

**PTYS 206**  
**Our Golden Age of Planetary Exploration**  
Spring 2017  
Kuiper Building, room 308  
Tuesday/Thursday, 12:30-1:45

**Description of Course**

PTYS 206 emphasizes the part of the universe that is within reach of direct human experience and exploration. We will review current understanding of the contents of our Solar System and emphasize the processes that unite all of the planets and smaller bodies, such as tectonics, weathering, cratering, differentiation, and the evolution of oceans and atmospheres. The course will build on this knowledge to understand humankind's motivation to explore beyond our Solar System, especially to search for planets around distant stars and to look or listen for evidence of life elsewhere in the Universe. PTYS 206 is a Tier II Natural Science course in the University's general education curriculum. PTYS 206 is cross-listed with ASTR 206. Course requisites: Two courses from Tier One, Natural Sciences.

**Instructor and Contact Information**

Dr. Jeff Andrews-Hanna  
Kuiper 438  
520-626-3338  
[jcahanna@lpl.arizona.edu](mailto:jcahanna@lpl.arizona.edu) (preferred mode of contact)

Office hours: Thursday, 2:00-3:00 PM, Kuiper 438  
*I am also available to meet at other times – please e-mail to set up a meeting*

Teaching assistants:

Tad Komacek  
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office hours: Tuesdays, 2-3 PM, Kuiper 324

Joanna Voigt  
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office hours: Wednesdays, 2-3 PM, Kuiper 330

Web information: This course will use a D2L page:  
<https://d2l.arizona.edu/d2l/home/643040>

**Course Format and Teaching Methods**

This is primarily a lecture course. Lectures will be supplemented by in-class discussions and activities. One project will also entail out-of-class activities (telescopic observing).

**Course Objectives and Expected Learning Outcomes**

Students in this class will become acquainted with the properties and histories of their neighbors in the solar system. This course will emphasize not only what we know, but also how we know it. Students will gain a basic understanding of the processes driving planetary evolution. We will also learn about the history of planetary exploration.

General Education Program Outcomes:

Think Critically

Communicate Effectively

Use Information Effectively

### **Absence and Class Participation Policy**

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at <http://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 preapproved by the UA Dean of Students (or dean's designee) will be honored. See <http://policy.arizona.edu/employmenthuman-resources/attendance>.

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings. Students who miss class due to illness or emergency are required to bring documentation from their health-care provider or other relevant, professional third parties. Failure to submit third-party documentation will result in unexcused absences.

### **Makeup Policy for Students Who Register Late**

Statement on whether students who register after the first class meeting may make up missed assignments/quizzes.

### **Course Communications**

Information pertinent to this course will be conveyed by announcements in class, through messages to your official University of Arizona e-mail address, and by D2L.

### **Required Texts or Readings**

*Introduction to Planetary science: The geological perspective* (Faure and Mensing)

Electronic textbook available for *FREE* through the library:

<https://link-springer-com.ezproxy1.library.arizona.edu/book/10.1007%2F978-1-4020-5544-7>

### **Required or Special Materials**

None.

### **Required Extracurricular Activities (if any)**

Students are expected to take part in a telescopic observing project outside of class time. There will be multiple opportunities to do this, with dates and times announced in advance. Students unable to take part in this activity will be given an alternative assignment.

### **Assignments and Examinations: Schedule/Due Dates**

Papers: Students will be required to complete three writing assignments, one of which will require a revision.

Homework assignments: Optional homework assignments will be distributed to serve as study guides.

Exams: This course will include two mid-term exams and one final exam. The exams will cover all aspects of the course, including in-class work, homework, observing activities, and the term projects. Exams taken in the normal classroom setting, and may include multiple choice, fill in the blank, and short answer questions. The dates of the exams will be posted on the class web page and announced in class. Exhibiting suspicious behavior during an exam may result in confiscation of your exam and/or a zero for the exam grade.

Alternative exams will be available for students who are absent either for University-approved activities (prior notice required), or due to illness (documentation required within 24 hours).

### **Writing Requirement**

All Tier One and Tier Two General Education Courses are writing intensive (<http://gened.arizona.edu/content/writing-component>). In this course, these writing assignments will provide you with the opportunity to learn more deeply about a topic of interest. One of these will be in the form of a “creative writing” assignment. Specific topics or choices of topics will be provided. A revision of one writing assignment will be required, in consideration of feedback from the TA or professor.

### **Final Examination or Project**

The final exam will be held on the date/time designated by the registrar, as indicated at:

<http://www.registrar.arizona.edu/schedules/finals.htm>

Final exam regulations can be found at:

<https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information?audience=students&cat1=10&cat2=31>

### **Grading Scale and Policies**

Letter grades will nominally be assigned based on the following distribution:

A: 90% and higher

B: 80-89%

C: 70-79%

D: 60-69%

F: <60%

The professor may choose to apply a curve to raise the final letter grades if needed, but grades will not be curved down.

