



PTYS/ASTR 170B2 UNIVERSE AND HUMANITY: EXPLORING OUR PLACE IN SPACE

T1-NATS (Tier 1 Natural Sciences)

Kuiper Space Sciences Room 308

Tuesday and Thursday from 9:30 to 10:45 a.m.

Course Objectives

This course places the Earth and humanity in a broad cosmic context and seeks to answer fundamental questions about our surroundings. Where are we, and where do we come from? What is matter made of, and what processes created it? What are different types of stars like and where does our Sun fit in? What is the role of stars in shaping the cosmos and the planets orbiting them? How did the Sun, the Earth, and the other planets form in the solar system? What are the planets in the solar system like, and are there other planetary systems like ours? In addition to exploring these questions, this course will help students to understand how we have arrived at our current view of the universe, with a focus on the scientific method and the history of astronomy.

Instructor and Contact Information

Instructor: *Pierre Haenecour*, Kuiper Space Sciences (KSS) 530, haenecour@arizona.edu

Office Hours: In-person (Kuiper 530) or on Zoom by appointment. Preferred time: 1-3 p.m. on Thursdays.

<https://www.lpl.arizona.edu/faculty/pierre-haenecour>

Graduate Teaching Assistants: *Lori Huseby*, lhuseby@arizona.edu

Office Hours: Wednesdays from 2-3 pm in Kuiper 301 or by appointment.

Course Website and Communications

The course materials, grades, and all communications will be posted on D2L. Please include 'PTYS/ASTRO170B2' in the subject of all emails to the instructor and TA.

Course Format and Teaching Methods

Lecture format supplemented with some in-class discussions and small-group activities in class and out of class.

Scheduled Topics/Activities

The topics are organized into logical units in a weekly schedule, including assignment due dates and exam dates, as listed below. The workload, topics, and course requirements are subject to change at the instructor's discretion (with proper notice to the student).

Date	Anticipated Topic(s)	Date	Anticipated Topic(s)
08/25	Introduction	10/22	Star and planet formation
08/27	The Earth and the Cosmos	10/27	Star and planet formation
09/01	The Earth and the Cosmos	10/29	Giant planets and the outer solar system
09/03	Light and matter	11/03	Asteroids and comets
09/08	Apparent motion of celestial bodies	11/05	Asteroids and comets
09/10	Apparent motion of celestial bodies	11/10	Astromaterials
09/15	Apparent motion of celestial bodies laws (Quiz #1 – D2L)	11/12	Space Exploration (Missions)
09/17	The Laws of Planetary Motion & Newton's laws (Quiz #1 – D2L)	11/17	Space Exploration (Missions)
09/22	The Laws of Planetary Motion & Newton's	11/19	TBD
09/24	The Laws of Planetary Motion & Newton's laws	11/24	Quiz #3 (on D2L, no in-person class)
09/29	Gravity + The sun and stars	11/26	Thanksgiving (no class)
10/01	Light, Radiation and Electromagnetic Spectrum	12/01	Origin of Life and Life in the Universe
10/06	Light, Radiation and Electromagnetic Spectrum	12/03	Exoplanets, Habitable worlds and
10/08	The sun and stars	12/08	Recap – Big Picture
10/13	Radiation and Electromagnetic Spectrum (Quiz #2 – D2L)	12/10	Reading Day (no class)
10/15	A brief history of the Universe - The Big Bang (Quiz #2 – D2L)	12/15	Final Exam (8-10 AM)
10/20	A brief history of the Universe - The Big Bang	12/17	

Course Objectives

This course aims to introduce you to planetary science and astronomy concepts, what we know about the observable universe, and to place humankind into that context. You will be introduced to the concepts and techniques used in astronomy and planetary science to understand our solar system and beyond.

Expected Learning Outcomes

Upon completing this course, you will be able to explain our current models for the formation of the universe, stars, and our solar system. You will be able to describe the properties of the major bodies in our solar system and how they compare to one another. You will gain a quantitative

understanding of the scale of our solar system, our galaxy, and the observable universe. You will gain an understanding of the properties of light, matter, time, and gravity.

Course Communications

Online communication will be conducted through D2L and the official UA e-mail address. Students are encouraged to email the instructor about any questions and/or concerns. Please include 'PTYS170B2' in the subject of all emails to the instructor and TAs.

Makeup Policy for Students Who Register Late

Students who register after the first-class meeting may make up missed assignments/quizzes by contacting the instructor (haenecour@arizona.edu) before 8/31/2026.

Required Texts or Readings

No required textbook.

Astronomy (Fraknoi, Morrison, and Wolff; OpenStax). The textbook is an open-access textbook available on D2L, and students are strongly encouraged to use it as a resource.

