

Fall 2019 ASTR/PHYS 1050: The Solar System

Course Description

Astronomy—from ancient to modern times. A central theme for this class will be the attempt to understand the nature and origin of our solar system starting with the early ideas of the cosmos, proceeding through investigations that led to the scientific revolution of the 17th century, and culminating with the observations and discoveries made by the 20th-century space program. Topics will include apparent motions of the Sun, moon, planets, and stars; seasons and eclipses; and principles of light and telescopes. Discovery of thousands of planets orbiting other stars will be discussed and related to the creation of our own Solar System.



My goal for you is to come away from this course with (1) scientific reasoning skills that can be applied in a variety of fields; (2) a conversational understanding of modern astronomy that will allow you to interpret and explain press releases of new discoveries in astronomy; and (3) a desire to learn more about the field!

Credit Hours: 3.0

General Education Designation: Physical/Life Science Exploration

Instructor

Dr. Tabitha Buehler
INSCC 314
801-587-9780

t.buehler@utah.edu (the best way to reach me)
office hours: MoWe 1:00 pm - 2:00 pm, or by appointment

Teaching Assistant

Ben Gibson
u1267339@utah.edu

Meeting Time and Location

MoWe 3:05 pm - 3:55 pm, JFB 103 7:15 pm - 9:00 pm
Fr 3:05 pm - 3:55 pm, CSC 205

Website

Canvas course website: utah.instructure.com

Announcements, assignments, and grades will be posted on our Canvas site.

Course Materials

We will be using an electronic form of the textbook, *Understanding our Universe*, by Stacy Palen. You will be able to access this text, as well as the online homework platform, by inclusive access through our Canvas course. In our Canvas course, there should be a link along the left-hand side called WWNorton that will allow you to view the text and the homework. If you would like a paper copy of the text, you may contact W. W. Norton Publishing (wwwnorton.com) and request a 3-hole punch version for \$15.

You will also be purchasing access to Learning Catalytics, which we will be using during class.

Course Procedure and Grade Breakdown

This class will be an active learning environment and will be largely collaborative. Research shows that the person who is involved actively doing something is the person who is learning!

Pre- and Post-Course Surveys (30 total points possible)

I will be asking you to take a CLASS survey at the beginning and the end of the course (15 points each time you take it). You will receive credit for these based solely on completing them—your score will not be based on correct or incorrect answers.

Reading Quizzes (200 total points possible):

Reading quizzes will be taken through Canvas. These will quiz you over the reading for the day's discussion in class, as well as tell me what you would like to cover in more detail during our discussion. Reading quizzes will be due by 1:00 pm on Mondays and Wednesdays that are not holidays or exam days (excluding the first day of class). The exception to this will be Friday, 27 September—there will be a reading quiz due that day. There will be 24 reading quizzes throughout the semester. Your four lowest reading quiz grades will be dropped.

In-Class Quizzes (200 total points possible):

As part of our discussion days in class, we will have quizzes that you will take together using Learning Catalytics on your laptops, tablets, or smartphones. The scores on these quizzes will be based on whether or not you participate in them (10 points if you are there and participate, 0 if not). There will be 24 of these in-class quizzes throughout the semester. I will drop four of these from your overall score, so that you can miss up to four discussion days with no penalty.

Friday Group Assignments (250 total points possible):

On most Fridays you will be working through assignments in groups. I will give these to you as we go along, and they will be exercises that go along with and review the discussion material from the previous Monday and Wednesday. Each group will turn in one assignment. You will turn

in 11 of these for credit, each worth 25 points. Your lowest score will be dropped at the end of the semester.

Homework (240 total points possible):

There will be 13 homework assignments, each worth 20 points, due on most Thursdays online by 11:59pm. I will be giving you more information about these homework assignments during the first week of class. Your lowest homework assignment grade will be dropped from your overall score.

Final Project (100 points):

The final project is a very open-ended assignment that you will design yourself. For this project, I would like for you to take something that you learned and found interesting in this class, and combine it with another interest you have (ie. cooking, writing, painting, history, music, etc.) to create a project that expresses concepts from this class. You will need to have your project proposal approved by me beforehand. If your project involves some kind of performance art, or you would otherwise like to share it with the class, we will have time set aside near the end of the semester for these presentations.

Midterm Exams (600 total points possible):

There will be three midterm exams, each worth 200 points. The questions on the exams will be similar in style to the quiz questions, homework questions, and the questions from the Friday Group Assignments. There will be an individual component and a group component to each exam. The exams will be given in class during our regular meeting time on the dates specified by the Semester Schedule. You will need to bring a picture ID to all exams.

Final Exam (200 points):

The final exam will be on Thursday, 12 December, from 3:30pm to 5:30pm in our usual classroom. You will need to bring a picture ID to the final exam. **If your final exam score is higher than your lowest midterm score, I will replace your lowest midterm score with it, so that your final exam score will count twice.**

Extra Credit Opportunities (80 total points possible):

You may turn in up to four extra credit observing projects. No more than two of these can be “cloudy night” observing projects. I will make these available to download from the course Canvas website. You will have the opportunity to attend (for free) a presentation at Clark Planetarium on either September 26 or 28. A report on your planetarium visit can count as one “cloudy night” observing project. These extra credit projects will each be worth 20 points and will not be accepted after the last day of class.

