

HIST/ASTR 305 The History of Astronomy
Spring 2016
T-Th 2:00-3:15
Location: See Schedule



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Course Description:

History of Astronomy is an interdisciplinary exploration of astronomy from ancient to modern times that integrates scientific principles and discoveries within a global and historical perspective. In this class, you will learn basic astronomical principles, ideas, and practices. You will also be able to situate astronomical science within its social and historical context. Our hope is that you will come away from this course with a better understanding of astronomical science and an appreciation for how astronomy was (and remains) a cultural endeavor.

The course takes the broad view of the history of astronomy. It is structured chronologically, beginning with prehistory and ending with modern astronomical thought. But it is also thematic: we explore the role of astronomy in the scientific revolution, questions concerning cosmology and our place in the universe, the impact of society on astronomy and vice versa, to name but a few. To achieve these goals, the course is a roughly even mixture of lecture, in-class activities, and reading discussion. Thus you will be required to take notes during lecture

as well as actively participate in in-class activities and discussion of various readings, which as you'll see below is significant. You will not be successful in this class if you do not actively engage with these class activities. Because there are a number of students enrolled in this course, we have assigned you to a specific group (A or B) for the in-class activities/discussion component for this class. These groups will rotate every Thursday class (usually). You can find the rotation sequence in the schedule of classes below.

There are no prerequisites (other than sophomore standing) and you do need any background in astronomy, mathematics, or history to do well in this course.

Learning Outcomes:

Enduring Understandings:

Astronomical science is not a separate realm that sits outside of culture (i.e. science is affected by human culture and vice versa.)

Course Objectives:

Any engaged student who works assiduously in this course will be able to analyze how:

- 1) Modern scientific practices generate astronomical knowledge.
- 2) Scientific ideas emerge and develop within a specific historical context.
- 3) Past cultures/people have understood, interpreted and valued astronomy.
- 4) Astronomical ideas have shaped how humans have understood their place in the cosmos.

Required Readings:

Anthony Aveni, *Stairway to the Stars*, John Wiley and Sons, 1997.

Steven Shapin, *The Scientific Revolution*, University of Chicago Press, 1996.

Patrick McCray, *Keep Watching the Skies: The Story of Operation Moonwatch and the Dawn of the Space Age*, University of Princeton Press, 2008.

Robert Poole, *Earthrise: How Man First Saw the Earth*, Yale University Press, 2008.

Desire2Learn (D2L): In addition to the books above, you will also be **required to read articles, print, and bring them to class to discuss**. These will be available on D2L. They are noted in the schedule below with an asterisk (*).

Sometimes readings not included in the schedule below will be assigned during the in-class activities or lecture. You will be responsible for reading these and bringing them to the next class. **You must purchase the books and bring them to class on the days we discuss them.**

Students who fail to bring their readings to class for discussion will be docked points on their in-class assignments.

Course Website:

<http://www.uwsp.edu/d2l/Pages/default.aspx>

Log on using your UWSP login and password. ***This website will be used for posting grades, lecture notes/comments, assignments, class announcements, library and web resources, etc.***

Assignments:

Quizzes: There will be various quizzes throughout the semester in both the lectures and the in-class activities component of the class. Quizzes may not be made up in any circumstance. To account for illness and other unforeseen legitimate issues that may prevent you from attending class, you will be able to drop your lowest quiz from your final quiz grade. This will be done automatically through D2L. Does this mean you should come to class consistently? Yes. Yes, it does. Quizzes will consist of in-class written as well as online D2L quizzes. The D2L quizzes will be announced in class. They will be timed and will be available only in a 24 hour window.

In-Class Assignments: There will be twelve in-class assignments (which, in some cases, may require you to complete them at home) associated with the in-class activities/discussion component of class. What these are and how to complete them will be discussed in class. In-class assignments may not be made up in any circumstance. To account for illness and other unforeseen legitimate issues that may prevent you from attending class, you will be able to drop your lowest assignment from your in-class assignment grade.

Paper: There will be a major paper assignment of 12 -14 pages. The paper will require you to think deeply about a historical issue associated with astronomy. There are various assignments associated with this paper before you turn it in. These are noted in the schedule below.

Final Exam: There will be a cumulative final exam for this course on May 19th. It will be comprised of multiple choice questions, short-answer identifications, and short essay(s).

