

**Description of Course:** 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 in the solar system form? 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 and planetary science.

**Instructor and Contact Information:**

**Instructor**

Thomas Zega, Professor

Email: [tzega@arizona.edu](mailto:tzega@arizona.edu)

Office: Kuiper Space Sciences Bldg., Room 522

Office Hours: Wednesdays 1:30pm to 2:30 pm or by appointment

**Teaching Assistant**

Maria Pudoka, Graduate Research Assistant

Email: [pudoka@arizona.edu](mailto:pudoka@arizona.edu)

Office: Steward Observatory, Room 315

Office Hours: Thursday 10-11 AM (or otherwise scheduled)

**Course Website:** The course materials and grades will be posted on D2L.

**Course Format and Teaching Methods:** Primarily lecture format supplemented with in-class discussions, in-class and out-of-class small-group activities.

**Course Objectives:** The goal of this course is to introduce you to the concepts of planetary science and astronomy, 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.

**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 acquire 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:** All communication for the course will be through D2L.

**Required Textbook:** The Cosmic Perspective (J. Bennett, M. Donahue, N. Schneider, and M. Voit), Pearson Education, Inc., 10<sup>th</sup> edition, 2024. The mastering astronomy website (<http://www.masteringastronomy.com>) that accompanies the textbook offers online resources that can be used to test your knowledge, review material, and prepare for quizzes and exams. The book can be purchased as an ebook through the University bookstore.

**Required Materials:** The course may periodically require a calculator.

**Required Extracurricular Activity:** The course includes a signature assignment involving tasks both within and outside of class. More information about the assignment will be made available through the D2L page.

**Lecture Topics and Schedule:**

Week	Topic	Assigned Chapter Reading
1	Course overview/A Modern View of the Universe	1
2	Discovering the Universe for Yourself	2
3	The Science of Astronomy	3
4	Making Sense of the Universe	4
<b>Test #1 (September 20, 2023)</b>		
5	Light and Matter	5
6	Our Planetary System	7
7	Formation of the Solar System	8
8	Planetary Geology	9
<b>Test #2 (October 18, 2023)</b>		
9	Planetary Atmospheres/Exoplanets	10/13
10	Building Blocks of the Universe/Our Star	S4/14
11	Star Birth	16
12	Star Stuff	17
<b>Test #3 (November 15, 2023)</b>		
13	The Bizarre Stellar Graveyard	18
14	Our Galaxy	19
15	The Birth and Fate of the Universe	22/23
16	Life in the Universe	24
<b>Final Exam</b>		

Final Exam, Monday, December 11, 10:30AM to 12:30pm. Kuiper Space Sciences Bldg. Room 308

**Assignments and Examinations: Schedule/Due Dates:** There will be six homework assignments, one signature assignment, three tests, and a final exam.

The current due dates for the **homework** (HW) are:

- HW #1: August 30
- HW #2: September 13
- HW #3: October 4
- HW #4: October 11
- HW #5: November 1
- HW #6: November 8

**Signature Assignment:** November 29

The current dates for the **tests** are:

- Test #1: September 20
- Test #2: October 18
- Test #3: November 15

**Policy on revision or resubmission of assignments and Writing Requirement:** PTYS 170B2 is a Tier 1 General Education course, which 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 signature assignment. The writing assignments will emphasize critical inquiry, including the gathering of information and interpretation of facts and ideas. You will be provided feedback on the assignments, which may vary in number and length. One of these assignments will involve submission of a first draft, feedback on the first draft, and submission of 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 Exam:** Our Final Exam is scheduled for Monday, December 11, 10:30AM to 12:30pm. For more information, refer to <https://registrar.arizona.edu/faculty-staff-resources/room-class-scheduling/schedule-classes/final-exams>.

**Grading Scale and Policies:** Your grade in this class will be based on a combination of homework, tests, a signature assignment (with an in- and out-of-class activity), and the final exam.

The following is the breakdown of the grade and associated weighting:

Homework	30%
Tests	30%
Signature Assignment	20%
Final Exam	20%

Homework is due on the dates listed above. A 10% penalty will be assessed for each day that they are late. After seven days, they will not be accepted, and you will receive no credit for the assignment. Neither the tests nor the final exam will be cumulative. Makeup exams will only be given for extenuating circumstances or previously approved absences (see attendance policy below).

**Grading Scale:**

A = 90 to 100%

B = 80 to 89%

C = 70 to 79%

D = 60 to 69%

E = &lt;60%

**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.

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

**Schedule:** We will meet M,W from 11:00 to 12:15 in Kuiper Space Sciences, Rm. 308. Course materials will be made available online as the semester progresses.

**Attendance:** Students are highly encouraged to attend class and engage with lectures. However, attendance will not be taken. More on attendance policies can be found at <http://catalog.arizona.edu/syllabus-policies>.

**Policy on Generative Artificial Intelligence (AI):** In this course, any and all uses of generative artificial intelligence (AI)/large language model tools such as ChatGPT, Dall-e, Google Bard, Microsoft Bing, etc. will be considered a violation of the [Code of Academic Integrity](#), specifically the prohibition against submitting work that is not your own. This applies to all assessments in the course, including case studies, written assignments, discussions, quizzes, exams, and problem sets. This course policy is driven by the learning goals and desired learning outcomes for the course: *(i)* to introduce you to the concepts of planetary science and astronomy, what we know about the observable universe, and to place humankind into that context; and *(ii)* you will be able to explain our current models for the formation of the universe, stars, and our solar system.

The following actions are prohibited:

- entering all or any part of an assignment statement or test questions as part of a prompt to a large language model AI tool;
- incorporating any part of an AI-written response in an assignment;
- using AI to summarize or contextualize reading assignments or source materials; and
- submitting your own work for this class to a large language model AI tool for iteration or improvement.

**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.

Some learning styles are best served by using personal electronics, such as laptops and iPads. These devices can be distracting to other learners. Therefore, students who prefer to use electronic devices for note-taking during lecture should use one side of the classroom.

**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](https://arizona.sabacloud.com/Saba/Web_spf/NA7P1PRD161/common/learningeventdetail/crtfy000000000003560)

**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](mailto: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](mailto:survivoradvocacy@email.arizona.edu)

Phone: 520-621-5767

### **Confidentiality of Student Records**

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

**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