

Astronomy 3019: Astronomy & Astrophysics 2

Course Dates for 2021 Spring:

January 11 – April 30

Lecture Times and Locations:

Tuesdays: 10:40 AM – 11:30 AM (4) in TURL007 or on Zoom

Thursdays: 10:40 AM – 12:35 PM (4 – 5) in CSEE121 or on Zoom
(both in-person sections meeting together; ignore FLG assigned rooms)

Instructor: Dr. Paul Sell
Office: Bryant Space Sciences Center 222
(use Zoom link in Canvas Modules menu for office hours)
Office Hours: Mondays, Tuesdays, and Wednesdays 11:45AM – 12:30PM;
Thursdays 1:15PM – 2:00PM; and by appointment
Contact Information: psell@ufl.edu
Office Phone: (352) 294–1867

Teaching Assistant: Chris Lam
Office: Bryant Space Sciences Center TBD
Office Hours: Mondays 11:00 – 11:45AM and Wednesdays 12:30 – 1:15PM
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Teaching Assistant: Sankalp Gilda
Office: Bryant Space Sciences Center 319A
Office Hours: By appointment only
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Course Website: Canvas/E-Learning

Textbook: You must purchase the required text, *Foundations of Astrophysics*, by Ryden and Peterson (<https://www.cambridge.org/us/academic/subjects/physics/astrophysics/foundations-astrophysics?format=AR>), which is available in hardback (ISBN 978-1-108-83195-6) or ebook (ISBN 978-1-108-935-012-9). This is the same text used for AST3018: Astronomy and Astrophysics 1. Other references may be used for supplemental information throughout the course.

Brief Description: This is an introductory course in Astronomy and Astrophysics designed for students majoring in astronomy, physics, math, or engineering. This course pairs with AST 3018, discussing about half of the major topics in astronomy. While the other course focuses on stellar astrophysics and the interstellar medium, this course primarily focuses on planetary science, relativistic phenomena, Galactic and extragalactic astrophysics, and cosmology.

General Education Course Description

AST 3018 & 3019 are GenEd physical science (P) courses. As the list of topics above demonstrates, the course covers not only the Universe and the bodies in it – planets, moon, stars, galaxies, etc. – but also how we know about those things, making use of our understanding of the underlying physics of orbits and radiation. The course will focus on major scientific developments in astronomy & astrophysics and their impacts on society and the environment.

Physical Science: The physical and biological sciences provide instruction in the basic concepts, theories, and terms of science and the scientific method. Courses focus on major scientific developments and their impacts on society and the environment. You will formulate empirically-testable hypotheses derived from the study of physical processes and living things and you will apply logical reasoning skills through scientific criticism and argument.

Student learning outcomes for a GenEd physical science course in astronomy are as follows:

I. Content

- Know the basic concepts, theories, and terminology of natural science and the scientific method in astronomy.
- Know the major scientific developments in astronomy and the impacts on society and the environment.
- Know relevant processes that govern physical systems in astronomy.

II. Critical Thinking

- Formulate empirically-testable hypotheses derived from the study of physical processes in astronomy.
- Apply logical reasoning skills effectively through scientific criticism and argument in astronomy.
- Apply techniques of discovery and critical thinking effectively to solve experiments and to evaluate outcomes.

III. Communication

- Communicate scientific findings clearly and effectively using oral, written, and/or graphic forms.
- Write effectively in several forms, such as in research papers and laboratory reports.

Detailed Description of the Graded Course Structure

Worksheets: Worksheets will be assigned during most classes to give you an opportunity to review the material and give the instructor the opportunity to check your comprehension of the material. Worksheets typically will be due at the end of the class they are assigned and are not accepted late. Class participation is expected and will greatly help you complete this work.

The number and frequency of these assignments is at the discretion of the instructor. The lowest few (depending on the total number given) will be dropped or counted as extra credit for your final grade. Given this lenient policy, please do not contact the instructor to make up this work unless you have a serious ongoing problem, which should be an excused absence consistent with university policy: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>.

Homeworks: Problem sets will be regularly assigned throughout the semester. Late homework is penalized 25% per day; exception: when answers must be posted promptly for exam studying, no late homework after that point will be accepted. The assignment with the lowest grade will be dropped.

Working in groups is allowed for homeworks and (usually strongly encouraged) for worksheets, although if you do, discuss the problem/solution and then write your own answers without looking at the other students' paper; also write the names of the people you worked with on the submitted homework. Each student is required to show all work and submit separate homework solutions; no emailed work.

