

**The University of Arizona**  
**ASTR 333: Astronomy and the Arts**  
**Dr. Richard L. Poss**  
**Spring 2022**

**Description:**

This course examines the intersection of astronomy and the arts by studying astronomical ideas as they occur in works of art, literature, and music. Students will be exposed to a diverse assortment of cultural works from different periods, all portraying and responding to astronomical ideas. From frescoes in ancient Rome to contemporary space painting, we will examine the artifacts for what they reveal about both the poetic and the scientific worlds. In this process students will become acquainted with the details of the astronomical content which is the context for the work. Classroom sessions will be a combination of small group work, discussions, and lecture. There will be short writing prompts, 2 exams, reading quizzes, a final exam, small writing assignments, and a Signature Assignment (which can be either a research paper or a creative project).

**Required Texts:**

Friedrich Dürrenmatt, *The Physicists* (Grove Press) 1991. ISBN: 978-0-8021-4427-0  
 Bertolt Brecht, *Galileo* (Grove Press) 1966. ISBN: 978-0-8021-3059-4.  
 Heinar Kipphardt, *In the Matter of J. Robert Oppenheimer* (Hill & Wang) 1997.  
 ISBN: 0-8090-1215-4

**Course Outline:** *This class meets Tue/Thur from 3:30 to 4:45pm in Steward Observatory 204.*

Thur.	Jan. 13	Introduction and Overview: What can we expect from this class? Scientific Method. Culture, Marginal Science, Pseudo-Science.
Tue.	Jan. 18	“What is Art?” Art vs Artifact. Aesthetics, art criticism.
Thur.	Jan. 20	<i>The Physicists</i> (D. 1-43) Characters and Disguises.
Tue.	Jan. 25	<i>The Physicists</i> (D. 44-76) The role of absurdity. The Cold War context.
Thur.	Jan. 27	Are there Archaeoastronomical sites world – wide?
Tues.	Feb. 1	The Philosophical Background of Ancient Greek Astronomy.
Thur.	Feb. 3	Medieval Art and Medieval Astronomy.
Tue.	Feb. 8	Renaissance and Revolution: Ptolemy and Copernicus.
Thur.	Feb. 10	Galileo at the Crossroads: The Telescope and the Trial. (B. 47-129)
Tue.	Feb. 15	<i>Galileo</i> and the Modern World (B. 9-42, 133-155).
Thur.	Feb. 17	<b>Exam #1.</b>

Tue.	Feb. 22	Allegory: How to read a painting.
Thur.	Feb. 24	Periods and Styles. Perspective and Symbolism.
Tue.	Mar. 1	Astronomy in the Art of the Old Masters: Leonardo, Elsheimer. Cigoli, Van Eyck, Vermeer.
Thur.	Mar. 3	Donato Creti and the Astronomical Landscape.
<i>March 5 – March 13 Spring Break – No Classes.</i>		
Tue.	Mar. 15	Astronomy and Lyric Poetry: Whitman, Blake, Pope, T.S. Eliot.
Thur.	Mar. 17	Plurality of Worlds: Wilkins, Huygens, Fontenelle.
Tue.	Mar. 22	Voltaire, <i>Micromegas</i> .
Thur.	Mar. 24	Opera, Ethics, the Bomb: John Adams, <i>Doctor Atomic</i> (K. 5-68).
Tue.	Mar. 29	The Hydrogen Bomb and the Cold War. Oppenheimer (K. 69-126).
Thur.	Apr. 31	<b>Exam #2.</b>
Tue.	Apr. 5	The Canon of Space Art: Chesley Bonestell. David Hardy.
Thur.	Apr. 7	Robert McCall, William Hartmann, Pat Rawlings, Kim Poor, Lynette Cook.
Tue.	Apr. 12	Frida Kahlo. Remedios Varo. Joseph Cornell.
Thur.	Apr. 14	Rene Magritte. The Current Art Scene.
Tue.	Apr. 19	Herschel's Symphonies. Holst, <i>The Planets</i> . Kronos Quartet.
Thur.	Apr. 21	Astronomy in Film and TV.
Tue.	Apr. 26	Conceptual Art and Social Media. YouTube Videos.
Thur.	Apr. 28	Student Presentations.
Tue.	May 3	Student Presentations. Review. <b>Projects Due.</b>
Reading Day:	Thursday, May 5. No Classes.	
<b>Final Exam:</b>	Wednesday May 11, 2022, 3:30 – 5:30pm, Steward 204.	

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**Class Meets:** Tue/Thur at 3:30 – 4:45.  
**Instructor:** Dr. Richard L. Poss  
**Office:** Steward Observatory 212  
**Email:** [rposs@arizona.edu](mailto:rposs@arizona.edu)  
**Telephone:** 621-8630  
**Office Hours:** 2:00 - 3:00 Wednesdays online, and by appt.

**CLASS POLICIES:**

**CLASS PARTICIPATION:** It is important to keep up with the day-to-day assignments, preparing the topic **before** class. Try to marshal your thoughts (favorable or unfavorable) about the material before class. Then argue your point of view in class. **You are encouraged to get to know each other during the semester, and to study “together” if possible.**

**ATTENDANCE:** Regular attendance is important. Your participation in discussions is important, and is taken into consideration in preparing your final grade. In addition, the exams and paper topics are all geared to class discussion.

**GRADING:** Your grade is based on the two exams, the Signature Assignment, the final exam, participation in class, and reading quizzes and writing exercises. The Signature Assignment is either a research paper for which you will turn in a rough draft which will be returned to you, or a creative art work which we will agree upon. You will be expected to make a brief presentation to the class on the results of your Signature Assignment.