Final Grades

Your final letter grade will be assigned as follows:

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	E
Percentage	93+	90-93	87-90	83-87	80-83	77-80	73-77	70-73	67-70	60-67	< 60

I will be using the Canvas grade book to record your scores. Please check this grade book as the semester progresses and alert me of any discrepancies. You have until December 13 to notify me of any changes that need to be made.

Semester Schedule
(subject to change as semester progresses)

Date	Textbook Sections to Discuss/Group Assignments (Reading Quiz due by 1pm, MW)	Homework (Due by 11:59 pm)
Mon 8/19	1-1: Course Introduction	
Wed 8/21	1-2 & 1-3: Science & Math	Homework 1 due 8/22
Fri 8/23	<i>Group Assignment 1</i>	
Mon 8/26	2.1 - 2.2: Motions of the Earth	
Wed 8/28	2.3 - 2.4: Motions of Earth's Moon	Homework 2 due 8/29
Fri 8/30	<i>Group Assignment 2</i>	
Mon 9/2	Holiday—No Class	
Wed 9/4	3.1 - 3.2: Planet Motions & Galileo	Homework 3 due 9/5
Fri 9/6	<i>Group Assignment 3</i>	
Mon 9/9	3.3 - 3.4: Newton's Laws	
Wed 9/11	3.5: Orbits	Homework 4 due 9/12
Fri 9/13	<i>Group Assignment 4</i>	
Mon 9/16	4.1: Light	
Wed 9/18	4.2 - 4.3: Astronomical Instrumentation	Homework 5 due 9/19
Fri 9/20	<i>Group Assignment 5</i>	
Mon 9/23	Exam 1 Review	
Wed 9/25	Exam 1	
Fri 9/27	5.1 - 5.2: Star Formation	
Mon 9/30	5.3 - 5.4: Planetary Disks	
Wed 10/2	5.5 - 5.5: Our Solar System and Others	Homework 6 due 10/3

Date	Textbook Sections to Discuss/Group Assignments (Reading Quiz due by 1pm, MW)	Homework (Due by 11:59 pm)
Fri 10/4	<i>Group Assignment 6</i>	
Mon 10/7	<i>Fall Break—No Class</i>	
Wed 10/9	<i>Fall Break—No Class</i>	
Fri 10/11	<i>Fall Break—No Class</i>	
Mon 10/14	6.1 - 6.2: Terrestrial Planet Surfaces	
Wed 10/16	6.3 - 6.4: Tectonism & Volcanism	Homework 7 due 10/17
Fri 10/18	<i>Group Assignment 7</i>	
Mon 10/21	6.5: Wind & Water	
Wed 10/23	7.1 - 7.2: Introduction to Atmospheres	Homework 8 due 10/24
Fri 10/25	<i>Group Assignment 8</i>	
Mon 10/28	7.3 - 7.5: Atmospheres of the Terrestrial Planets	
Wed 10/30	Exam 2 Review	Homework 9 due 10/31
Fri 11/1	Exam 2	
Mon 11/4	8.1 - 8.2: Introduction to Giant Planets	
Wed 11/6	8.3 - 8.4: Giant Planet Interiors & Magnetic Fields	Homework 10 due 11/7
Fri 11/8	<i>Group Assignment 9</i>	
Mon 11/11	8.5: Giant Planet Rings	
Wed 11/13	9.1 - 9.2: Dwarf Planets & Moons	Homework 11 due 11/14
Fri 11/15	<i>Group Assignment 10</i>	
Mon 11/18	9.3 - 9.4: Asteroids & Comets	
Wed 11/20	9.5 - 9.6: Collisions & Remnants	Homework 12 due 11/21
Fri 11/22	<i>Group Assignment 11</i>	
Mon 11/25	18.1 - 18.2: Life on Earth & Beyond	
Wed 11/27	18.3 - 18.4: SETI + <i>Project Presentations</i>	Final Projects due
Fri 11/29	<i>Holiday—No Class</i>	
Mon 12/2	Exam 3 Review	Homework 13 due 12/2
Wed 12/4	Exam 3	
Thu 12/12	Final Exam 3:30pm	

Inclusivity is a Priority to me

I intend for all students from all backgrounds and perspectives to have their learning needs addressed in this class. I intend for all materials to be presented in a way that is respectful of diversity: gender, disability, race, age, sexuality, ethnicity, culture, and socioeconomic status. I appreciate any input and suggestions for improvement from all students.

Additional Resources

Class Notes

I will post a form of the notes I use in class online for you to access before class. I recommend that you bring these to class, in either printed or electronic form, so that you can add notes to them during class.

Each Other

Working and studying together in groups is the best way to survive college classes! Find some people to work with at the beginning of the semester, and exchange contact information.

Tutoring Services

The University of Utah Tutoring Center, in SSB 330, provides tutoring services. Low-income students may qualify for free tutoring through this program. For more information, call 801-581-5153 or visit www.sa.utah.edu/Tutoring/. The Physics & Astronomy Department may also have a list of undergraduate and graduate student tutors available. See the front office at JFB 201 for a list of possible tutors.

Campus Computer Labs

A list of computer labs open to U students with valid IDs and computer accounts can be found at <http://www.it.utah.edu/services/connected/labs.html>.

The Americans with Disabilities Act

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 801-581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

Addressing Sexual Misconduct

Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status, or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

Safety Statement

The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.

In addition, Commuter Services will provide a late-night, on-demand shuttle service that is launching this fall. The launch date has been set for August 19th and tentative service hours will be 6:00 pm - 12:30 am. More information about how to utilize the software (Tap Ride) will be forthcoming.