

Astronomy: The Solar System

PHYS104 - Fall 2020

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Overview and basic info

Course info

Classroom: Zoom

Time: 1:10-2:00 MWF, 2:10-4:00 M

Attend on time (synchronous): 1:10-2:00 MW, 2:10-4:00 M (most weeks)

Optional attendance (asynchronous): 1:10-2:00 F

Instructor

Dr. Stephanie Douglas

Please call me “Professor Douglas” or “Doctor Douglas” or “Professor”

My pronouns are she/her/hers

Email: douglste@lafayette.edu

Course Policies

Synchronous/Asynchronous Attendance

This class will be taught fully online. The Monday and Wednesday class times will proceed assuming everyone is participating synchronously, and you will be graded on your participation in class activities. The regular class time on Friday will be optional; you may either attend live or watch the recording and complete the relevant work on your own.

I strongly suggest that you also plan to do the labs during the 2:10-4pm window on Mondays. If you choose not to participate during this time, any results will be due at 9am on Tuesdays. When labs require nighttime observing, we will skip the 2:10-4pm meeting and the deadline will change accordingly.

Absences

Your health is always paramount, but even more so this semester. For minor illnesses or other events, let me know and I will waive participation for that day. You will also have a set of free extensions to use on assignments; see the time bank section for more information.

If you will miss multiple classes due to COVID-19 or another serious illness, let me know ASAP and work with your local health provider (if applicable) and Bailey Health Center to obtain a Dean's Excuse. Dean's Excuses are also available for other disruptive life events. If you have a Dean's Excuse, you will not be required to use the time bank, and participation grades will be waived for the time you were out.

If you will miss class or an assignment deadline due to a religious holiday, contact the relevant dean by the add/drop deadline to obtain a Dean's Excuse. Please also contact me ASAP so that we can make alternate plans for you to complete the relevant work.

Contact hours, Moodle, and email policy

I expect you to check email (and read any course announcements) at least once between each class.

I will also set up blocks of available time each week for student drop-in meetings; you may sign up for specific times if desired, otherwise please feel free to drop in for a discussion during any unclaimed time. If these blocks don't work for you, please email me and we can schedule a meeting at another time.

I will generally check email between 8-6 on weekdays (MTWRF), and will do my best to respond by the end of the next weekday. I will sometimes check email or the Moodle forums on Saturdays or Sunday nights, but I can't guarantee a response during weekends or holidays.

Accommodations: flexible, let me know as early as possible

My policy: Your success in this class is important to me. If you need accommodations for any reason, please speak with me privately ASAP to discuss reasonable accommodations. I am happy to consider creative solutions as long as they do not compromise the learning goals of the activity.

Mandatory statement for any Lafayette course with a disability policy: Lafayette College is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning in this course, you are welcome to discuss your concerns with me. If you have a disability, or think you may have a disability, please meet with the [Office of Accessibility Services](#), to begin this conversation or request an official accommodation. If you have already been approved for accommodations through the Office of Accessibility Services, please meet with me so we can develop an implementation plan together.

Collaboration and Plagiarism

You are expected to abide by the principles of intellectual honesty outlined in the Lafayette College Student Handbook (available from <http://conduct.lafayette.edu>).

Science is a social enterprise, and I encourage you to work with your peers on pre-class work, homework, in-class activities, studying, etc. "Collaboration" does not mean "copying." You must understand and individually write out your answer to each problem, and you must turn in your own copy of each assignment.

You may not work collaboratively on challenge assignments or projects, unless otherwise noted.

Evidence of plagiarism will yield a zero grade for the assignment and may be reported to the College. Egregious or repeated plagiarism will yield an F for the course.

Commitment to Inclusion and Equity

Lafayette College is committed to creating a diverse community: one that is inclusive and responsive, and is supportive of each and all of its faculty, students, and staff. The College seeks to promote diversity in its many manifestations. These include but are not limited to race, ethnicity, socioeconomic status, gender,

gender identity, sexual orientation, religion, disability, and place of origin. The College recognizes that we live in an increasingly interconnected, globalized world, and that students benefit from learning in educational and social contexts in which there are participants from all manner of backgrounds. The goal is to encourage students to consider diverse experiences and perspectives throughout their lives. All members of the College community share a responsibility for creating, maintaining, and developing a learning environment in which difference is valued, equity is sought, and inclusiveness is practiced.

If you are experiencing discrimination or harrassment in this class, please do not hesitate to reach out to me so that I can help resolve the issue.

Do not repost learning materials, do not create your own class recordings

All course materials are proprietary and for class purposes only. This includes posted recordings of lectures, worksheets, discussion prompts, and other course items. Such materials should not be reposted, and any recordings should be deleted at the end of the semester. Online discussions should also remain private and not be shared outside of the course. If you have any questions about proper usage of course materials feel free to ask me. If you have concerns about your voice being recorded, please let me know. You may not record classes yourself.

Moodle privacy statement

Moodle contains student information that is protected by the Family Educational Right to Privacy Act (FERPA). Disclosure to unauthorized parties violates federal privacy laws. Courses using Moodle will make student information visible to other students in this class. Please remember that this information is protected by these federal privacy laws and must not be shared with anyone outside the class. Questions can be referred to the Registrar's Office.

