

ASTR 320
Philosophy and History of Astronomical Thought

Spring 2021
Tuesdays and Thursdays, 12:30-1:45 pm, live online

SYLLABUS

ASTR320 covers the History and Philosophy of Astronomy, from prehistorical times to the present. The story of astronomy is central to the history of science and to the history of thought in general. It plays a principal role in the narratives about this development as told by various historians with their differing philosophies and presumptions. We shall learn, using a “flipped classroom” format. Students will individually familiarize themselves with class material asynchronously, and we shall use our live online time for discussions and to work together on various assignments.

Course Syllabus: Your Roadmap to ASTR 320

Disappointment and misunderstanding often arise because of miscommunication of expectations. The goal of this document is to minimize such issues, serving as a "contract" between teachers and students.

Course Materials

There is **no required textbook** for this course. Material will be made available through D2L. Once you register in ASTR320 you will see the course appear under your Student Tab. It is where you go to know what to do.

Honors Contract

“Students wishing to contract this course for Honors Credit should email me to set up an appointment to discuss the terms of the contract and to sign the Honors Course Contract Request Form. The form is available at www.honors.arizona.edu/documents/students/ContractRequestForm.pdf.”



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Dr. Gabor will respond to your emails within 24 hrs, Mon-Fri.

Course format

The course will be taught live online, in a flipped classroom format. Course material will be available in writing (as pdf files) and as pre-recorded video presentations. Students will be required to view the material, answering Panopto Quiz questions. They will do so asynchronously, prior to the classroom session where the material will be discussed.

Our live online sessions will be dedicated to discussions and other activities, some of which will resemble what in an “unflipped” classroom would be homework. History and philosophy of astronomy is interdisciplinary. Fortunately, the students in ASTR320 have a wide range of different majors. Ideally, each student will be assigned to an interdisciplinary group of 4-5 students. Our live online sessions will include hands-on online searches, determining the pedigree of information and ideas, reading texts and writing summaries or précis, learning about the academic publication process (peer reviewed journals, press releases, book reviews, etc.), cosmological and other philosophical presuppositions, the applicability limits in scientific statements, etc.

Activities & Grading

Your final course grades will be based on a simple sum of the points you earn for the graded activities:

ACTIVITY		#	@	sub/total
course material	online asynchronous	26	0.5 pts	13 pts
précis	written	4	4 pts	16 pts
bibliography	written	5	7 pts	35 pts
test	online	3	12 pts	36 pts
				100 pts

If your total is 90 points or greater your grade will be A, 80 to 89 points – B, 65 to 79 points – C, and 55 to 64 points – D. If your total is 54 points or less, you will not pass.

The requirements for written work and the assessment criteria are explained in appropriate rubrics.

Course Learning Outcomes

Upon completion of this course, students will be able to:

- understand the nature and application of physical science
- apply ideas and processes beyond the classroom
- recognize the complexity of many scientific issues
- speak and write about scientific knowledge
- critically analyze and interpret science information in mass media
- read and understand scientific literature from popular sources such as magazines and newspapers

Course Goals & Objectives

Is our identity as individuals and as culture formed by our history? What is the role of science in the development of our civilization? What preconceived ideas (if any) is a given historian of science disseminating? What is cosmic and cosmological symbolism? How does it function within the collective unconscious? How does science interact with it?

ASTR320 is designed with active learning in mind, i.e., it is guided by the principle that students learn more effectively when stimulated by classroom activities (as opposed to listening to lectures). In the process, you will also develop communication skills, quantitative literacy, critical-reasoning ability, and evidence-based problem-solving skills. Engaging in student-to-student discourse is a significant component of this course. By working in groups, you will be stimulated to interpret, judge, synthesize and communicate, often across the differences in disciplines and backgrounds present within each group.

There will be five bibliographical assignments in ASTR320. Their broader purpose is to let you understand, recognize and appreciate the flow, assessment and communication of scientific information.

Course Schedule

See the D2L "Calendar" tool (remember to set "Display Options" >> "Course Events" appropriately). For an illustrative draft, see the attached sheet. Course material and activities may not follow the exact dates indicated in the draft with the notable exception of the three tests. Tests will be administered on the dates given in the schedule: (1) Feb 23, (2) Apr 6, and (3) May 4. Note that your ASTR320 grades will be finalized by May 5. There will be no ASTR320 test nor examination during finals' week.

