General Education

PTYS/ASTR 170A1: Alien Earths
Fall 2024
Kuiper 308, TuTh 2:00-3:15
https://d2l.arizona.edu/d2l/home/1501024

Instructor:

Dr. Joe Schools (he/him)
jschools@arizona.edu
Kuiper Space Sciences, Room 424
Office Hours: TBD and by appointment
Joe's office hours will be virtual on Zoom this semester: https://arizona.zoom.us/j/4238378843

Graduate Teaching Assistant:

Chaucer Langbert (they/them)
chaucer@arizona.edu
Room TBD
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 (6-8 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 six 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, 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*.

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
As this is a GenEd course it is available for Honors credit. Honors contract information is available at frankehonors.arizona.edu. See the instructor to discuss your ideas for an honor contract.

1.4 Scheduled Topics/Activities

Scheduled lesson topics are likely to shift or change:

Week	Class Dates	Topic	Deliverable	Due Date *
1	8/27, 8/29	Intro, Syllabus, Space, and Time	Top Hat registration	8/30
2	9/3, 9/5	The Solar System		
3	9/10, 9/12	Fundamentals of Physics and Chemistry	Essay	9/13
4	9/17, 9/19	Stars and Planet Formation	Project Planning Report	9/20
5	9/24, 9/26	Stars and Planet Formation continued	Essay	9/27
6	10/1, 10/3	The Age of the Universe and the Age of the Earth	Grade Breakdown Choice	10/4
7	10/8, 10/10	Geologic and Biologic History of the Earth	Essay	10/11
8	10/15, 10/17	Geologic and Biologic History of the Earth continued		
9	10/22, 10/24	Plate Tectonics	Essay	10/25
10	10/29, 10/31	Plate Tectonics Continued	Project Progress Report	11/1
11	11/5, 11/7	Mars	Essay	11/8
12	11/12, 11/14	Mars and Venus		
13	11/19,11/21	Venus and Ocean Worlds	Essay	11/22
14	11/26	Ocean Worlds		
15	12/3, 12/5	Exoplanets	Project Final Video	12/6
16	12/10, 12/12	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.

2.3 Required Resources and Equipment
- Any device (smartphone, tablet, computer) capable of internet access, including during class time.

2.4 Student Success Resources
Please make your students aware of resources and support services. At a minimum, you may include:
- UA Academic policies and procedures
- Student Assistance and Advocacy information
- Counseling and Psych Services (CAPS)
- Other student support resources

2.4 Course Textbook

This course will 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.

Absence and Class Participation

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). Extra credit is possible on the Signature Assignment for exceptional work beyond the nominal requirements of the project. If you have any interesting ideas for extra credit work, please tell the instructor as early in the semester as possible.

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, Dall-e, Gemini, Perplexity, 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

UA Policies and Student Resources

All UA courses adhere to the general UA Policies as stated on the institutional websites: https://academicaffairs.arizona.edu/syllabus-policies. Please make yourself familiar with the Student Code of Academic Integrity and the protocol ensuring non-discriminatory, anti-harassment, non-threatening learning experiences. This site also includes a list of student resources. The entirety of University Policies can be found here: https://catalog.arizona.edu/policies.

Accessibility and Accommodations

It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let the instructor know immediately so that options can be discussed. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations. Please be aware that the accessible positions in this 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: https://deanofstudents.arizona.edu/student-rights-responsibilities/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.

Course Climate and Inclusion Statement

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, gaming, online shopping, etc.).

This course also supports elective gender pronoun use and self-identification; rosters indicating such choices will be updated throughout the semester, upon student request. As the course includes some group work and discussion, it is vitally important for us to create and educational environment of inclusion and mutual respect.

Threatening Behavior

UA policy prohibits threats of physical harm to any member of the University community. Details on the policy are available at:

https://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students

Nondiscrimination and Anti-harassment

The University is committed to creating and maintaining an environment free of discrimination. 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. Details on the official UA policy are available at:

https://policy.arizona.edu/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/common/learningeventdetail/crtfy000000000003560

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

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
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

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.

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.