



PTYS/ASTR 170B2 UNIVERSE AND HUMANITY

Tier 1 Natural Sciences/NATS 102

Kuiper Space Sciences Room 308 and online (Zoom)

Tuesdays and Thursdays 11AM – 12:15PM

Description of Course

This course places the Earth and humanity in a cosmic context and seeks to answer fundamental questions about our surroundings. Where are we and where do we, the Earth and the solar system come from? What are the planets in the solar system like and are there other planetary systems like ours? What is matter made of and how is it produced in the universe? What are the different types of stars out there and how does the sun fit in? What is the role of stars in shaping planetary systems and the cosmos? In addition to addressing these questions, this course will help you to understand how we have arrived at our current understanding of planets, stars and the universe, illuminating the scientific method and the influence of scientific inquiry on the society.

Instructor and Contact Information

Instructor: *Pierre Haenecour*, Kuiper Space Sciences (KSS) 533, haenecour@arizona.edu

Office Hours: On Zoom by appointment, preferred times is 2-3pm on Tuesdays and Thursdays
<https://www.lpl.arizona.edu/faculty/pierre-haenecour>

Graduate Teaching Assistants:

Maureen Palmer, mypalmer@email.arizona.edu

Office Hours: On Zoom by appointment, preferred times is 3-5pm on Wednesdays

Lucas Smith, lucasrsmith@email.arizona.edu

Office Hours: On Zoom by appointment, preferred times is 1-3pm on Tuesdays and Thursdays

Course Format and Teaching Methods

Lectures, individual and small group activities, term projects, homework assignments, mid-term quizzes, web-delivered content and assessment.

We will be meeting remotely for regular lectures and other activities (through Zoom on Tuesdays and Thursdays 11:00-12:15pm) at least until the University notifies us that in-person meetings are

safe. We will use D2L for all class communications and student should use D2L to enter the Zoom meetings. D2L quizzes will replace in-person quizzes for this course.

When the Covid-19 situation permits teaching on campus, in-person classes will be made available. Students who wish to come to class in person will register in advance on D2L at the beginning of each week. In-person classes take place in Kuiper Space Science room 308 and will be streamed live on Zoom, as needed. Should the number of students wishing to come to class exceed the capacity of the lecture hall (which is reduced to enable social distancing), the instructor will rotate students to enable all those who wish to attend class in person to be able to do so at least periodically.

Course Objectives

During this course, the students will be exposed to a variety of topics in astronomy and planetary science, including the history of planetary science and astronomy, the Copernican revolution, Newton's laws and gravity, relativity, the properties of light and matter, the planets in the solar system, the sun, other planetary systems in the galaxy, the origin of stars and planetary systems and Earth as a habitable planet. Students are expected to answer questions about and describe these topics during lectures, in homework assignments, term project and quizzes. The course follows the writing requirement for General Education classes and supports basic mathematical literacy by requiring students to undertake simple calculations.

More information on Natural Sciences (NATS) course outline can be obtained from: <https://catalog.arizona.edu/policy/general-education-tier-one-and-tier-two>. General information on undergraduate program assessment is available at http://assessment.arizona.edu/academic_degree_programs.

Expected Learning Outcomes

The students will develop an understanding of the importance of physical and chemical processes that shape our surroundings and apply it to the study of astronomy and planetary sciences. The students will learn the fundamental concepts and major current topics in these fields and understand the place of the Earth and humanity in the cosmic context. They will gain a solid foundation in these topics to facilitate further study or interest. They will learn to apply their knowledge to write about astronomy and planetary science in their own words. They will also learn the basis of the scientific method and have an opportunity to apply it in practice to interpret observational data and design experiments.

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, either in person (when available) or online via Zoom, 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 a disability-related accommodation to 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.

Face coverings and social distancing

Face coverings are required in all classroom: Per UArizona's Administrative Directive, face coverings that cover the nose, mouth, and chin are required to be worn in all learning spaces at the University of Arizona (e.g., in classrooms, laboratories and studios). Any student who violates this directive will be asked to immediately leave the learning space, and will be allowed to return only when they are wearing a face covering. Subsequent episodes of noncompliance will result in a Student Code of Conduct complaint being filed with the Dean of Students Office, which may result in sanctions being applied. The student will not be able to return to the classroom until the matter is resolved.

The Disability Resource Center is available to explore face coverings and accessibility considerations if you believe that your disability or medical condition precludes you from utilizing any face covering or mask option. DRC will explore the range of potential options as well as remote course offerings. Should DRC determine an accommodation to this directive is reasonable, DRC will communicate this accommodation with your instructor.

Physical distancing is required in our classroom: During our in-person class meetings, we will respect CDC guidelines, including restricted seating to increase physical distancing and appropriately-worn face coverings. Per UArizona's Administrative Directive, face coverings that cover the nose, mouth, and chin are required to be worn in all learning spaces at the University of Arizona (e.g., in classrooms, laboratories and studios). Any student who violates this directive will be asked to immediately leave the learning space, and will be allowed to return only when they are wearing a face covering. Subsequent episodes of noncompliance will result in a Student Code of Conduct complaint being filed with the Dean of Students Office, which may result in sanctions being applied. The student will not be able to return to the learning space until the matter is resolved.

Classroom 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 of you will be missing an in person or online course. Campus Health (<https://health.arizona.edu>) is testing for COVID-19. Please call (520) 621-9202 before you visit in person. Visit the UArizona COVID-19 page (<https://covid19.arizona.edu>) for regular updates.

- 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.

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.

Makeup Policy for Students Who Register Late

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

Course Communications

Online communication will be conducted through official UA e-mail address and D2L. Students are encouraged to email the instructor about any question and/or concern. Please include 'PTY170B2' in the subject of all emails to the instructor and TAs.