Assignments and grading

Unless otherwise noted, all assignments must either be completed entirely within Moodle/ MasteringAstronomy, or be uploaded to Moodle as PDF files or Kaltura video submissions. Work that is uploaded as an image straight from your camera will not be graded.

Course Grade Components

Reading quizzes and pre-class work (completion): 10%

Participation: 10%

Labs: 10%

Homework: 20%

Challenge assignments: 20%

Midterm project: 10%

Final project: 20%

Time bank and late work policy

Over the course of the semester, you will have three 48-hour passes that you can use to extend deadlines for homework, labs, challenge assignments, or projects, no questions asked. You may combine 2 or 3 of these passes on a single assignment, but you may not subdivide the 48-hour increments. The only exception is the final project - you may only use 1 pass on the final project. When you turn the assignment in, indicate the number of passes you would like to use.

I will accept late assignments until the solutions and grades for that assignment are posted (typically one week after they're turned in). Once solutions and grades are posted, no late assignments will be accepted without prior approval. If you do not use the time bank, late assignments will be penalized by 5 percentage points per 24 hours after the assigned deadline.

Reading quizzes and pre-class work (10%)

Reading and pre-class assignments will be assigned weekly, along with learning goals for each unit. These assignments may include watching videos or exploring interactive apps ahead of the class. Use the listed learning goals to guide your reading. Expect to spend 2-3 hours actively reading per week.

As part of these assignments, you may take small quizzes and/or submit short reflections on the content. These will be graded for completion, but the class-wide results may guide the content we cover in the following meetings.

Participation (10%)

We will often have small-group or other interactive activities during synchronous class periods. Your participation in these activities, including productive group work where applicable, will be graded. You can also improve your participation score by asking or answering questions in class or in office hours.

Labs (10%)

Lab periods will generally involve extended activities intended to help you uncover challenging concepts and to meet the Natural Science requirements of the Common Course of Study. For about half of the weeks, we will meet during the scheduled Monday afternoon lab session (2:10-4pm). I strongly encourage you to complete the lab during that time, so that you can ask me and your classmates questions. Lab grades will be based on a worksheet or brief report turned in at the end of the lab period. If you choose to complete a lab later in the day, without assistance, it will be due at 9am the next morning (Tuesday).

Sometimes the Monday afternoon session will be replaced with evening observing activities. In this case, the due date for the report will be extended. Indoor options will always be available, typically using the free [Stellarium software](#).

Homework (20%)

Each week you will be assigned about 2 hours of homework consisting of conceptual questions, sketches, diagrams, math problems, and other tasks that suit the content from the previous week. I encourage you to work together on homework, though you must turn in your own copies of each assignment. It must be clear that short answer/essay questions were written in your own words.

After the first week, homeworks will be due on Wednesdays at 11:59 pm. Part of the assignment will be automatically graded in MasteringAstronomy. I will usually grade the remaining questions and post solutions within one week. I will drop your lowest homework grade.

Challenge Assignments (20%)

After I return the homework from a given unit, you will also receive a more challenging assignment that will require you to apply the same concepts again. Each Challenge Assignment should take 3-4 hours to complete. For each Challenge Assignment, you will be able to present your results as either a written essay/solution, or as a video. You must work independently on these assignments unless otherwise noted.

Instead of taking exams, there will be 7-8 Challenge Assignments spread throughout the semester. You will combine most of these assignments into larger essays or video presentations for the midterm and final projects. I strongly suggest that you choose a single planet or moon to focus on throughout the semester to make combining them easier. You can change your mind about your topic at any time, you'll just have to re-do some work when you get to the midterm or final projects.

Midterm Project (10%) and Final Project (20%)

In lieu of exams, you will produce two projects that build on the Challenge Assignments completed during the semester. The midterm project will combine two of the first three Challenge Assignments, along with some new information.

The final project will combine the midterm project with four additional Challenge Assignments. You must work independently on these projects unless otherwise noted.

Course Outcomes

After completing this course, you will be able to...

- Use simple optical telescopes
- Explain what causes the phases of the Moon and Seasons on Earth, and apply this knowledge to other planets
- Explain how the Solar System is studied using telescopes and space probes
- Describe the basic characteristics of the bodies in the Solar System, and how they are classified
- Explain how the bodies in the Solar System formed and obtained their present-day characteristics
- Make simple geometric calculations for purposes such as measuring distances and angular sizes
- Carry out algebraic problem-solving using Kepler's Laws and other physical laws

- Calculate planet surface temperatures, and explain the greenhouse effect
- Explain how planets are discovered around other stars, and compare exoplanetary systems with our Solar System

In addition to the outcomes listed above, this course will promote the outcomes from the Natural Sciences section of the Common Course of Study. You will be able to...

- NS 1: Employ the fundamental elements of the scientific method in the physical and natural world by identifying and evaluating a testable scientific hypothesis.
- NS 2: Create and evaluate descriptions and representations of scientific data via equations, graphs, tables, and/or models.

Specific learning goals for each unit will be distributed weekly.

Mandatory credit hour statement

The student work in this course is in full compliance with the federal definition of a four credit hour course.