Grade Breakdown (weighted):

Quizzes: 20%

In-Class Assignments: 20%

Paper: 40%

(Thesis Statement: 10 points

Writers' Workshop Draft: 20 points

Final Paper Draft: 100 points

Total: 130 points)

Final: 20%

Total: 100%

Grading Scale (percentage):

A	93-100	B-	80-82	D+	67-69
A-	90-92	C+	77-79	D	60-66
B+	87-89	C	73-76	F	59 and below
B	83-86	C-	70-72		

Other Stuff:

Attendance: We will record attendance for the lecture portion of this class. Students who miss 3 lectures will be docked a 1/3 of a grade from their final grade. Students who miss 5-6, 2/3rds of a grade, 7 a full grade, and so on. For example, if you were to earn a B in this class, but missed 3 classes, your final grade would be a B-.

In-Class Activities/Discussion Component: As you will notice from the schedule below, a significant portion of this class is comprised of in-class/discussion (usually on Thursday). Students will be assigned a specific group (either A or B), which will determine where you are to go for the day (either in-class activity with Durbala or discussion session with Jessee). In-class activities will usually be held in the astronomy lab (Science Building B204), but also at times in the planetarium (right around the corner from the astro lab). Discussions will be held in the regular classroom (CCC224). You cannot change your section assignment. Where you are to be for the in-class activities/discussion can be found in the schedule below.

Electronics: All electronics must be turned off during class or put in silent mode, unless instructed by us to use them. These include cell phones, laptops, headsets, and tablets. In some cases an electronic device may be permitted if the student has an accommodation approved by the Disability Services Office (see below).

Plagiarism: For information on plagiarism, consult <http://www.uwsp.edu/centers/rights>. See Chapter 14, *Student Academic Standards and Disciplinary Procedures*, pages 5 -10, for the disciplinary possibilities if you are caught cheating. We will vigorously pursue all incidents of plagiarism. The essay will be checked for originality.

Equal Educational Opportunities: If you have a learning or physical challenge which requires classroom accommodation, please contact the UWSP Disability and Assistive Technology Center (6th Floor of the Learning Resources Center) with your documentation as early as possible in the semester. They will then notify us, in a confidential memo, of the accommodations that will facilitate your success in the course. Voice: (715) 346-3365, TTY: (715) 346-3362, <http://www.uwsp.edu/special/disability/studentinfo.htm>.

Writing/Reading Help: This is a reading and writing intensive course. If you need help you can visit the Tutoring and Learning Center in the basement of the Library. They are there to help you with papers etc. This is totally free! Their webpage is <http://www.uwsp.edu/tlc/Pages/writingReadingTutorials.aspx>. You can also call them to make an appointment at (715) 346-3568.

Final note: Common courtesy dictates that students attending a class should remain seated for the duration of class. While in class, students should refrain from using phones, music players, head phones, etc. and should also refrain from gossiping/chatting while the professor is lecturing and other students are listening and taking notes. Students who consistently engage in this type of disruptive behavior will be asked to leave and will receive an email requesting a meeting with the professors before being admitted back to class.

***Note:** We reserve the right to alter this schedule of topics/activities for any reason.

TENTATIVE SCHEDULE

Week	Topics
Unit I – Premodern Astronomy	
Week 1	Tuesday – Course Introduction (CCC 224)
Jan 25-29	Thursday – What is the History of Science? Astronomical Knowledge Introduction – Planetarium – 2 nd floor Science Building by the pendulum * Schiebinger, “Gender and Natural History.”
Week 2	Tuesday – Lecture on Prehistory and the Heavens (CCC 224) * Ascher, “Models and Maps from the Marshall Islands”
Feb 1-5	Thursday – Breakout 1: Group A – Astronomy in-class Activity 1 (B204 SCI) Group B – History, Stonehenge and the History of Science Discussion (CCC 224) * Aveni, <i>Stairway to the Stars</i> , vii-92. * Schuster, “The Problem of ‘Whig History’ in the History of Science.
Week 3	Tuesday – Lecture on Ancient Astronomy (CCC 224)
Feb 8-12	Thursday – Breakout 1: Group A – History, Stonehenge and the History of Science Discussion (CCC 224) * Aveni, <i>Stairway to the Stars</i> , vii-92. * Schuster, “The Problem of ‘Whig History’ in the History of Science. Group B – Astronomy in-class Activity 1 (B204 SCI)
Week 4	Tuesday – Lecture on Classical and Pre-Columbian Astronomy (CCC 224) * Seife, “Nothing Doing: The Origin of Zero.” * Aveni, “Apocalypse Soon?”
Feb 15-19	Thursday – Breakout 2: Group A – Astronomy in-class Activity 2 (B204 SCI) Group B – History, <i>Stairway to the Stars</i> Workshop (CCC 224)
Week 5	Tuesday – Lecture on Medieval / Islamic Astronomy (CCC 224) * Saliba, “Greek Astronomy and the Medieval Arabic Tradition”
Feb 22-26	Thursday – Breakout 2: Group A – History, <i>Stairway to the Stars</i> Workshop (CCC 224) Group B – Astronomy in-class Activity 2 (B204 SCI)