Required Resources and Equipment

You will need access to a computer/electronic device and the Top Hat platform (www.tophat.com) for the class. Top Hat will be used during the lectures for live polling/quiz questions as part of class participation. You will be able to submit answers to in-class questions using Apple or Android devices, computers, or through text messages. For instructions on how to download the Top Hat app, refer to Top Hat's [Getting Started Guide \(opens in new tab\)](#). Please note, you cannot create an account through the mobile application.

If you already have a Top Hat account, navigate to your course via the learning management system (e.g. D2L), select UA Tools in the course Navbar, and then select **Top Hat**. If your course does not have a UA Tools menu in the Navbar, contact your instructor for the location of the Top Hat link. If you are new to Top Hat, you will be prompted to create an account once you select the Top Hat link.

Self-guided help is available at [UArizona's Student Top Hat Help Pages](#). Should you require assistance with Top Hat at any time, please contact Top Hat's Support Team directly by emailing support@tophat.com, selecting the in-app support button, or calling **1-888-663-5491**. Their technical support team may require specific user information when troubleshooting issues. For issues with your device, browser, or NetID account, please visit <https://247.arizona.edu> ([opens in new tab](#)).

Use code to join: 457970

Required Extracurricular Activities

The course includes a term project (signature assignment) that is undertaken outside of class. Students must choose one project from the available options early in the semester. More information about choosing the term project is available on the course D2L page.

Assignments and Examinations: Schedule/Due Dates

There will be six homework assignments, one signature assignment, three tests, and a final exam. The due dates are listed below:

Syllabus Quiz: Aug 25, 2026

HW #1: Sept 10, 2026

HW #2: Oct 01, 2026

HW #3: Oct 29, 2026

HW #4: Nov 24, 2026

HW #5: Dec 08, 2026

Quiz#1: Sept 17, 2026

Quiz#2: Oct 15, 2026

Quiz#3: Nov 24, 2026 (on D2L)

Signature Assignment: Oct 22, 2026 (first draft) and Dec 01, 2026 (final submission)

Final Exam: Dec 15, 2026, from 8 – 10 AM

Policy on revision or resubmission of assignments and Writing Requirement

PTYS 170B2 is a Tier 1 General Education course that requires significant writing so that students engage with the concepts, facts, and theories they interact with in different disciplines. Therefore, both informal and formal writing assignments will be integrated into your homework sets, tests, and a signature assignment. The writing assignments will emphasize critical inquiry, including gathering information and interpreting facts and ideas. You will be provided feedback on the assignments, which may vary in number and length. One of these assignments will involve submitting a first draft, receiving feedback on the first draft, and submitting a revised draft for grading. Otherwise, all other assignments will be submitted as a single draft on which you will be given feedback but will not revise for a grade.

Final Examination or Project

Our Final Exam is scheduled for **Tuesday, December 15, from 8 – 10 AM**. For more information, refer to <https://registrar.arizona.edu/faculty-staff-resources/room-class-scheduling/schedule-classes/final-exams>.

Final Exam Regulations are available at <https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information>, and the Final Exam Schedule is at <http://www.registrar.arizona.edu/schedules/finals.htm>. The schedule is provided for reference only.

Signature Assignment and ePortfolio

In the new General Education curriculum, you will include signature assignments in your final [ePortfolio](#) in [Digication](#), started in your UNIV 101 course. Please keep track of assignments and materials from this course that are meaningful, relevant, and useful to you. We highly recommend uploading them to your Digication ePortfolio to make UNIV 301 easier. For students in the Tiers General Education curriculum, you **do not** need to compile your assignments in Digication.

Grading Scale and Policies

Students will be assessed based on:

- Homeworks: 30% (6% each)
- Mid-term quizzes: 30% (10% each)
- Signature Assignment: 20%
- Final Exam (10%)
- Syllabus Quiz (5%)

- Class attendance and participation (5%)
- There will be opportunities to earn bonus points throughout the semester. The points will be added to your final grade. Extra-credit opportunities will be announced during the semester.

Grading Scale for the Course:

A — 90-100%	D — 50-64.9%
B — 80-89.9 %	E — < 50%
C — 65-79.9%	

Late homework will only be accepted with a valid reason and will, in most cases, be subject to a 20% penalty. You cannot submit any late homework through D2L.

The general university policy regarding grades and grading systems is available at <http://catalog.arizona.edu/policy/grades-and-grading-system>

Incomplete (I) or Withdrawal (W):

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal>, respectively.

Dispute of Grade Policy

The acceptable time period for disputing a grade on a paper/assignment, presentation, or quiz/exam is a maximum of a week after the grade has been posted on D2L. The student must email the instructor to request a Zoom office hour call to discuss the disputed grade.

