

**HIST 305/ASTR 305 The History of Astronomy
Spring 2021**

Tuesday 2:00-3:15 pm (asynchronous Canvas)

Thursday 2:00-3:15 pm (synchronous Zoom)

Location: Virtual Classroom



Dr. Sarah Scripps

sscripps@uwsp.edu

ALB 106A, Museum of Natural History

Virtual Office Hours (Zoom):

Tuesdays 10am-11am or by appt.

Dr. Adriana Durbala

adurbala@uwsp.edu

SCI B203

Virtual Office Hours (Zoom):

T 11:00am-12:00; W 4:00-5:00 pm or by appt.

Instructions about Online (Virtual) Office Hours: via Zoom

You will receive an email invitation for the Zoom Virtual office hours. The purpose of the office hours is to allow students to ask any kind of questions related to Astr 305 / Hist 305 (lectures, in-class activities, papers, etc.) or History/Astronomy in general.

You can also schedule an individual meeting by emailing the instructor. If your schedule conflicts with all listed time intervals, we are also available by appointment; you would have to send us an email and we can decide accordingly.

Course Description:

This online synchronous course takes a scientific and historical perspective on how past cultures (including “western” civilization) have come to understand the heavens and the universe. Students gain historical perspective by putting astronomical science in its historical context and analyzing how different peoples in different times have come to understand the heavens and the universe. Students also learn about astronomical traditions in different places across the world to gain an understanding of how different regions and cultures of the world have come to know and value their place in the cosmos. Taken together, this historical and

global approach enables students to understand how science is a cultural endeavor, which fosters empathy for astronomical traditions sometimes different from modern astronomy.

The course 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 recorded lectures, virtual in-class activities, and reading discussion. Thus, you will be required to watch the recorded lectures as well as actively participate in virtual in-class activities and discussion of various readings. You will not be successful in this class if you do not actively engage with these virtual 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 virtual 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 and you do need any background in astronomy, mathematics, or history to do well in this course.

Learning Outcomes:

Enduring Understandings:

Astronomical science and human culture are inescapably intertwined.

Course Objectives:

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

- 1) Describe modern astronomical theories and practices for generating scientific knowledge of the universe. (GA – LO2)
- 2) Analyze how a historical and global perspective on astronomy contributes to an understanding of science as a universal and culturally interconnected endeavor. (GA – LO2)
- 3) Use primary sources to analyze how past cultures/peoples have understood, interpreted, and valued astronomy. (HP – LO1)
- 4) Describe differences among interpretations of the past (HP – LO2)
- 5) Identify the key components found within one or more cultures that are distinct from those found in predominantly English-speaking cultures (GA – LO1)
- 6) Analyze the role of astronomy in institutional and cultural changes in one or more human societies over time. (HP-LO3)
- 7) Demonstrate curiosity and empathetic insight in analyzing the role of astronomy in shaping how various cultures (in different continents and at various epochs) understood their place in the cosmos (GA-LO3)

GEP Category Learning Outcomes:

Historical Perspectives

- Use primary sources as evidence to answer questions about historical change. HP – LO1
- Describe differences among interpretations of the past. HP – LO2
- Analyze institutional and cultural changes in one or more human societies over time. HP – LO3

Global Awareness

- Identify the key components found within one or more cultures that are distinct from those found in predominantly English-speaking cultures. GA – LO1
- Analyze key forces or processes that contribute to global interconnectedness, and their implications. GA – LO2
- Demonstrate curiosity and empathetic insight about diverse cultural perspectives. GA – LO3

Required Readings:

Anthony Aveni, *Stairway to the Stars*, John Wiley and Sons, 1997.
Available for text rental at the UWSP Bookstore.

Robert Poole, *Earthrise: How Man First Saw the Earth*, Yale University Press, 2008.
Available for text rental at the UWSP Bookstore.

John Christianson, *On Tycho's Island: Tycho Brahe, Science, and Culture in the Sixteenth Century* (abridged), Cambridge University Press, 2002.
Available for rental at the UWSP Bookstore.

Canvas: In addition to the books above, you will also be **required to read articles and bring them to the virtual class to discuss**. These will be available on Canvas. 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 virtual activities or lecture. You will be responsible for reading these and bringing them to the next class. **You must rent the books and bring them to the virtual class on the days we discuss them.**

Course Website: <https://www.uwsp.edu/canvas/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:

Lecture Responses(short): There will be various short quizzes/lecture responses throughout the semester corresponding to the Tuesday lecture. The Tuesday lecture will be pre-recorded (asynchronous). You have to take the quiz/lecture response AFTER you watch the Tuesday lecture for that week. To account for illness and other unforeseen legitimate issues that may prevent you from attending class, you will be able to drop your lowest lecture response from your final lecture response grade. This will be done automatically through Canvas. Lecture responses will be short quizzes consisting of multiple-choice and/or short-essay questions and will be available online through Canvas. They will be timed and will be available only in two-day window.

In-Class Assignments: There will be twelve in-class synchronous assignments (which, in some cases, may require you to complete them at home) associated with the in-class activities component of class (on Thursday). What these are and how to complete them will be discussed in the virtual class. 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.

