomy and present a poster during the last few days of class. Students will be graded not only on their own poster, but also in how thoughtfully they evaluate other posters. Details will be given in class mid-semester.

Final Exam
Comprehensive final exam. Friday December 8, 2-5 pm.

Statement on Academic Integrity:
Please review the College's policy on Academic Integrity. It is available online in the 2017-18 Hendrix Catalog at https://www.hendrix.edu/Catalog/2017-2018/Academic_Policies/Policies_and_Appeals/Academic_Integrity For this course, you are encouraged to work in small groups for class work and homework, but all quizzes and tests must be the work of the individual student. The lab instructor will have details about academic integrity for the lab.

Statement on Diversity:
The Hendrix College physics department values diversity and inclusion in all forms. We expect our faculty, staff, and students to be respectful of diversity in gender, sexuality, disability, age, socioeconomic status, ethnicity, race, religion, and culture. We strive to create a learning environment that is comfortable and effective for all. We should all be open to the views of others, appreciate the opportunity that we have to learn from each other in this community, and value each other's opinions and communicate in a respectful manner. If you encounter or observe sexual harassment, sexual misconduct, sexual assault, or discrimination please contact an appropriate person who can help. These people include: your instructor, the chair of the department (Dr. Todd Tinsley, tinsley@hendrix.edu, 450-1404), the department Safe Zone Ally (Dr. Ann Wright, wright@hendrix.edu, 450-3808), the Dean of Students (Jim Wiltgen, wiltgen@hendrix.edu, 450-1222), or the campus Title IX Coordinator (Shawn Goicoechea, goicoechea@hendrix.edu , 450-1415). To review your rights regarding harassment and discrimination, we encourage you to review the information located at https://www.hendrix.edu/SRR/page.aspx?id=70128.

Accommodations:

It is the policy of Hendrix College to accommodate students with disabilities, pursuant to federal and state law. Students should contact Julie Brown in the Office of Academic Success (505.2954; brownj@hendrix.edu) to begin the accommodation process. Any student seeking accommodation in relation to a recognized disability should inform the instructor at the beginning of the course. To schedule an appointment, please click use this link: https://brownj.youcanbook.me/

Astronomy events this semester:

- Aug 21 Solar eclipse
- Aug 26 Pinnacle Mountain Star Party 8:30 pm
- Sept 22 Fall equinox
- Sept 9 Pinnacle Mountain Star Party
- Oct 8 Draconid meteor shower
- Oct 21-22 Orionid meteor shower
- Oct 28 Pinnacle Mountain Star Party
- Oct 28 International Observe the Moon Night
- Nov 4-5 Taurid meteor shower
- Nov 11 Woolly Hollow Star Party
- Nov 13 Conjunction of Venus and Jupiter
- Nov 17-18 Leonid meteor shower
- Nov 18 Woolly Hollow Star Party

Class Schedule:

Date	Class topic	Reading
W Aug 23	syllabus and introductions	
F Aug 25	the sky viewed from Earth	1.1-5
M Aug 28	Earth cycles	1.6-10
W Aug 30	eclipses, scale of universe	1.11-14
F Sept 1	geocentric vs. heliocentric universe	2.1-4
M Sept 4	**Labor Day – no class**	
W Sept 6	Kepler and Newton	2.5-8
F Sept 8	review	
M Sept 11	**Test #1**	
W Sept 13	nature of light	3.1-4
F Sept 15	atoms and spectra	3.14-17
M Sept 18	black bodies, doppler shift	3.12-13, 3.18
W Sept 20	optics and telescopes	3.5-9
*F Sept 22	non-optical astronomy	3.10-11
M Sept 25	space telescopes	
W Sept 27	review	
F Sept 29	**Test #2**	
M Oct 2	Intro to solar system	4.1-5

W Oct 4	formation of solar system	4.6-10
F Oct 6	exoplanets	5.1-10
M Oct 9	Earth and Moon	6.1-10
W Oct 11	Mercury, Venus, Mars	6.11-21
F Oct 13	**Fall Break – no class**	
M Oct 16	Mars exploration	6.22-25
W Oct 18	Jupiter and Saturn	7.1-13
F Oct 20	Uranus, Neptune, Dwarf Planets	7.14-17, 8.1-2
M Oct 23	asteroids, meteoroids, meteors, meteorites	8.3-5, 8.10-13
W Oct 25	comets	8.6-9
F Oct 27	review	
M Oct 30	**Test #3**	
W Nov 1	The Sun	9.1-6
*F Nov 3	the Sun, cont'd	9.7-10
M Nov 6	characterizing stars	10.1-7
W Nov 8	stellar life cycle: formation	10.8-12, 11.1-7
F Nov 10	death of low-mass stars	11.8-12.2
M Nov 13	death of high-mass stars	12.3-10
W Nov 15	black holes	12.11-18
F Nov 17	review	
M Nov 20	**Test #4**	
W Nov 22	Thanksgiving – no class	
F Nov 24	Thanksgiving – no class	
M Nov 27	Milky Way galaxy	13.1-7
W Nov 29	**Poster session #1**	
F Dec 1	**Poster session #2**	
M Dec 4	course evaluations, review	
F Dec 8	Final exam, 2pm	