Unit II – Astronomy and The Scientific Revolution	
Week 6 Feb 29- Mar 4	Tuesday – Lecture on <i>Copernican “Revolution”</i> (CCC 224) * Osiander, “Foreword” to Copernicus, <i>On the Revolution of the Heavenly Spheres.</i> * Lindberg, “The Medieval Church Encounters the Classical Tradition.” Thursday – Breakout 3: Group A – Astronomy in-class Activity 3 (B204 SCI) Group B – History, Science and Religion/Rationality and Superstition Discussion(CCC 224) * Selections from <i>Newton’s Apple and Other Myths about Science</i>
Week 7 Mar 7-11	Tuesday – Lecture on <i>The Pre-Newtonians: Brahe, Kepler, and Galileo</i> (CCC 224) Thursday – Breakout 3: Group A – History, Science and Religion/Rationality and Superstition Discussion(CCC 224) * Selections from <i>Newton’s Apple and Other Myths about Science</i> Group B – Astronomy in-class Activity 3 (B204 SCI)
Week 8 Mar 14-18	Tuesday – Lecture on <i>Newtonian Physics and Astronomy</i> (CCC 224) * Mcfadden, “Survival of the Wisest.” * Weinberg, “On God, Christianity and Islam.” Thursday – Breakout 4: Group A – Astronomy in-class Activity 4 (B204 SCI) Group B – History, <i>The Scientific Revolution Workshop</i> (CCC 224)
Mar 19 - 27 – Spring Break	
Week 9 Mar 28 – Apr 1	Tuesday – Lecture on <i>Telescopic Observations and New Findings in the Solar System</i> (CCC 224) Thursday – Breakout 3: Group A – History, <i>The Scientific Revolution Workshop</i> (CCC 224) Group B – Astronomy in-class Activity 4 (B204 SCI)
Unit III – Modern Astronomy	
Week 10 Apr 4-8	Tuesday – Lecture on <i>Milky Way as an Island Universe</i> (CCC 224) Thursday – Lecture on <i>Hubble and Cosmology</i> (CCC 224)
Week 11 Apr 11-15	Tuesday – Lecture on <i>The Cold War and the Space Race</i> (CCC 224) * Oreskes, “Science in the Origins of the Cold War.” Thursday – Writers’ Workshop (Both Groups A & B – CCC 224)
Week 12 Apr 18-22	Tuesday – Breakout 5: Group A – Astronomy in-class Activity 5 (B204 SCI) Group B – History, <i>Keep Watching the Skies Workshop</i> (CCC 224) Thursday – Breakout 5: Group A – History, <i>Keep Watching the Skies Workshop</i> (CCC 224) Group B – Astronomy in-class Activity 5 (B204 SCI)
Week 13 Apr 25-29	Tuesday – Lecture on <i>Theory of Relativity of Einstein</i> (CCC 224) Thursday – Lecture on <i>Astrobiology and Exoplanets</i> (CCC 224)
Week 14 May 2-6	Tuesday – Breakout 6: Group A – Astronomy in-class Activity 6 (B204 SCI) Group B – History, <i>Earthrise Workshop</i> (CCC 224) Thursday – Breakout 6: Group A – History, <i>Earthrise Workshop</i> (CCC 224) Group B – Astronomy in-class Activity 6 (B204 SCI)
Week 15 May 9-13	Tuesday – Movie TBD Part I (CCC 224) Thursday – Movie TBD Part II & Wrap Up (CCC 224)
May 19	FINAL EXAM Thursday, May 19th 8:00-10:00 a.m.