Exam #1 – 15 %  
 Exam #2 – 15 %  
 Signature Assignment – 30 % altogether  
     3 % – Assignment Proposal  
     7 % – Assignment Rough Draft  
     20 % – Assignment Final Version  
 Final Exam – 20 %  
 Writing Exercises – 20 %  
     10 % – All In-Class writing prompts  
     10 % – All Take-Home writing prompts.

**COURSE LEARNING OUTCOMES:**

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

- understand the nature and application of physical science and its relation to the arts.
- apply ideas and processes beyond the classroom.
- recognize the complexity of many scientific issues and their role in culture.
- speak and write about scientific knowledge and how it interacts with art and literature.
- appreciate different critical approaches to the interpretation of works of art and literature, especially as they involve astronomical themes.
- critically analyze and interpret data and results presented in tables, graphs and charts as well as perform appropriate mathematical calculations.
- read and understand scientific literature from popular sources such as magazines and newspapers.

**COURSE OBJECTIVES:**

During this course students will:

Examine important developments in the history of astronomy and explore their cultural, social, and political context by studying contemporaneous works of culture.

Communicate and justify how interdisciplinary approaches, especially through the arts, contribute to understanding the scientific and technological challenges of the 21<sup>st</sup> century

Defend the strengths and consequences of mixing art and science together to generate insights unavailable to single disciplinary lenses.

Use core values, theories, and methods from art criticism to “read” the meaning of a painting from various methodological perspectives.

Connect, compare and contrast multiple perspectives to develop deeper understandings of contemporary physics (relativity, quantum mechanics) and the varied forms of modern art which claim to respond to those developments.

Discuss the role and importance of dramatic works dealing with the Manhattan project and the atom bomb from various perspectives.

Engage in critical and conceptual thinking about the recent group of plays about astronomy, physics, and mathematics.

Create new works of art, literature, or music through the synthesis of perspectives and content examined in this course.

**IN-PERSON COURSE:**

This is an “In Person” course and we will meet person-to-person in a physical classroom.

PowerPoint slides will be posted to D2L after the class session, but this is a supplement to, not a substitute for, attending class. We will try to make arrangements for those times when you cannot be at a class session, but remember that the core of the course takes place during the live sessions. Office hours will be both in person in my office and online over Zoom.

**CONDUCT:** *No laptops are allowed during class.* No Ipads, tablets, texting or cell phones are allowed during class. Cell phones must be turned off when class begins. When another student is speaking to the class, please give them your attention. You are expected to treat your fellow students with dignity and respect. The use of personal electronics such as laptops, iPads, and other such mobile devices is distracting to the other students and the instructor. Their use can degrade the learning environment. Therefore, students are not permitted to use these devices during the class period.

**NOTIFICATION OF OBJECTIONABLE MATERIALS:** This course will contain material of a mature nature, which may include explicit language, depictions of nudity, sexual situations, and/or violence. The instructor will provide advance notice when such materials will be used. Students are not automatically excused from interacting with such materials, but they are encouraged to speak with the instructor to voice concerns and to provide feedback.

**UA NONDISCRIMINATION AND ANTI-HARASSMENT POLICY:** The University is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>. Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

**INTEGRITY:** Absolute academic integrity is expected of every student in all academic activities. All students are expected to be aware of and follow the *University of Arizona Code of Academic Integrity*. The *Code* prohibits all forms of academic dishonesty, including cheating, plagiarism, and fabrication. The repercussions for all of those found guilty of violating the *Code* will include loss of credit for the work (grade=0) and may include failure of the course or more extreme measures.

**PLAGIARISM:** 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. Written work must be *your own thoughts*. “Double-dipping,” (turning in a paper you wrote and used in a previous class), is not permitted. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See <http://deanofstudents.arizona.edu/academicintegrity>.

**CODE OF CONDUCT:** *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 e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

### **STUDENTS WITH DISABILITIES:**

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 the Disability Resource Center (520-621-3268) to establish reasonable accommodations. For additional information on the Disability Resource Center and reasonable accommodations, please visit <http://drc.arizona.edu>.

**EXCUSED ABSENCES:** All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored.

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable: <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Absences preapproved by the UA Dean of Students (or dean's designee) will be honored. See <http://policy.arizona.edu/employmenthuman-resources/attendance>.

**THREATENING BEHAVIOR:** The University prohibits threatening behavior, which it defines as "Any statement, communication, conduct or gesture, including those in written form, directed toward any member of the University community that causes a reasonable apprehension of physical harm to a person or property." The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. For more information, see: <http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting>.

**MISSED TESTS:** The exams are already scheduled and posted on the class schedule. If you know that you will miss a test (before the test), you must make arrangements (for valid reasons) for an oral exam at a time and date *prior to* the written test. Missing one of the midsemester exams is an automatic loss of 20% of your grade. Missing the final is a loss of 20%.

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

**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.

### **COVID – 19 ISSUES:**

**CLASS ATTENDANCE:** If you feel sick, or may have been in contact with someone who is infectious, stay home. Except for seeking medical care, avoid contact with others and do not travel.

- ○Notify your instructors if you will be missing an in person or online course.
- ○[Campus Health](#) is testing for COVID-19. Please call (520) 621-9202 before you visit in person.
- ○Visit the [UArizona COVID-19](#) page for regular updates.

**ACADEMIC ADVISING:** If you have questions about your academic progress this semester, or your chosen degree program, please note that advisors at the [Advising Resource Center](#) can guide you toward university resources to help you succeed.

**LIFE CHALLENGES:** If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The [Dean of Students Office](#) can be reached at 520-621-2057 or [DOS-deanofstudents@email.arizona.edu](mailto:DOS-deanofstudents@email.arizona.edu).

**PHYSICAL AND MENTAL-HEALTH CHALLENGES:** If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.