Astronomy 104: Spring 2014 Intro, Stars, Galaxies, and Cosmology

Class: M & W Lewis 101, Instructor: James Hill <u>jhill6333@gmail.com</u> 662-547-6970 (H) Office Hours: Kennon 1: MW 2:00-3:45 Lab section and hours TBA Text: Cosmic Perspective, Bennett et al., 7th Ed, 2013

Learning Objectives: (a) To learn some fundamentals of the history and laws of astrophysics, and (b) how stars, galaxies, and the history of the Universe are currently understood. To examine how astronomers made these discoveries. (c) To do experiments in the labs demonstrating astronomical concepts.

Read and study the assigned chapters before class. The schedule below is subject to adjustment, but tests will be on the indicated dates.

Date	Subject	Chapter(s)
22 Jan	Introduction to the course (syllabus), scale of the universe	Chap 1
27 Jan	History of the universe, constellations, definitions	Chap 1 & 2
29 Jan	Star motion: daily/yearly, Angles, Sidereal Time, the Moon	Chap 2
3 Feb	Longitude/Latitude, Right Ascension/Declination, RA/Dec	Chap S1
5 Feb	Kepler's 3 laws, Newton's Laws, Gravity, orbits	Chap 3 & 4
10 Feb	Matter, Energy, Temperature, Atomic energy levels	Chap 5
12 Feb	Light Wavelengths, Spectral Lines, Doppler Shift	Chap 5
17 Feb	Spectroscopes, Wien's Law, Black Body Radiation	Chap 5
19 Feb	Telescopes: Optical, Radio, X-ray, etc.	Chap 6
24 Feb	FIRST HOUR TEST	Chapters 1-6
26 Feb	Why does the Sun shine? Sunspots, Neutrinos	Chap 14
3 Mar	Stars: Distances Luminosity Magnitudes Temperature Size	Chap 15
5 Mar	HR Diagram. Stellar Masses and Binary Stars.	Chap 15
17 Mar	Gas-> New Stars, Old stars Move off the Main Sequence	Chap 16
19 Mar	Variable Stars, Red Giant and White Dwarf Stars	Chap 17
24 Mar	Supernovae, Neutron Stars, Gravity Waves, and Black Holes	Chap 18
26 Mar	SECOND HOUR TEST	Chapters 14-18
31 Mar	Our Milky Way Galaxy, Globular Star Clusters	Chap 19
2 Apr	100 Billion Galaxies	Chap 20
7 Apr	Finding Distances with Cepheid Variables, Galaxies	Chap 20
9 Apr	Hubble's Law, Redshifts, and Distances	Chap 20
14 Apr	Quasars and Active Galaxies	Chap 21
16 Apr	Dark Matter in Galaxies and Galaxy Clusters	Chap 22
21 Apr	Cosmology, Expanding Universe, Big Bang, 3K Radiation	Chap 23
23 Apr	THIRD HOUR TEST	Chapters 19-23
28 Apr	Early Universe, Inflation, Big Bang, Sub-Atomic Particles	Chap S4
30 Apr	Search for Extraterrestrial Civilizations	Chap 24
5-9 May	COMPREHENSIVE FINAL EXAMS	
ę	May 4:00 pm class: exam 4:00 pm Friday	Chapters 1-6; 14-24
Ę	5 May 5:00 pm class: exam 7:30 pm Monday	Chapters 1-6; 14-24

Semester Final Grading Algorithm

15% Homework/Quizzes25% Labs12% 1st Test12% 2nd Test12% 3rd Test24% Final Exam

Mid-term grade March 7 (1/3 quizzes, 1/3 labs, 1/3 test 1.)

Attendance at all classes is expected. The Automated Attendance System using your Ole Miss ID card will be used. Always <u>have you ID with you</u> and inform the instructor if the scanner doesn't record you presence. Excess absences or missed quizzes will affect your grade.

Hard copies of chapter outlines will be handed out at the beginning of classes. Take home, open book HW/quizzes will be given out at the end of each class and Scantron answer sheets for these will be due at the end of the following class. You may only turn in one (your own, not someone else's) Scantron. There may also be in-class quizzes at the end of class covering the information covered during that class.

Chapter outlines and answers to previous HW/quizzes and tests will be posted on "Blackboard". Keep and use your corrected back outlines, quizzes, and tests to use for review and as study guides for the final exam. Once answers to quizzes or tests are posted on Blackboard (about a week after they are due), they will not be accepted for credit. Missed HW/quizzes or tests must be made up within one week unless prior permission is obtained. Missed tests may only be made up during office hours in Kennon.

Labs Start: Jan 27. Maximum 3 labs can be missed and still pass the course Lab Sections: for changes contact Dr. Tabor Tarmac.

Labs meet Monday-Thursday 7-8:50 or 9-10:50 at Lewis 1 or Kennon Observatory For information on or to check lab grades:

http://www.phy.olemiss.edu/~kakukk/Astro/Lab/Lab.html

Bring a scientific calculator to labs/tests (Texas Instruments TI-30Xa is a good choice).

ASTR 104 Lab Manual is required. These may be purchased of the University Printing Office. (915-7066) next to the water tower and across from the University Police Department

Please come to the lab the right night and time you have signed up for. Labs are a required part of the course. You must do at least 70% of the labs to pass. Come to labs even if it is raining. Some labs will be held at the dark observing site off campus.

Reasonable accommodations for students with disabilities will be provided.

Suggestion: subscribe to APOD (Astronomy Picture of the Day) at apod.nasa.gov to get daily images and information about astronomy. Another interesting site to subscribe to is universetoday.com for space news.