



# General Education

PTYS/ASTR 170A1: Alien Earths

Fall 2025

Kuiper 308, TuTh 2:00-3:15

<https://d2l.arizona.edu/d2l/home/1648464>

## Instructor:

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## Graduate Teaching Assistant:

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Office Hours: TBD

## Part 1: Course Curriculum

### 1.1 Course Description

Thousands of planets have been discovered orbiting nearby stars. How many of these worlds can we expect to be Earth-like? We explore this question from the perspective of astronomers, geologists, and historians. We look back at Earth's geologic history to periods when our planet itself would appear very alien to us today. We study the nearby planets Venus and Mars, which were once more Earth-like than today. We discuss not only the evolution of Earth, Venus, and Mars as habitable worlds but also how human understanding of these planets has evolved. Finally, we apply these perspectives to the search for alien Earths in our galaxy. This interdisciplinary treatment of Earth, its neighboring planets, and planets being discovered around nearby stars allows us to consider the potentially unique position of Earth as a habitable world not only in space but in time.

### 1.2 Expected Students Learning Outcomes

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

1. Access and use information and data from a variety of sources, including their own activities.
2. Critically evaluate this information and data for reliability in supporting fundamental concepts.
3. Effectively communicate an understanding of these concepts to their peers by synthesizing the

information and data they have gathered.

4. Demonstrate practical skills with a variety of software, including Word, Excel, Keynote, PowerPoint, and image/video editing apps.

### 1.3 Course Assessment Plan

#### Learning Opportunities Throughout the course

This course will involve several components: 1) In-class activities, writings, and review questions based on the content, 2) a collection of 1-page written essays (5-6 of these), 3) The Signature Assignment (see below). The schedule of written essay due dates will be announced in class and posted on the class D2L page. There will be no exams in this course.

#### In-class activities

Using the Top Hat platform (<https://app.tophat.com>), students will participate in the course by answering questions during the lecture. These questions include polls and rhetorical questions recorded as attendance/participation and review questions graded as correct or incorrect. At the end of the semester 5% will be added to this final grade to accommodate for unexpected absences or technical difficulties.



#### Essays

The five essays in this course consist of a one-page, single space response to the prompt. Each essay will include a second page using a Large Language Model AI chatbot (ChatGPT, Claude, Gemini, etc.) to output an answer to the same prompt and critique its response. The format of the essays will be reviewed in class before the first essay. Essay requirements, templates, and examples are posted to D2L under *Essay Help* in *Content*.

A sixth mandatory written assignment consists of using the Arizona Scale Model of the Solar System on the campus mall to reflect on scales at astronomical scales. This assignment will also include a simple video component.

#### Signature Assignment and ePortfolio

The Signature Assignment for this course is a Cosmic Calendar video documentary project. Details and due dates will be announced in class and posted on D2L. The Signature Assignment and portfolio of 6-8 written essays will fulfill the requirement of a summative assessment in this course.

#### Final Examination

There is no final exam for this course.

#### Honors Credit

This course it is available for Honors credit. Honors contract information is available at [frankehonors.arizona.edu](http://frankehonors.arizona.edu). See the instructor to discuss your ideas for an honor contract. The Fall 2025 deadline for submitting an honors contract is Monday, September 15<sup>th</sup>.

## 1.4 Scheduled Topics/Activities

Scheduled lesson topics are likely to shift or change:

Week	Class Dates	Topic	Deliverable	Due Date *
1	8/26, 8/28	Intro, Syllabus, Space, and Time	Top Hat registration	8/29
2	9/2, 9/4	The Solar System	Essay #1	9/5
3	9/9, 9/11	Fundamentals of Physics and Chemistry	Essay #2	9/12
4	9/16, 9/18	Stars and Planet Formation		
5	9/23, 9/25	Stars and Planet Formation continued		
6	9/30, 10/2	The Age of the Universe and the Age of the Earth	Essay #3	10/3
7	10/7, 10/9	Geologic and Biologic History of the Earth	Cosmic Calendar Planning Report	10/10
8	10/14, 10/16	Geologic and Biologic History of the Earth continued	Grading Choices	10/17
9	10/21, 10/23	Plate Tectonics	Solar System Scale Video	10/24
10	10/28, 10/30	Plate Tectonics Continued	Essay #4	10/31
11	11/4, 11/6	Mars	Cosmic Calendar Progress Report	11/7
12	11/13	Mars and Venus		
13	11/18, 11/20	Venus and Ocean Worlds	Essay #5	11/21
14	11/25	Ocean Worlds		
15	12/2, 12/4	Exoplanets	Cosmic Calendar Final Video	12/5
16	12/9	Aliens?		

\*Due dates are all Fridays by 11:59 Tucson time to D2L.

## Part 2: Course Information

### 2.1 Course Site

Course information, announcements, assignments, and grades will be posted on the class D2L page, [here](#).



### 2.2 Course Communications

Course announcements and other communications will be posted on the class D2L page. Important and/or urgent communications will be sent by email. If you need to communicate with the instructor for any reason, see them before class, after class, or by sending an email to [jschools@arizona.edu](mailto:jschools@arizona.edu).

### 2.3 Required Resources and Equipment

- Any device (smartphone, tablet, computer) capable of internet access, including during class time.
- Any device (smartphone, tablet, camera, etc.) capable of capturing video while moving around (required for the final project)

## 2.4 Course Textbook

This course may include readings from the following textbook: **How to Build a Habitable Planet**. This text is available for free [here](#). You may need to be on UA Wi-Fi to access initially, but you can download individual chapters.



