08-7aa.

Curriculum

over sheet for each course

proposal and for

Stellar Astronomy

gnatures as appropriate

Part II: Description of the Curriculum Change

1. SYLLABUS OF RECORD (NEW)

I. Catalog Description
GEOS 342 Stellar Astronomy

3 class hours
3 lab hours
4 credit hours

Prerequisites: MATH 121, PHYS 111 or instructor permission (3c-3l-4cr)

Evolution and nature of objects in the universe, including the Sun, stars, and galaxies. Study of methods for gathering astronomical data on motion, distance, and composition.

II. Course Objectives
At the end of this course students will be able to:

1. Apply basic science concepts from physics, chemistry, and biology to stellar astronomy; for example, the laws of motion to binary stars.
2. Explain how the scientific method has been used to solve questions about the universe; for example, how the size and shape of our galaxy were determined.
3. Describe evolution of the Sun, other stars, and galaxies.
4. Summarize the uses of modeling, instrumentation, and technology in study of the universe.
5. Outline major ideas in cosmology and the history of the universe as a whole.

1. Recognition and Types of Galaxies
2. Neutron Stars and Pulsars
3. Black Holes and Quasars

Part D (8 academic hours): Universe as a whole

1. Red Shift and the expanding Universe
2. Evidence for Early History of the Universe
3. Models and Evidence for the Fate of the Universe
4. Possible Environments for Life

Seven academic hours are allotted to instruction in, and use of, the planetarium.

Correct operation and maintenance of star projector (2 academic hours)

Constellation identification and celestial navigation skills (3 academic hours)
Student presentations using planetarium projector (1 academic hour)

Three academic hours are allotted to exams during the semester.
Final exam during final exam period.

Laboratory Exercises (3 academic hours each)

Week 1: Sky Coordinates and Constellations

VII. [redacted]

Moché, D. *Astronomy: A Self-Teaching Guide (6th edition)*. Hoboken, N.J.: John Wiley & Sons, 2004.
Approximately six scientific or education papers will be used periodically throughout the course to supplement textbook readings.

VIII. Special resource requirements

This course will make use of the University planetarium in Weyandt Hall to illustrate various principles of Stellar astronomy and for training students in use of a planetarium projector.

IX. Bibliography

In addition to the required textbooks and supplemental readings from science and education journals, the following will be used to develop the course curriculum:

Consolmagno, G. and D. Davis (2000) Turn Left at Orion (3rd edition): Cambridge University Press, Cambridge, England, 224 p.

Gupta, R., editor (2005) *Observer's Handbook 2006* (issued annually): Royal Astronomical Society of Canada, Toronto, 304 p.

Ottewell, G. (2005) *Astronomical Calendar 2006* (issued annually): Sky Publishing Corp., Cambridge, Mass., 82 p.

Pasachoff, J. M. (2002) *Astronomy: From the Earth to the Universe (6th edition)*: Thompson Brooks/Cole, Belmont, Calif., USA, 816 p.

Ridpath, I. (2004) Norton's Star Atlas and Reference Handbook (20th edition): Pi Press/Pearson Education, New York, 196 p.

Seife, C. (2003) *Alpha and Omega: The Search for the Beginning and End of the Universe*: Viking, New York, 294 p.

2. SUMMARY OF PROPOSED REVISIONS

[redacted]

GEOS 342 - Stellar Astronomy
Syllabus - Fall 2007

Dr. Kenneth S. Coles
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Geoscience Dept.
Office: 111 Walsh
Phone: 7-2379

Goal

To build a solid understanding of the fundamentals of astronomy, with emphasis on sun, stars, galaxies, the sidereal universe and use of spectroscopy for gathering astronomical data, so that students will be able

Lectures Tues and Thurs 3:30-4:20 P.M, Room 134 Weyandt (Planetarium)

Tues	Thurs		
Aug 28	Aug 30	Position and motion in sky	Position, motion
Sept 4	Sept 6	Light, what it tells us	Light
Sept 11	Sept 13	Astronomical instruments	Radio astronomy
Sept 18	Sept 20	Kepler	Newton, Einstein
Sept 25	Sept 27	Measuring distances	**EXAM 1**
Oct 2	Oct 4	The Solar nebula	Sun: description
Oct 9	Oct 11	Sun: behavior	Measuring star properties
Oct 16	Oct 18	Star types	Hertzsprung-Russell plot
Oct 23	Oct 25	Star birth	Evolution of small stars
Oct 30	Nov 1	Evolution of large stars	**EXAM 2**
Nov 6	Nov 8	Wierdness I: neutron stars	Wierdness II: black holes
Nov 13	Nov 15	Discovering our galaxy	Galaxy types, evolution
Nov 27	Nov 29	Cosmos: the red shift	Microwave Background
Dec 4	Dec 6	Cosmos: future universe	Cosmos: early history

Thursday, December 13, 2007, 12:30 P.M. to 2:30 P.M. - **FINAL EXAM**

Lab Schedule (specific lab schedule will be given in class)

[redacted]

Test 1	15%	(covers lectures and labs through Sept. 27)
Test 2	15%	(covers lectures and labs from Oct. 2 to Oct. 30)
Final Exam	20%	(a comprehensive test)
Labs	20%	
Assignments	10%	