

**History of Astronomy and Cosmology**  
**Course Syllabus**  
**Fall 2001**

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**Office: 7142 Social Science**  
**Hours: T. and Th. 6:30-7:30**

This course covers the history of astronomy and cosmology from prehistory to the present. During the next 15 weeks we will be investigating many aspects of humanity's interactions with the sky, from ritual sites aligned to prominent celestial events and the formation of celestial-based theologies, through the development of mathematical and observational astronomy, to the modern search for the origins of the universe. In addition to studying the development of scientific astronomy, we will also look at the role of astronomy in religion, art, culture and technology.

The course is organized into three sections: 1) the early and Medieval period; 2) the scientific revolution and the Enlightenment; 3) the 19<sup>th</sup> and 20<sup>th</sup> centuries. Instead of in-class exams, at the end of each section there will be a 5-6 page take-home essay due. For each of the essays you will have a choice of two questions to answer. In addition to providing you the opportunity to show your knowledge of the course material, these essays are meant to help you learn how to express your ideas clearly in writing. No matter what your major is, being able to communicate clearly is a vital skill to learn for your future academic or professional careers. I am more than happy to help you with drafts of the essays.

The format of the classes will revolve around lecture, discussion, quizzes, assignments, and small-groups. In order to get the most out of the class, there are a few things you need to do:

- 1) **Read the material assigned for that week** by the Thursday class at the latest.
- 2) **Take notes during lecture.** This may seem obvious but it is really important that you pay attention to the material covered during the lecture and that you have access to that information when you go to write your essays.
- 3) **Be prepared for quizzes.** There will be short, true/false quizzes almost every week that are designed to make sure that you are keeping up with the material. If you are paying attention in lecture and keeping up with the reading it should be impossible to do poorly on the quizzes.
- 4) **Do the assignments.** Several times throughout the semester there will be homework assignments of a rather unusual sort designed to help you understand how people practices astronomy or how it fit into different cultural behaviors.
- 5) **Be prepared to participate!** This is going to be one of the most important aspects of this class. Discussion of the material leads to a much greater understanding and is simply more fun than listening to me lecture for two and a half hours a week. Please come prepared to ask questions, answer questions, state opinions, etc.
- 6) **Bring show-and-tell items.** As part of your participation I strongly encourage you to keep your eyes out for news articles, TV specials, and the like for interesting bits of information related to the history of astronomy and cosmology. During each class there will be an opportunity to share this information with the rest of us. Good sources are: *National Geographic*; *Discover* magazine; any newspaper; the news magazines such as *Time*; the NASA website; *Sky and Telescope* magazine; and numerous others.

In addition to the regular classes, I will hopefully be able to schedule several field trips or movie nights. A trip to the observatory and watching a few movies (some good, some bad – depends on what you would like) will add considerably to the course.

**There are two required texts for the course;**

*The Norton History of Astronomy and Cosmology* by John North (Norton 1995) available at the University bookstore, and the HS 206 course reader available from the secretary of the History of Science department, room 7143 Social Science. Please purchase the reader as soon as possible so you do not fall too far behind in the readings.

**Grading:**

Your grade will be determined by these factors:

Essays (3 @ 40 points each)	120 pts
Participation	30 pts
Quizzes (12 @ 2 pts each)	24 pts
<u>Assignments</u>	<u>26 pts</u>
Total possible	200 pts

Letter grades will not be given until the end of the semester. Essays will be given a numerical score to which I will assign an approximate letter grade simply to let you know how you are doing. It is important that you understand that grading starts in the middle and goes up and down. That means that an average essay will get an average grade. You can do nothing wrong and still receive a B. ABs are reserved for very good papers and As are limited to truly excellent work. I believe that you all have the capability to earn an A and I hope I can help you achieve that.

You are encouraged to visit me in my office, 7142 Social Sciences, next to the elevators in the front hallway. My office hours will be Tuesday and Thursday 6:30-7:30 before class. The office phone number is 262-3999. You are also welcome to schedule a different time to meet if necessary. Feel free to send me email as well at [kinraide@hotmail.com](mailto:kinraide@hotmail.com). Because I trust you not to abuse it, I am giving you my home phone number as well, 278-8540. You may call me at home anytime between 10:00 am and 10:00 pm.

We will cover a great deal of interesting material in this course and I hope you are looking forward to it as much as I am. I hope that together we can make this course one of the most enjoyable and informative that you will take during your college careers.

## Course Schedule

### *Section I: Astronomy on a Stationary Earth*

Week 1: September 4-6

Prehistoric astronomy

Readings: pg. 1-50 in reader

Week 2: September 11-13

Egypt and Mesopotamia

Readings: pg. 51-116 in reader

Pg. 7-58 in North (you can skim pages 19-48)

Week 3: September 18-20

Greece

Readings: pg. 117-126, 139-150, 173-180 in reader (please skim the skipped pages)

Pg. 59-104 in North

Week 4: September 25-27

Ptolemaic astronomy

Readings: pg. 181-202 in reader

Pg. 104-124 in North

Week 5: October 2-4

Non-Western astronomy

Readings: pg. 203-242 in reader

Pg. 132-176 in North

Week 6: October 9-11

Medieval Arabic and Latin Astronomy

Readings: pg. 243-292 in reader

Pg. 177-248 in North

*The first essay will be handed out.*

### *Section II: Cosmic Revolutions*

Week 7: October 16-18

Copernicus and Heliocentrism

Readings: pg. 293-330 in reader

Pg. 249-298 in North

Week 8: October 23-25

Tycho Brahe and Johannes Kepler

Readings: pg. 331-374 in reader

Pg. 299-326 in North

**First Essay Due October 23**

Week 9: October 30- November 1  
Galileo and the Telescope  
Readings: pg. 375-414 in reader  
Pg. 326-354 in North

Week 10: November 6-8  
Descartes and Newton  
Readings: pg. 415-420 in reader  
Pg. 355-379 in North

Week 11: November 13-15  
The Enlightenment  
Readings: pg. 421-454 in reader  
Pg. 379-398 in North  
*The second essay will be handed out*

Week 12: November 20-22  
Astronomy in art and culture  
No readings and no class on Thursday the 22<sup>nd</sup> for Thanksgiving

*Section III: Space: the Final Frontier*

Week 13: November 27-29  
William Herschel and the 19<sup>th</sup> Century  
Readings: pg. 455-469, 508-524 in reader (please skim the skipped pages)  
Pg. 398-457 in North

**Second Essay Due on November 27**

Week 14: December 4-6  
The Early 20<sup>th</sup> Century  
Readings: pg. 525-560 in reader  
Pg. 458-541 in North

Week 15: December 11-13  
The Later 20<sup>th</sup> Century and the Future  
Readings: pg. 561-589 in reader  
Pg. 542-566 in North (567-623 is recommended)  
*Final essay handed out*

**Final Essay due on December 20th**