## Part 3: Course Policies

### 3.1 Progress and Completion Policies

#### Late Enrollment

Students who register by the end of the first week of classes will be given an opportunity to make up missed work within a reasonable time to be mutually agree upon by the instructor and student.

#### Dropping or Withdrawing

For the Fall of 2025, the last day to drop the course without a grade of “W” is Sunday, September 7<sup>th</sup>. The last day to withdraw with a grade of “W” is Sunday, November 2<sup>nd</sup>.

This course has a high rate of students who enroll, but do not participate or submit any assignments during the semester. To combat this, and to prevent these students from receiving D, E, or W grades, **students who do not submit the first written assignment by Saturday, September 6<sup>th</sup>, will be administratively dropped from the class.**

#### Absence and Class Participation

Class attendance is encouraged through in-class activities, which are logged through the Top Hat platform. Most class days will be worth 3 points, where 2 of those points are awarded through participating through Top Hat, and 1 point is awarded for inputting the daily password which is stated verbally and written on the whiteboard.

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

The UA policy regarding absences for any sincerely held religious customs will be accommodated where reasonable:

<https://policy.arizona.edu/human-resources/religious-accommodation-policy>

Absences preapproved by the UA Dean of Students (or dean’s designee) will be honored:

<https://policy.arizona.edu/employment-human-resources/attendance>

Do not attend class while ill. Temporary remote attendance can be arranged with appropriate advanced notification.

#### Grading

Each student designs their own customized weighting for the different components of the course from the allowed ranges listed at the right. Total weighting must add up to 100%. Each component is described in

Course Component	Allowed Range
In-Class Activities	0-20%
Collection of 1-Page written Essays	30-60%
Signature Assignment	30-60%

detail during class and feedback is provided on early work for each component prior to the selection deadline, which is at the end of the sixth week of class. After the selection deadline passes, all grading choices are final and cannot be changed. Three examples of the many possible combinations are shown below. Please use 5% increments. If the student does not make a choice and does not reply to the instructor by email, the Example 1 (shown below) will be used as the default.

Example 1

Activities	20%
Essays	40%
Signature	40%

Example 2

Activities	20%
Essays	30%
Signature	50%

Example 3

Activities	0%
Essays	60%
Signature	40%

The nominal scale shown here will be used to determine the final letter grades in the course from the overall cumulative percentage. A lower “curve” may be used.

A:	90% and higher
B:	80-89%
C:	70-79%
D:	55-69%
E:	below 55%

### Late policy

For regular assignments, with no advance notice, there is a late policy of -10% per day. If you have difficulties this semester which affect your ability to meet due dates, please communicate with the teaching staff as soon as possible.

### Regrades

All your work will be graded by Dr. Schools or the Graduate Teaching Assistants. Although we will make every effort to evaluate your work thoroughly and fairly, we may err. If you think there is an error in grading your homework, please contact Dr. Schools; I will look at your work again and return it to you with a response, usually within a week. **You must report any grading errors within a week of the return of your assignment to receive a regrade.**

### Extra credit

There will be opportunities for extra credit during the semester. Take advantage of them when they appear because they may not be available at the end of the semester. The total amount of extra credit that can count towards the final overall letter grade is capped at 5% (essentially half a letter grade).

Bonus points are also possible for exceptional work on individual assignments in the three main grading categories.

### Academic integrity

Both students and faculty are bound by the University’s Code of Academic Integrity, which covers many forms of academic dishonesty. 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. This means that work submitted in your name must be the result of your own scholarly efforts. In this course, it is typical that 2-3 students be caught plagiarizing on homework or attempting to cheat on the term project. Every such incident is reported to the Dean of Students. Don’t be one of these students! Details on the code of academic integrity are available at:

<https://deanofstudents.arizona.edu/policies/code-academic-integrity>

The University Libraries have some excellent tips for avoiding plagiarism, see:

<https://lib.arizona.edu/research/citing/plagiarism>

### **Use of AI tools**

In this course there will be some assignments where generative artificial intelligence/large-language-models (e.g. ChatGPT, Claude, Gemini, etc.) are welcome or even required. Every assignment will have a description of how AI tools are to be used or avoided. AI contributions to assignments will be clearly labeled when submitted. Inappropriate use of AI tools will be considered a violation of the Code of Academic Integrity, specifically the prohibition against submitting work that is not your own.

## **3.2 Classroom Climate and Community Engagement**

### **Confidentiality of Student Records**

All student records, not just grades but also any identifiable material submitted for credit are handled according to FERPA guidelines, see: <https://www.registrar.arizona.edu/privacy-ferpa/ferpa-compliance>

### **Accessibility and Accommodations**

At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, <https://drc.arizona.edu/>) to establish reasonable accommodations.

### **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: <https://deanofstudents.arizona.edu/policies/code-academic-integrity>.

The University Libraries have some excellent tips for avoiding plagiarism, available at

<https://lib.arizona.edu/research/citing/plagiarism>.

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.

### **Nondiscrimination and Anti-harassment**

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 (including pregnancy), national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information. For more information, including how to report a concern, please see

<https://policy.arizona.edu/employment-human-resources/nondiscrimination-and-anti-harassment-policy>.

## **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/app/me/ledetail/crtfy0000000000003841](https://arizona.sabacloud.com/Saba/Web_spf/NA7P1PRD161/app/me/ledetail/crtfy0000000000003841).

## **Safety on Campus and in the Classroom**

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>.

## **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. 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@arizona.edu](mailto: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](mailto:survivoradvocacy@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](https://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.

### **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.