



PTYS170B2 Universe and Humanity

Tier 1 Natural Sciences/NATS 102

Kuiper Space Sciences Room 308, Tue 12:30-1:45pm, Thu 12:30-1:45pm

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

Tommi Koskinen, Kuiper Space Sciences (KSS) 421, 520-621-6939, tommik@arizona.edu

Office Hours: 2-3pm Tuesday and Thursday, or by appointment (or you can knock on my door any time when I'm not otherwise occupied)

<https://www.lpl.arizona.edu/faculty/tommi-koskinen>

Graduate Teaching Assistants

Tyler Meng, tmeng@email.arizona.edu

Office Hours: Mondays, Kuiper 330, 12-1pm

Emileigh Shoemaker, eshoemaker@email.arizona.edu

Office Hours: Tuesdays, Kuiper 301, 11am-12pm

Yuhui Tang, tangy14@email.arizona.edu

Office Hours: XX, XX-XX (TBD)

Course Format and Teaching Methods

Lectures, individual and small group activities, term project, homework assignments, mid-term and final quizzes

Course Objectives

During the course, the students will be exposed to key topics in astronomy and planetary science, including the history of astronomy, the Copernican revolution, Newton's laws and gravity, relativity, the properties of light and matter, the sun and planets in the solar system, extrasolar planets, 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 includes quantitative reasoning. More information on Natural Sciences (NATS) course outline can be obtained from: <https://catalog.arizona.edu/policy/general-education-tier-one-and-tier-two>.

Learning Outcomes

This course is intended to provide a qualitative foundation in astronomy and planetary science to facilitate further study or interest. The students will develop an understanding of the basic physical and chemical processes that shape our surroundings and learn to apply this knowledge to the study of astronomy and planetary science. They will be able to explain the fundamental concepts and major current topics in these fields, and describe the place of the Earth and humanity in the cosmic context. They will be able to demonstrate their knowledge by writing about topics in astronomy and planetary science in their own words. They will also learn the basis of the scientific method and will be able to apply it 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 and attending lectures and other course events are vital to the learning process. The lectures cover material that is not included in the textbook and include in-class assignments and clicker questions.

Classroom attendance during the COVID-19 pandemic

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. Note that the instructor has been encouraged to cancel class if they suspect that a student is showing symptoms in class.

Notify your instructor(s) if you will be missing a course meeting or an assignment deadline. Non-attendance for any reason does not guarantee an automatic extension or due date or rescheduling of examinations/assessments. Please communicate and coordinate any request directly with your instructor.

If you must miss the equivalent of more than a week of class, you should contact the Dean of Students Office DOS-deanofstudents@email.arizona.edu to share documentation about the challenges that you are facing.

Voluntary, free, and convenient [COVID-19 testing](#) is available for students on Main Campus.

COVID-19 vaccine is available for all students at [Campus Health](#).

Visit the [UArizona COVID-19](#) page for regular updates.

Course Communications

Online communication will be conducted through D2L.

Recommended Textbook

The Cosmic Perspective (Bennett, Donahue, Schneider, Voit)

Required Materials

Clickers are required.

Required Extracurricular Activities

The course includes an optional term project that is undertaken outside of class. More information about the term project is available through the course D2L page.

Assignments and Examinations: Schedule/Due Dates

There are six homework assignments, three mid-term quizzes and a final quiz (for those who choose not to do the term project). The current schedule of due dates for homework is:

#1P: September 3

#1: September 17

#2: October 1

#3: October 15

#4: November 5

#5: November 23 (essay)

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

#1: September 23

#2: October 28

#3: December 2

Final: December 15, 1-3pm

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 essays.

Term project and final examination

The term project is due on Sunday, November 21. Please submit the materials through D2L. The final quiz is scheduled for Tuesday, December 15, 1-3pm. 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>. Note that you are not expected to take the final quiz if you submit the term project.

Grading Scale and Policies

Homework sheets: 30%

Mid-term quizzes: 40%

Final quiz: 0-20%

Term project: 0-20%

In-class assignments: 10%

A: 90-100

B: 80-89.9

C: 65-79.9

D: 50-64.9

E: <50

There will be opportunities for extra credit that will be announced during the term.

The students will choose if they want to sign up for the term project. If they do, it will count up to 20% of their overall grade and they do not take the final quiz. If not, the final quiz counts up to 20% of the overall grade.

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

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.

Honors Credit

Students wishing to contract this course for Honors Credit should email the instructor to set up an appointment to discuss the terms of the contract. Information on Honors Contracts can be found at <https://honors.arizona.edu/academics/honors-contracts>.

Scheduled Topics/Activities

The anticipated class schedule is as follows:

Week 1: The Earth and the Cosmos

Week 2: Apparent motion of celestial bodies

Week 3: Copernican revolution

Week 4: Newton's laws

Week 5: Quiz#1

Week 6: Light and matter

Week 7: The sun and stars

Week 8: A brief history of the Universe

Week 9: Star and planet formation

Week 10: Quiz#2

Week 11: Rocky planets in the solar system

Week 12: Giant planets and the outer solar system

Week 13: Extrasolar planets

Week 14: Extrasolar planets

Week 15: Quiz#3

Week 16: Habitable planets

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).

Class recordings

For lecture recordings, which are used at the discretion of the instructor, students must access content in D2L only. Students may not modify content or re-use content for any purpose other than personal educational reasons. 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 ([Code of Academic Integrity](#) and the [Student Code of Conduct](#)) are also subject to civil action. Other materials available through D2L must not be distributed in public without explicit permission.

Academic advising

If you have questions about your academic progress this semester, please reach out to your academic advisor (<https://advising.arizona.edu/advisors/major>). Contact the Advising Resource Center (<https://advising.arizona.edu/>) for all general advising questions and referral assistance. Call 520-626-8667 or email to advising@arizona.edu

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.

University-wide policies link

Links to the following UA policies are provided here, <https://academicaffairs.arizona.edu/syllabus-policies>:

- Threatening Behavior Policy
- Accessibility and Accommodation Policy
- Code of Academic Integrity
- Nondiscrimination and Anti-Harassment Policy
- Subject to Change Statement