PHYS 2411
COLLEGE ASTRONOMY
Spring 2012

Lecture 2:00pm-2:50pm MWF LSC 168
21311 LAB 2:40pm-3:55pm Thursdays
http://faculty.uca.edu/saustin/2411/2411_sp12.html

Instructor

Scott Austin
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Office hours: MWF 11am-12pm, MWF 1pm-2pm

Course Description

A lower division elective intended for science majors and minors. Observational astronomy, radiation, celestial mechanics, stellar structure and evolution, variable stars, compact stars, galaxies, and cosmology. Includes laboratory. Prerequisites: High school trigonometry and grade C or better in MATH 1390 or equivalent.

Goals/Objectives

- Understand astronomy as a process by conducting systematic observations, formulating and testing hypotheses, recognizing sources of error and uncertainty in methods, and disseminating results.
- Understand the structure and evolution of the universe on various scales.
- Be able to apply classical- and modern-physics to astronomical- and astrophysical-phenomena at the pre-calculus level.
- Obtain the necessary knowledge and skills for taking PHYS2421 Observational Astronomy.

Course Format

Text Books

On-line wiki text at:
http://faculty.uca.edu/saustin/2411/Wikibook.html

Neil DeGrasse Tyson, "Death by Black Hole and Other Cosmic Quandaries"

Required Equipment

- Lab book: hard-bound book with quadrille-ruled paper and sewn-in pages
- Calculator
- UCA computer account (username and password).

Classroom Activities

Assigned reading must be done before coming to class. Class time will be spent on presentations, demonstrations, discussions, and activities related to the assigned subject matter.

Laboratory Exercises

Lab work will be done during Thursdays lab block. You must have a lab notebook. You must use a hard-bound book with quadrille-ruled paper and sewn-in pages. These are inexpensive and readily available at the bookstores and office supply stores. You must have a fresh notebook. You may not use notebooks from previous semesters, unless the pages that have been written on have been removed. You should always bring the notebook to lab, along with writing utensils, a calculator, and your textbook. You should record all data, calculations, and answers to questions in your lab notebook. Lab participation will be recorded and will count for 30% of your lab grade. Your understanding of the lab assignments will be assessed with weekly quizzes (which will count for 70% of your lab grade) and on the exams. You will be allowed to use your lab notebook when taking your quiz. A quiz may have some combination of multiple choice and true or false all referring exclusively to the lab. If you did not attend lab then you will not receive credit on the lab quiz. Three unexcused lab absences will result in an automatic grade of F for the semester.

Problem Sets

Weekly problem sets must be done in your lab notebook. Weekly open-lab-book tests based on the problems will be given.

Exams

Three exams are scheduled during the semester. These tests may consist of multiple choice, short answer, and short essay/problem type questions covering the classroom activities, readings, and lab exercises.

Final Exam

The final exam is comprehensive. A failing grade on the final exam will result in an automatic failing grade for the entire course. The final may consist of multiple choice, short answer, and short essay/problem type questions covering the classroom activities, readings, and lab exercises.

Grading and Grades

- 25% Problem Tests+25% Labs+25% Exams+25% Final Exam

Starting Grade Scale

$90\% \leq A \leq 100\%$
$80\% \leq B < 90\%$
$70\% \leq C < 80\%$
$60\% \leq D < 70\%$
$0\% \leq F < 60\%$

Phones and PDAs

Sending or receiving messages with phones or other devices during class or lab will result in the loss of points equivalent to one lab quiz for each infraction.

Using phones as calculators is prohibited.

Having a phone on or visible during an exam or quiz will result in an automatic F for the exam or quiz.

Absences

All labs, quizzes, and exams must be done during the scheduled times.
Consideration will be given for the following at the convenience of the instructor:

- Any student who is required to participate in off-campus, university-sponsored activities such as field trips, musical performances, judging teams, intercollegiate athletic events, etc. must obtain a letter from the fac-

ulty or staff member supervising the off-campus activity. The letter must contain specific information concerning the activity and date, be signed by the supervising faculty or staff member, and be submitted by the student to me at least one week in advance.
- Students that must miss a class because of illness, personal crises, mandated court appearances, parental responsibilities, and the like are required to submit a written explanation of the absence at least one week in advance. For emergency situations, students are required to call or e-mail me immediately followed by a written explanation.
- If one cannot come to class because of inclement weather one must call or e-mail me immediately.
- Students who attempt to gain advantage through abuse of this policy (e.g., by providing an instructor with false information) will receive disciplinary action and will fail this course.

Academic Misconduct

Academic misconduct include cheating, falsification, multiple submission, plagiarism, abuse of academic materials, and complicity or misconduct in research; the definition of academic misconduct is stated in the Student Handbook. Any student guilty of an act of academic misconduct will be subjected to one or more of the following penalties as outlined in the Student Handbook: 1. The students' grade in the course or on the examination or assignment affected by the misconduct may be reduced to an extent, including reduction to failure. 2. The student may be placed on probation or suspended from the university for a specific period of time. 3. The student may be expelled from the university. Expect to receive the maximum penalty for any academic misconduct.

Misc Policies

All other policies not explicitly covered in the syllabus can be found in the Student Handbook. For example, academic policies in general can be found beginning on page 26 and the sexual harassment policy can be found on page 93.

Americans with Disabilities Act

UCA adheres to the requirements of the Americans with Disabilities Act. If you need accommodation under this Act contact the UCA Office of Disability Services at 450-3135.