Quizzes (before/after in-class activities): There will be various quizzes throughout the semester corresponding to the Thursday synchronous breakout sessions. They will be available either BEFORE or AFTER class. 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 take-home quiz grade. This will be done automatically through Canvas. Does this mean you should come to class consistently? Yes. Yes, it does. Quizzes will consist of online Canvas quizzes. The Canvas quizzes will be announced in class. They will be timed and will be available only in a 24-hour window.

Book Responses: You will be required to write two written responses to two of the three required books for this course. These responses will be 2-3 pages in length and will require you to provide a critical analysis of how the text contributes to a historical understanding of astronomy. We will provide a set of guidelines for the response within the first couple weeks of class. Which books you will write on will be selected by us.

Final Paper: There will be a final paper assignment of 5-6 pages that will require you to describe modern astronomical theories and analyze how a historical perspective on astronomy contributes to an understanding of how science is part of human culture. We will provide a prompt around the middle of the semester.

Final Exam: There will be a cumulative final exam for this course on Tuesday, May 18. The exam will be available in Canvas and it will be comprised of multiple-choice questions, short-answer identifications, and/or short essay(s).

Grade Breakdown (weighted):

Lecture Responses (short): 15%

In-Class Assignments: 20%

Quizzes: 15%

Book Responses (two) 10%

Final Paper: 20%

Final Exam: 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:

In-Class Activities Component: As you will notice from the schedule below, a significant portion of this class is comprised of virtual in-class activities (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 astronomy in-class activity with Durbala or history in-class activity/discussion with Scripps). **Group A is ASTR 305 and Group B is HIST 305.** In-class activities will be virtual through Zoom on Thursdays from 2pm-3:15pm. You cannot change your section assignment.

Plagiarism: For information on plagiarism, consult <https://www.uwsp.edu/dos/Pages/Student-Conduct.aspx>. Go to UWSP Chapter 14, *Student Academic Disciplinary Procedures*, for the disciplinary possibilities if you are caught cheating. We will vigorously pursue all incidents of plagiarism. The essay will be checked for originality. Students are expected to maintain the highest standards of academic integrity.

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/disability/Pages/default.aspx>.

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.

In case of emergency:

In the event of a medical emergency call 9-1-1 or use Red Emergency Phone. Offer assistance if trained and willing to do so. Guide emergency responders to victim.

See UW-Stevens Point Emergency Procedures at www.uwsp.edu/rmgt/Pages/em/procedures for details on all emergency response at UW-Stevens Point.

UWSP Service Desk:

The Office of Information Technology (IT) provides a Service Desk to assist students with connecting to the Campus Network, virus and spyware removal, file recovery, equipment loan, and computer repair. You can contact the Service Desk via email at techhelp@uwsp.edu or at (715) 346-4357 (HELP) or visit:

<https://www.uwsp.edu/infotech/Pages/ServiceDesk/default.aspx>

Lecture materials and recordings for HIST/ASTR 305 are protected intellectual property at UW-Stevens Point. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record my lectures without my permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or share lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

TENTATIVE SCHEDULE

Note: Group A is ASTR 305
Group B is HIST 305

Week	Topics
Unit I – Premodern Astronomy	
Week 1 Jan 25-29	Tuesday – Canvas Course Introduction ; Introduction to Basic Astronomical Concepts (pre-recorded, asynchronous)
	Thursday – Zoom session, 2:00pm-3:15pm (synchronous) – All (Groups A & B) Astronomical Knowledge Introduction – The Virtual Sky using <i>Stellarium</i> How Do Historians Study Science?
Week 2 Feb 1-5	Tuesday – Canvas Lecture on Prehistory and the Heavens (pre-recorded, asynchronous)
	Thursday – Breakout 1: Zoom session, 2:00pm-3:15pm (synchronous) Group A – Astronomy Activity 1 - <i>Motions on the Celestial Sphere through the Eyes of Ancient Stargazers</i> Group B – History Activity 1 * Aveni, <i>Stairway to the Stars</i> , vii-92. * Schuster, “The Problem of ‘Whig History’ in the History of Science.”
Week 3 Feb 8-12	Tuesday – Canvas Lecture on Ancient Astronomy (pre-recorded, asynchronous) * Lombardi, “Why is a minute divided into 60 seconds...”
	Thursday – Breakout 1: Zoom session, 2:00pm-3:15pm (synchronous) Group A – History Activity 1 <i>Stairway to the Stars</i> , vii-92. * Schuster, “The Problem of ‘Whig History’ in the History of Science.” Group B – Astronomy Activity 1 - <i>Motions on the Celestial Sphere through the Eyes of Ancient Stargazers</i>
Week 4 Feb 15-19	Tuesday – Canvas Lecture on Classical and Pre-Columbian Astronomy (pre-recorded, asynchronous) * Seife, “Nothing Doing: The Origin of Zero.”
	Thursday – Breakout 2: Zoom session, 2:00pm-3:15pm (synchronous) Group A – Astronomy Activity 2 - <i>Measuring the Position of Stars and Sun in the Sky</i> Group B – History Activity 2 <i>Stairway to the Stars</i> (Chapters 4 and 6)
Week 5 Feb 22-26	Tuesday – Canvas Lecture on Medieval / Islamic Astronomy (pre-recorded, asynchronous) * Saliba, “Greek Astronomy and the Medieval Arabic Tradition”
	Thursday – Breakout 2: Zoom session, 2:00pm-3:15pm (synchronous) Group A – History Activity 2 <i>Stairway to the Stars</i> (Chapters 4 and 6) Group B – Astronomy Activity 2 - <i>Measuring the Position of Stars and Sun in the Sky</i>
Unit II – Astronomy and The Scientific Revolution	
Week 6 Mar 1-5	Tuesday – Canvas Lecture on Copernican “Revolution” (pre-recorded, asynchronous) * Osiander, “Foreword” to Copernicus, <i>On the Revolution of the Heavenly Spheres</i> * Lindberg, “The Medieval Church Encounters the Classical Tradition.”
	Thursday – Breakout 3: Zoom session, 2:00pm-3:15pm (synchronous) Group A – Astronomy Activity 3 - <i>Phases of the Moon & Eclipses and their Meaning to Different Cultures</i> Group B – History Activity 3 <i>On Tycho’s Island</i> pp. 1-124
Week 7 Mar 8-12	Tuesday – Canvas Lecture on The Pre-Newtonians: Brahe, Kepler, and Galileo (pre-recorded, asynchronous)
	Thursday – Breakout 3: Zoom session, 2:00pm-3:15pm (synchronous) Group A – History Activity 3 <i>On Tycho’s Island</i> pp. 1-124 Group B – Astronomy Activity 3 - <i>Phases of the Moon & Eclipses and their Meaning to Different Cultures</i>

