ASTR1660 - HISTORY OF ASTRONOMY
Fall Semester - 2005

Time/Place: Tuesday and Thursdays 12:30 - 1:45 PM Physics 327

Instructor: Professor Magnani (Office: Physics 238)
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Office Hours: Tuesday and Thursday 11:00 AM - 12:15 PM
or by appointment (542-2876)

Textbooks: THE CAMBRIDGE CONCISE HISTORY OF ASTRONOMY - edited by M. Hoskin.
ARCHIVES OF THE UNIVERSE - ed. by Marcia Bartusiak
THE UNIVERSE AT MIDNIGHT - Ken Croswell
– ALL REQUIRED –

Grades: Final exam: 30%

Midterm exam: 20%

2 term papers: 25% each

Letter grades will follow the traditional system: A is for 90.0 or above, B is for 80.0 - 89.9, C is for 70.0 - 79.9, D is for 60.0 - 69.9, and F is for below 60.0.

Term papers are to be 10-20 pages in length on a topic that is chosen from a list that I will provide. First paper is due October 3, 2005 and will cover a pre-Newtonian topic (i.e., 17th century and earlier astronomy). The second paper is due November 21, 2005 and will cover a topic from post-17th century astronomy. For each week that the paper is late, a letter grade will be deducted from the actual grade.

The midterm and final exams will consist of essay questions based on the material covered in class and on the readings. The date for the final exam has been set for Thursday, Dec. 15th at 12 noon.

If you miss one of the exams due to serious illness or family emergency, a make-up exam will be administered as soon as possible at a mutually convenient time. However, you will be asked to provide evidence of such an illness or emergency, and I am the final arbiter as to what constitutes an emergency.
Course Description: In this course, we will survey the history of astronomy from prehistoric times to the mid-twentieth century. For the latest, modern developments, you should take ASTR 1010 and ASTR 1020. Because I am an astronomer rather than a historian, we will focus on the development of the scientific ideas and how they drove the science forward. There will be a lot of assigned reading and some in-class discussion. You should come to class having done the reading and prepared to discuss various aspects of it. The class will be mostly qualitative, but there will be some quantitative expositions that will require a knowledge of high-school algebra.

Course Objectives: You will learn a bit about astronomy and science in general. In the process, you will engage in complex thought, analysis, and reasoning. The course is more than memorizing a series of sequential “facts”. You will have to think about the relationship between events and consequences (for instance, how the development of spectroscopy revolutionized astronomy and turned it into “astrophysics”). You will also have to do some research-based writing on topics that I will assign. Finally, in the first half of the course especially, you will develop an appreciation for the multicultural basis of our astronomical heritage.

Schedule & Reading Assignments

Week 1: Introduction;

Week 2: Ch. 1 (CHA) Pre-historic Astronomy; The Celestial Sphere
Readings from Bartusiak’s book will be assigned in class as needed

Week 3: Ch. 2 (CHA) Astronomy in Antiquity; Chinese Astronomy

Week 4: Ch. 3 (CHA) Islamic Astronomy; Mayan Astronomy

Week 5: Ch. 4 (CHA) Medieval Latin Astronomy

Week 6: Ch. 5 (CHA) Astronomy Transformed; Telescopes

Week 7: Ch.6 (CHA) Kepler’s Three Laws; Newton
Paper I due October 3rd

Week 8: Ch. 6 (CHA) More Newton

Week 9: Ch. 7 (CHA) The Birth of Stellar Astronomy

Week 10: Ch. 8 (CHA) The Rise of Astrophysics, Background on spectra

Week 11: Ch. 9 (CHA) Astronomy’s Widening Horizons

Week 12: Einstein’s Theory of Relativity

Week 13: Ch. 1 - 5 (UM) The Big Bang for Beginners

Week 14: Ch. 6 - 11 (UM) Trouble at the Mill...
Paper II Due November 21st

Week 15: Ch. 12 - 15 (UM) The Future of the Universe

Week 16: Conclusion

Final - December 15th at noon

You are expected to read the relevant material BEFORE coming to class. The class lectures clarify, supplement, and expand on the required reading.