Attendance & Active Participation

"The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop. The UA policy regarding absences for any sincerely held religious belief, observance or practice (<http://www.registrar.arizona.edu/calendar-religious-holidays>) will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>."

Etiquette

Everyone in the class is expected to abide by and follow the UA's Student Code of Conduct [public.azregents.edu/PolicyManual/5-308-Student Code of Conduct.pdf](http://public.azregents.edu/PolicyManual/5-308-Student%20Code%20of%20Conduct.pdf), and to refrain from disruptive behavior as outlined by the UA policy <http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting>.

"The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to one's self. See policy.arizona.edu/education-and-student-affairs/threatening-behavior-students."

UA Nondiscrimination and Anti-Harassment Policy

"The University is committed to creating and maintaining an environment free of discrimination (policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy) and harassment (www.titleix.arizona.edu)."

Late Work

No credit, with no exceptions, will be given for late work. In order to be fair to those that turn in their work on time, late work will not be accepted. If you are concerned about not being able to turn in your work on the due date, please turn it in early! **Err on the side of prudence!** If you choose to wait until a few hours before the deadline to do your assignment, you are taking a risk. Should your printer break, internet go down, or an emergency arise, these will NOT be valid excuses.

Missed Tests

No makeup tests, with no exceptions, will be administered. The tests are already scheduled and posted on the class schedule. If you know that you will miss a test, for valid reasons, contact the instructor as soon as possible.

Makeup Credit?

Near the end of term, there will be no makeup or extra credit assignments. Do not expect to compensate for poor work at the end of the term with additional work.

Disputing Grades

You have one week from the time an assignment or exam is returned to challenge any perceived errors. Although rare, there are occasions when grading errors occur, and you should review your returned work.

Academic Honesty

“Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See deanofstudents.arizona.edu/academicintegrity. *Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent.* Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA email to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student email addresses. This conduct may also constitute copyright infringement.”

Accessibility and Accommodations

At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, <https://drc.arizona.edu>) to establish reasonable accommodations.

Subject to Change Statement

“Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.”

Date	Material	Assignment due	
		online	written
Thu 14 Jan	Cosmic scales. Introduction		
Tue 19 Jan	Night sky. Archaeoastronomy	Reading 1	
Thu 21 Jan	Historiography. Flat Earth. Progress. Whig history		
Tue 26 Jan		Reading 2	
Thu 28 Jan	Babylonians. Egyptians		
Tue 02 Feb	Pythagoreans. Miletians		
Thu 04 Feb	Plato. Saving the Phenomena. Eudoxus		
Tue 09 Feb	Eratosthenes	Reading 3	
Thu 11 Feb	Aristotle		
Tue 16 Feb	Hipparchus	Reading 4	Bibliography 1
Thu 18 Feb	Ptolemy		
Tue 23 Feb	Test 1	Reading 5	
Thu 25 Feb	READING DAY		
Tue 02 Mar	Aristotle's physics	Reading 6	
Thu 04 Mar	Copernicus		
Tue 09 Mar	READING DAY		
Thu 11 Mar			
Tue 16 Mar	Tycho Brahe		Bibliography 2
Thu 18 Mar	Kepler		
Tue 23 Mar	Galileo		Bibliography 3
Thu 25 Mar	Riccioli		
Tue 30 Mar	Historiography. "Martyrs of science."		
Thu 01 Apr			
Tue 06 Apr	Test 2		Bibliography 4
Thu 08 Apr	Descartes		
Tue 13 Apr	Newton		Bibliography 5
Thu 15 Apr	Halley. W. & C. Herschel		
Tue 20 Apr	Photography. Spectroscopy	Reading 7	
Thu 22 Apr	Astrophysics		
Tue 27 Apr	Nebulae and the Galaxy. Shapley. Curtis. The Great Debate. Hubble		
Thu 29 Apr	Extraterrestrials. Atomists, Epicureans, Cusanus, Bruno, Fontenelle.		
Tue 04 May	Test 3 (end of ASTR320)		
Thu 06 May	READING DAY		
Wed 12 May	1 - 3 pm: no ASTR320 activity		