Week 8 Mar 15-19	Tuesday – Canvas Lecture on Newtonian Physics and Astronomy (pre-recorded, asynchronous) * Mcfadden, “Survival of the Wisest.” * Weinberg, “On God, Christianity and Islam.” * Jacobs, “Christianity and the Newtonian Worldview.”
	Thursday – Breakout 4: Zoom session, 2:00pm-3:15pm (synchronous) Group A – Astronomy Activity 4 – Galileo & Telescopes Group B – History Activity 4 * Selections from <i>Newton’s Apple and Other Myths about Science</i>
Mar 20 - 28 – Spring Break	
Week 9 Mar 29- Apr 2	Tuesday – Canvas Lecture on Telescopic Observations and New Findings in the Solar System (pre-recorded, asynchronous)
	Thursday – Breakout 4: Zoom session, 2:00pm-3:15pm (synchronous) Group A – History Activity 4 * Selections from <i>Newton’s Apple and Other Myths about Science</i> Group B – Astronomy Activity 4 – Galileo & Telescopes
Unit III – Modern Astronomy	
Week 10 Apr 5-9	Tuesday – Canvas Lecture on Milky Way as an Island Universe (pre-recorded, asynchronous)
	Thursday – Breakout 5: Zoom session, 2:00pm-3:15pm (synchronous) Group A – Astronomy Activity 5 - <i>Measuring the Mass of the Black Hole at the center of the Milky Way</i> * application of the Newtonian laws Group B – History Activity 5 <i>Earthrise</i> Chapters 1, 3, 5, 7, 10
Week 11 Apr 12-16	Tuesday – Canvas Lecture on Hubble and Cosmology (pre-recorded, asynchronous)
	Thursday – Breakout 5: Zoom session, 2:00pm-3:15pm (synchronous) Group A – History Activity 5 <i>Earthrise</i> Chapters 1, 3, 5, 7, 10 Group B – Astronomy Activity 5 - <i>Measuring the Mass of the Black Hole at the center of the Milky Way</i> * application of the Newtonian laws
Week 12 Apr 19-23	Tuesday – Canvas Lecture on The Cold War and the Space Race (pre-recorded, asynchronous) * Wolfe, “The Military-Industrial Complex.”
	Thursday – Breakout 6: Zoom session, 2:00pm-3:15pm (synchronous) Group A – Astronomy Activity 6 –TBD Group B – History Activity 6 *McCray, “Amateur Scientists, the International Geophysical Year, and Fred Whipple”
Week 13 Apr 26-30	Tuesday – Canvas Lecture on Theory of Relativity of Einstein (pre-recorded, asynchronous)
	Thursday – Breakout 6: Zoom session, 2:00pm-3:15pm (synchronous) Group A – History Activity 6 -*McCray, “Amateur Scientists, the International Geophysical Year, and Fred Whipple” Group B – Astronomy Activity 6 –TBD
Week 14 May 3-7	Tuesday – Canvas Lecture on Astrobiology (pre-recorded, asynchronous)
	Thursday – Canvas Lecture on Exoplanets (pre-recorded, asynchronous)
Week 15 May 10- 14	Tuesday – Movie TBD
	Thursday – Movie Wrap Up - Zoom session, 2:00pm-3:15pm Final paper due Thursday, May 13
May 18	FINAL EXAM - Tuesday, May 18 in Canvas

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