The different components of the course will be weighted as follows:

Writing assignments: 30% (10%, 10%, 10%)

Exams: 50% (15%, 15%, 20%)

In-class activities/discussions, participation: 15%

Observing project: 5%

Homework: 0%

**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](http://catalog.arizona.edu/policy/grades-and-grading_system#Withdrawal) respectively.

**Dispute of Grade Policy** An effort will be made to hand back material in a timely manner. Make sure to review all of your graded material as soon as possible. Occasionally errors in grading may occur. If you spot such an error, you must call it to the attention of the TA or instructor **within one week**.

### **Honors Credit:**

As this is a Tier Two course it is available for Honors credit. Honors contract information is available at <https://www.honors.arizona.edu/honors-contracts>. See the instructor to discuss your ideas for an honors contract.

### **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.

Please do not use your phones during class unless prompted by the instructor. Turn cell phone ringers off during class. If you absolutely must use your phone during class please inform the instructor before class begins, sit in a seat near the door, and quietly step out of the room when to use the device. Only class-related use of your laptop is allowed (e.g., taking notes, following D2L notes, etc). If your use of a phone, laptop or other device creates a distraction to the instructor or to other students you will be asked to leave, will be considered to be absent for that class, and will not be allowed to return to class until meeting with the instructor. If the behavior continues you will be dropped from the class and reported to the Dean of Students for violating the UA Code of Student Conduct.

### **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**

At the University of Arizona we strive to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, you are welcome to let me know so that we can discuss options. You are also encouraged to contact Disability Resources (520-621-3268) to explore reasonable accommodation. Please be aware that the accessible table and chairs 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

<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>.

*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.

### **UA Nondiscrimination and Anti-harassment Policy**

The University is committed to creating and maintaining an environment free of discrimination; 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>.

Student Assistance and Advocacy information is available at

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

### **Confidentiality of Student Records**

<http://www.registrar.arizona.edu/personal-information/student-information>

### **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.

## Scheduled Topics/Activities:

Lecture	date	day	Lecture topic	Contents	Papers	
1	1/11/18	R	Ancient astronomies	mayan, other ancients, greeks, romans, early European		
2	1/16/18	T	Formation of the solar system	Big bang, timeline, stars, planetary formation, asteroids, LHB		
3	1/18/18	R	Planet Earth	plate tectonics, earthquakes, volcanoes		
4	1/23/18	T	Planet Earth	climate, water		
5	1/25/18	R	Impacts and craters			
6	1/30/18	T	Moon	exploration, space race, apollo		
7	2/1/18	R	Moon	formation, magma ocean, impact basins, maria		
8	2/6/18	T	Moon	recent history, ice at poles, future exploration;		
9	2/8/18	R	Mercury	exploration, structure, magnetic field, volcanism, tectonism	Paper 1 due	
10	2/13/18	T	Venus	exploration, atmosphere, tessera, plains, rifts		
11	2/15/18	R	Venus	Venus and Earth? Evolution,		
12	2/20/18	T	EXAM 1	Ancient astro through Mercury		
13	2/22/18	R	Mars	early ideas, exploration, geologic timescale		
14	2/27/18	T	Mars	geophysics		
15	3/1/18	R	Mars	water and climate		
	3/6/18	T	SPRING BREAK			
	3/8/18	R	SPRING BREAK			
16	3/13/18	T	Mars	Future exploration		
17	3/15/18	R	Astrobiology	Requirements for life, origin of life		
18	3/20/18	T	Astrobiology	Life in extreme environments, search for life		
19	3/22/18	R	asteroids and meteorites	guest lecture	Paper 2 due	
20	3/27/18	T	Jupiter and its Moons	Jupiter, satellites, resonances, Io		
21	3/29/18	R	Jupiter and its moons	Europa, Ganymede, Callisto		
22	4/3/18	T	EXAM 2	Venus, Mars, astrobiology		
23	4/5/18	R	Saturn and its Moons	Saturn, regular and irregular satellite overview		
24	4/10/18	T	Saturn and its Moons	Enceladus and Iapetus		
25	4/12/18	R	Life in the solar system			
26	4/17/18	T	Uranus and Neptune	Ice giants, satellites, Triton		
27	4/19/18	R	Pluto and Charon	new discoveries from New Horizons	Paper 3 due	
28	4/24/18	T	Future of Solar System exploration			
29	4/26/18	R	Exoplanets			
30	5/1/18	T	Review			