

ASTR 320
Philosophy and History of Astronomical Thought

Spring 2020

Tuesdays and Thursdays, 12:30-1:45 pm, Steward 204

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, to identify such underpinnings also in today’s public discourse. The course entails several written 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.

Office Hours

Monday	11:00 am – 12:00 pm
Tuesday	1:45 pm – 2:15 pm
Thursday	1:45 pm – 2:15 pm

You can also set up an appointment at other times.

Course format

History and philosophy of astronomy is interdisciplinary. Fortunately, the students in ASTR320 have a wide range of different majors. Each will be assigned to an interdisciplinary group of four students. The class will be held in a refurbished Collaborative Learning Space (CLS). Classroom time will be devoted to active learning (discussions, mini-assignments, etc.), mostly conducted in groups. Outside of the classroom, students will familiarize themselves with material provided by the teacher. They will be stimulated to do so by guided reading exercises (online) or by the requirement to produce a précis of some historic texts (written assignment). Classroom activities will include hands-on online searches, determining the pedigrees of information and ideas, 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
reading exercises	online	7	2-3 pts	16 pts
engagement	in class	26	0.5 pts	13 pts
bibliography	writing	5	7 pts	35 pts
test	in class	3	12 pts	36 pts
				100 pts

If your total is 90pts or greater you will reach an A, 80 to 89pts – B, 65 to 79pts – C, and 55 to 64pts – D.

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

Rubrics also outline how your classroom engagement will be assessed (Engagement = Preparation + Participation). The table above suggests a link between the number of class sessions (30 class sessions in total, minus the three sessions devoted entirely to tests and minus the first session, i.e., 26 sessions) and your grade. Your discourse is a substantial part of the learning process in ASTR320. Therefore, it is a course requirement to be prepared and to participate in discussions.

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 20, (2) Apr 2, and (3) May 5. Note that your ASTR320 grades will be finalized on 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>."

"Participating in course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings. Students who miss class due to illness or emergency are required to bring documentation from their healthcare provider or other relevant, professional third parties. Failure to submit third-party documentation will result in unexcused absences."

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)

"To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed.

To that end, our focus is on the tasks at hand and not on extraneous activities (i.e. texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).” Food and drink (except for water) is not permitted in Steward classroom 204.

“Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.”

“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.”

For the UA policy on disruptive behavior in an instructional setting, see <http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting>

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

“Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations. For additional information on Disability Resources and reasonable accommodations, please visit <http://drc.arizona.edu/>. If you have reasonable accommodations, please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate. Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.”

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 16 Jan	Cosmic scales. Introduction		
Tue 21 Jan	Night sky. Archaeoastronomy	Reading 1	
Thu 23 Jan	Historiography. Flat Earth. Progress. Whig history		
Tue 28 Jan		Reading 2	
Thu 30 Jan	Babylonians. Egyptians		
Tue 04 Feb	Pythagoreans. Miletians	Reading 3	
Thu 06 Feb	Plato. Saving the Phenomena. Eudoxus		
Tue 11 Feb	Eratosthenes		Bibliography 1
Thu 13 Feb	Aristotle		
Tue 18 Feb		Reading 4	
Thu 20 Feb	Test 1		
Tue 25 Feb	Hipparchus	Reading 5	
Thu 27 Feb	Ptolemy		
Tue 03 Mar	Aristotle's physics	Reading 6	
Thu 05 Mar	Copernicus		
Tue 10 Mar	SPRING RECESS		
Thu 12 Mar	SPRING RECESS		
Tue 17 Mar	Tycho Brahe		Bibliography 2
Thu 19 Mar	Kepler		
Tue 24 Mar	Galileo		Bibliography 3
Thu 26 Mar	Riccioli		
Tue 31 Mar			
Thu 02 Apr	Test 2		
Tue 07 Apr	Descartes		Bibliography 4
Thu 09 Apr	Newton		
Tue 14 Apr	Halley. W. & C. Herschel		Bibliography 5
Thu 16 Apr	Photography. Spectroscopy		
Tue 21 Apr	Astrophysics	Reading 7	
Thu 23 Apr	Nebulae and the Galaxy. Shapley. Curtis. The Great Debate. Hubble		
Tue 28 Apr	Extraterrestrials. Atomists, Epicureans, Cusanus, Bruno, Fontenelle.		
Thu 30 Apr	Historiography. "Martyrs of science."		
Tue 05 May	Test 3 (end of ASTR320)		
Thu 07 May	READING DAY		
Wed 13 May	1 - 3 pm: no ASTR320 activity		