Schedule Spring 2012

	Month	Day	Location	Subject/Event	Read Chapter-Sections
TH	Jan	12	LSC 10	Syllabus, ADT, and Planetarium Show	I
F	Jan	13	LSC 168	Stellar Magnitudes	II. A.
M	Jan	16		MLK No class	
W	Jan	18	LSC 168	Stellar Electromagnetic Radiation	II. B.
TH	Jan	19	LSC 161	**Lab 01:** Spectroscopy	
F	Jan	20	LSC 168	Stellar Electromagnetic Radiation/**Lab Quiz 01**	II. B.
M	Jan	23	LSC 168	Spectra/**Problem Test 01**	II. C.

	Month	Day	Location	Subject/Event	Read Chapter-Sections
W	Jan	25	LSC 168	Spectra	II. C., D.
TH	Jan	26	LSC 161	**Lab 02:** Telescope Optics I	III.
F	Jan	27	LSC 168	Telescopes / **Lab Quiz 02**	III.
M	Jan	30	LSC 168	Telescopes / **Problem Test 02**	III.
W	Feb	1	LSC 168	Telescopes	III.
TH	Feb	2	LSC 161	**Lab 03:** Telescope Optics II	III.
F	Feb	3	LSC 168	Newtonian Gravity/ **Lab Quiz 03**	IV.
M	Feb	6	LSC 168	Binary stars/ **Problem Test 03**	IV.
W	Feb	8	LSC 168	**EXAM 1**	I, II, II, IV.
TH	Feb	9	LSC 174	**Lab 04:** Stellar Photometry	I., III.
F	Feb	10	LSC 168	Luminosity/ **Lab Quiz 04**	V. A.
M	Feb	13	LSC 168	Surface Temperature/ **Problem Test 04**	V. B.
W	Feb	15	LSC 168	Stellar Radii	V. C.
TH	Feb	16	LSC 174	**Lab 05:** Stellar Spectroscopy	
F	Feb	17	LSC 168	Masses / **Lab Quiz 05**	V. D.
M	Feb	20	LSC 168	Composition, **Problem Test 05**	V. E.
W	Feb	22	LSC 168	Energy Generation	VI. A.
TH	Feb	23	LSC 174	**Lab 06:** Star Cluster Ages	
F	Feb	24	LSC 168	Energy Generation / **Lab Quiz 06**	VI. A.
M	Feb	27	LSC 168	Energy Transport, **Problem Test 06**	VI. B.
W	Feb	29	LSC 168	Hydrodynamics	VI. C.
TH	Mar	1	LSC 174	**Lab 07:** Pulsars	
F	Mar	2	LSC 168	Zones / **Lab Quiz 07**	VI. D.
M	Mar	5	LSC 168	Stellar Models/ **Problem Test 07**	VI. E.
W	Mar	7	LSC 168	**EXAM 2**	V., VI.

	Month	Day	Location	Subject/Event	Read Chapter-Sections
TH	Mar	8	LSC 161	**Lab 08:** Galaxy Masses	
F	Mar	9	LSC 168	Stellar Main sequence Lifetimes and Nucleosynthesis/ **Lab Quiz 08**	VII. A., B.
M	Mar	12	LSC 168	Post-MS Stellar Evolution/ **Problem Test 08**	VII. C., D.
W	Mar	14	LSC 168	Post-MS Stellar Evolution	VII. E., F.
TH	Mar	15	LSC 174	**Lab 09:** Supernova Remnant Spectroscopy	
F	Mar	16	LSC 168	PNs and White Dwarfs/ **Lab Quiz 09**	
M	Mar	26	LSC 168	Type II Supernovae/ **Problem Test 09**	VII. G.
W	Mar	28	LSC 168	Type II Supernovae	VII. H.
TH	Mar	29	LSC 174	**Lab 10:** Hubble Law	
F	Mar	30	LSC 168	Supernova Remnants/ **Lab Quiz 10**	VII. I
M	Apr	2	LSC 168	Star clusters and formation/ **Problem Test 10**	VII. J., K.
W	Apr	4	LSC 168	Galaxies (Milky Way)	VIII. A
TH	Apr	5	LSC 174	**Lab 11:** Large Scale Structure	
F	Apr	6	LSC 168	Galaxies (Distances,Morphology and DM)/ **Lab Quiz 11**	VIII. B, C, D.
M	Apr	9	LSC 168	Galaxies (BHs and Clustering),/ **Problem Test 11**	VIII. E., F.
W	Apr	11	LSC 168	**EXAM 3**	VII., VIII
TH	Apr	12	LSC 174	**Lab 12:** Object X	
F	Apr	13	LSC 168	Cosmology (Expansion)/ **Lab Quiz 12**	IX. A
M	Apr	16	LSC 168	Cosmology (Expansion)/ **Problem Test 12**	IX. A
W	Apr	18	LSC 168	Cosmology (LSS)	IX. B
TH	Apr	19		**No Lab**	
F	Apr	20	LSC 168	Cosmology (CMB)/ **Lab Quiz 13**	IX. C.
M	Apr	23	LSC 168	Cosmology (Contents), **Problem Test 13**	IX. D.
W	Apr	25	LSC 168	Cosmology (Timeline of Big Bang)	IX. E.

	Month	Day	Location	Subject/Event	Read Chapter-Sections
TH	Apr	26		**No Lab**	
F	Apr	27		Study Day	
F	May	4	LSC 168	**FINAL EXAM,** (10:00am –12:00pm)	