Honors Credit

Students wishing to contract this course for Honors Credit should email me to set up an appointment to discuss the terms of the contract. Honors contract information is available at <https://www.honors.arizona.edu/honors-contracts>.

Absence and Class Participation Policy

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <https://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 pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <http://policy.arizona.edu/employmenthuman-resources/attendance>

Participating in the 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. Absences may affect a student's final course grade. If you anticipate being absent, are unexpectedly absent, or are unable to participate in class online activities, please contact me as soon as possible.

To request disability-related accommodations under this attendance policy, please contact the Disability Resource Center at (520) 621-3268 or drc-info@email.arizona.edu. If you are experiencing unexpected barriers to your success in your courses, the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office is located in the Robert L. Nugent Building, room 100, or call 520-621-7057.

Makeup Policy for Students Who Register Late

Late course registrations will be considered on a case-by-case basis. Students who want to register late for the course should email the instructor to discuss potential options (and the timeline) to make up missed assignments/quizzes.

Classroom Behavior Policy

To foster a positive learning environment, students and instructors share responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with one another and can challenge ourselves to succeed. To that end, our focus is on the tasks at hand, not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing).

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

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

Accessibility and Accommodations

Our goal in this classroom is to make learning experiences 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; <https://drc.arizona.edu>) to establish reasonable accommodations. For additional information on the Disability Resource Center 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 the lecture room should remain available for students who find standard classroom seating unusable.

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss the principles and applications of course materials freely. 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: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

The University Libraries have some excellent tips for avoiding plagiarism, available at <http://new.library.arizona.edu/research/citing/plagiarism>.

In this course, generative artificial intelligence/large-language-model tools, such as ChatGPT, Dall-e, Bard, Bing, and Grammarly, may be used to spell-check or improve writing assignments with appropriate acknowledgment and citation. You must acknowledge or cite your use of AI tools or content. If you do not acknowledge or cite your use of an AI tool, what you submit will be considered a form of cheating or plagiarism. You are not permitted to enter all or any part of an assignment statement or test questions as part of a prompt to a large language model AI tool. Your written work may be shared with one or more AI-detection tools designed to predict if the text was created by a generative AI/large-language model like ChatGPT. TurnItIn's detection tool is integrated into the Brightspace D2L learning management system.

Zoom recordings are part of the student's educational record. Selling and/or sharing class notes, ZOOM recordings, and/or other course materials to other students or to any third party is not permitted without the instructor's express written consent. Violations of 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.

Nondiscrimination and Anti-harassment Policy

The University of Arizona is committed to creating and maintaining an environment free of discrimination. In support of this commitment, the University prohibits discrimination, including harassment and retaliation, based on a protected classification, including race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information. For more information, including how to report a concern, please 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.

Additional Resources for Students

UA Academic policies and procedures are available at <http://catalog.arizona.edu/policies>

Campus Health - <http://www.health.arizona.edu/>

Campus Health provides quality medical and mental health care services through virtual and in-person care.

Phone: 520-621-9202

Counseling and Psych Services (CAPS) - <https://health.arizona.edu/counseling-psych-services>

CAPS provides mental health care, including short-term counseling services.

Phone: 520-621-3334

The Dean of Students Office's Student Assistance Program -

<https://deanofstudents.arizona.edu/support/student-assistance>

Student Assistance helps students manage crises, life traumas, and other barriers that impede success. Staff address the needs of students experiencing issues related to social adjustment, academic challenges, psychological health, physical health, victimization, and relationship issues through a variety of interventions, referrals, and follow-up services.

Email: DOS-deanofstudents@arizona.edu

Phone: 520-621-7057

Survivor Advocacy Program - <https://survivoradvocacy.arizona.edu/>

The Survivor Advocacy Program provides confidential support and advocacy services to student survivors of sexual and gender-based violence. The Program can also advise students about relevant non-UA resources available within the local community for support.

Email: survivoradvocacy@arizona.edu

Phone: 520-621-5767

Confidentiality of Student Records

<http://www.registrar.arizona.edu/ferpa>

Safety on Campus and in the Classroom

For a list of emergency procedures for all types of incidents, please visit the website of the Critical Incident Response Team (CIRT): <https://cirt.arizona.edu/case-emergency/overview>

Also watch the video available at

https://arizona.sabacloud.com/Saba/Web_spf/NA7P1PRD161/common/learningeventdetail/crtfy000000000003560

University-wide Policies link

Links to the following UA policies are provided here: <http://catalog.arizona.edu/syllabus-policies>:

- Absence and Class Participation Policies
- Threatening Behavior Policy
- Accessibility and Accommodations Policy
- Code of Academic Integrity
- Nondiscrimination and Anti-Harassment Policy
- Subject to Change Statement

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.