Recommended Texts or Readings

Astronomy (Fraknoi, Morrison and Wolff; OpenStax). The textbook is an open-access textbook available on D2L and it is strongly recommended that students opt in.

Required Extracurricular Activities

The course includes a term project that is undertaken outside of class. Students are required to choose one project out of the available options early in the semester. More information about choosing the term project is available through the course D2L page.

Assignments and Examinations: Schedule/Due Dates

There are five homework assignments, four quizzes on D2L and a term project that replaces the final quiz for this semester. The current schedule of due dates for homework is:

- #1: January 26
- #2: February 11
- #3: March 09
- #4: March 30
- #5: April 15

Updates to the schedule will be communicated in class and posted on D2L. The anticipated schedule of D2L quizzes is:

Syllabus Quiz: January 19

Quiz#1: January 28

Quiz#2: February 23

Quiz#3: March 25

Quiz#4: April 27

Spring Break will be replaced by five Reading Days scattered throughout the Spring 2021 semester: Feb. 25, March 9 & 10, April 2, and April 21.

Writing Requirement

All Tier One and Tier Two General Education Courses are writing intensive. Writing assignments are incorporated into the course through homework assignments, in-class exercises and term projects. Students will have the opportunity to revise an assignment.

Final Examination or Project

The term project acts as the final examination for this course. The final project submissions are due on **Thursday, April 22**. Please submit the materials through D2L.

Final Exam Regulations can be found at <https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information>, and Final Exam Schedule is at <http://www.registrar.arizona.edu/schedules/finals.htm>. The schedule is provided for reference only. There is no final exam on this course.

Grading Scale and Policies

Students will be assessed based on:

- Homework sheets: 30% (6% each)
- Mid-term quizzes: 40% (10% each)
- Term project: 20%
- Syllabus Quiz, class Participation and group assignments: 10%

Opportunities for extra credit 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%	

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 maximum a week after the grade has been posted onto 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>.

Scheduled Topics/Activities

The topics in logical units in a weekly schedule, including assignment due dates and exam dates are listed below for information. The workload, topics and course requirements are subject to change at the discretion of the instructor (with proper notice to the student) depending on the COVID-19 pandemic conditions and University decisions regarding in-person and remote teaching.

Date	Anticipated Topic(s)	Date	Anticipated Topic(s)
01/14	Introduction	03/16	Star and planet formation
01/19	The Earth and the Cosmos (<i>Syll. Quiz</i>)	03/18	Rocky planets in the solar system
01/21	The Earth and the Cosmos	03/ 23	Rocky planets in the solar system
01/26	Light and matter (HW#1)	03/25	Quiz #3
01/28	Quiz#1	03/30	Giant planets and the outer solar system (HW#4)
02/02	Apparent motion of celestial bodies	04/01	Giant planets and the outer solar system
02/04	Apparent motion of celestial bodies	04/06	Asteroids and comets
02/09	Newton's laws	04/08	Water in the Solar System
02/11	Newton's laws (HW#2)	04/13	Origin of Water and the Moon (Dr. Barnes)
02/16	The sun and stars	04/15	Asteroids and comets (HW#5)
02/18	A brief history of the Universe	04/20	Exoplanets and extrasolar planets
02/23	Quiz #2	04/22	Exoplanets and extrasolar planets (Term Project)
02/25	Reading Day	04/27	Quiz #4
03/02	A brief history of the Universe	04/29	Habitable worlds and life in the Universe
03/04	Star and planet formation	05/03	TBD
03/09	Star and planet formation (HW#3)	05/06	Reading Day
03/11	Reading Day	05/11	TBD

Classroom Behavior Policy

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 (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).

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 use of laptops, iPads, and other such mobile devices is not permitted in class for any other purposes other than those directly related to the course (in-class activity or note taking).

Posting videos, photos or recordings of lectures online or distributing them by any other media format is strictly prohibited (this includes social media forums). Materials available through D2L must not be distributed in public without explicit permission. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with UArizona values and educational policies are subject to suspension and civil action.

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 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; <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 that standard classroom seating is not usable.

Code of Academic Integrity

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: <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>.

Zoom recordings are part of the students' 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 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.

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

<http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

Student Assistance helps students manage crises, life traumas, and other barriers that impede success. The staff addresses the needs of students who experience 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@email.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@email.arizona.edu

Phone: 520-621-5767

Campus Pantry

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live and believes this may affect their performance in the course, is urged to contact the Dean of Students for support. In addition, the University of Arizona Campus Pantry is open for students to receive supplemental groceries at no cost. Please see their website at: campuspantry.arizona.edu for open times.

Furthermore, please notify me if you are comfortable in doing so. This will enable me to provide any resources that I may possess.

Preferred Gender Pronoun

This course affirms people of all gender expressions and gender identities. If you prefer to be called a different name than what is on the class roster, please let me know. Feel free to correct instructors on your preferred gender pronoun. If you have any questions or concerns, please do not hesitate to contact me directly in class or via email (instructor email). If you wish to change your preferred name or pronoun in the UAccess system, please use the following guidelines:

- **Preferred name:** University of Arizona students may choose to identify themselves within the University community using a preferred first name that differs from their official/legal name. A student's preferred name will appear instead of the person's official/legal first name in select University-related systems and documents, provided that the name is not being used for the purpose of misrepresentation. Students are able to update their preferred names in UAccess.
- **Pronouns:** Students may designate pronouns they use to identify themselves. Instructors and staff are encouraged to use pronouns for people that they use for themselves as a sign of respect and inclusion. Students are able to update and edit their pronouns in UAccess.
- More information on updating your preferred name and pronouns is available on the Office of the Registrar site at <https://www.registrar.arizona.edu/>.

Confidentiality of Student Records

<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>

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.