Exams: There will be one midterm exam and a final exam. The midterm exam will cover material from approximately the first half of the class (outline of topics/chapters will be provided when appropriate) and the final exam will primarily cover material after the midterm exam; both will include material from lecture and the book. The midterm exam will be during normal class time about halfway through the semester. The final exam is scheduled for 10:00 AM – 12:00 PM on 04/30/2021. Depending on your section, exams will either be in class or linked through Canvas to the online proctoring service, Honorlock:

- You must use Google Chrome with the Honorlock Chrome Extension, which can be downloaded here: www.honorlock.com/extension/install
- In addition to the your usual desktop/laptop computer (not phone!), webcam (both audio and video required), and stable internet connection, you are required to show your student or government-issued ID for both exams. A scientific calculator will be available on your screen through Canvas/Honorlock, though you may also use your own non-internet-capable scientific calculator. You may also have one blank scratch sheet of paper and a pencil/pen. Otherwise your table space should be empty.
- When you are ready to test, log into Canvas, go to your course, and click on your exam. Clicking “Launch Proctoring” will begin the Honorlock authentication process, where you will take a picture of yourself, show your ID, and complete a scan of your room. Honorlock will be recording your exam session by webcam as well as recording your

screen. Honorlock also has an integrity algorithm that can detect search-engine use, so please do not attempt to search for answers, even if it's on a secondary device!

- **Honorlock Student Privacy Protection**
- Honorlock support is available 24/7/365. If you encounter any issues, you may contact them by live chat (during the exam), phone (844-243-2500), and/or email (support@honorlock.com).

Project: A handout and discussion to explain the project fully will be provided when appropriate. All guidelines including due dates will be provided in the handout.

Extra Credit: A handout and discussion to explain the extra credit options will be provided early in the semester. All guidelines including due dates will be provided in the handout.

Course Grade Summary Breakdown: Each of the components of class described above will be assigned the following weights to determine your final score:

- Worksheets: 15%
- Homeworks: 35%
- Midterm Exam: 15%
- Final Exam: 20%
- Project: 15%

Grading Scale: (<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>)

<u>Score</u>	<u>Grade</u>	<u>Score</u>	<u>Grade</u>	<u>Score</u>	<u>Grade</u>
90% – 100%	A	77% – 79%	B–	64% – 66%	D+
87% – 89%	A–	74% – 76%	C+	60% – 63%	D
84% – 86%	B+	70% – 73%	C	57% – 59%	D–
80% – 83%	B	67% – 69%	C–	< 56%	E

Class/University Policies

- Though some of you are in the classroom and rest of you are online, my goal is to simulate the normal classroom experience as much as reasonably possible. Please stay focused and take notes through the Zoom lecture.
- You may need to make calculations, so you should always have available a scientific calculator in addition to your usual materials for taking notes.
- Our class sessions may be audio-visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded,

be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate verbally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

- Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting disability.ufl.edu/students/get-started. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester. Classroom accommodations can only be provided after appropriate verification.
- Responsible citizenship among college students includes honesty and integrity in classwork; regard for the rights of others; and respect for local, state, and federal laws as well as campus standards. Students are responsible for understanding the standards of the “Code of Student Conduct” and the Student Handbook. From the Academic Honesty Guidelines and Student Conduct Code in the University of Florida Undergraduate Catalog: “Academic Honesty: The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge are diminished by cheating, plagiarism, and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff, and administrators who practice dishonest or demeaning behavior.” Any student caught cheating will be referred to the Honor Code Chancellor.
- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Campus Resources

Health and Wellness

- *U Matter, We Care*: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.
- *Counseling and Wellness Center*: [Visit the Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.
- *Student Health Care Center*: Call 352-392-1161 for 24/7 information to help you find the care you need, or [visit the Student Health Care Center website](#).
- *University Police Department*: [Visit UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).
- *UF Health Shands Emergency Room / Trauma Center*: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; [Visit the UF Health Emergency Room and Trauma Center website](#).

Academic Resources

- *E-learning technical support*: Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.
- *Career Connections Center*: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- *Library Support*: Various ways to receive assistance with respect to using the libraries or finding resources.
- *Teaching Center*: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.
- *Writing Studio*: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- *Student Complaints On-Campus*: [Visit the Student Honor Code and Student Conduct Code webpage for more information](#).
- *On-Line Students Complaints*: [View the Distance Learning Student Complaint Process](#).

Tentative Class Schedule

(41 total classes; 12 chapters; ~3 classes/chapter)

Week Starting (Number of Classes)	Topics Covered	Week Starting (Number of Classes)	Topics Covered
01/11 (3)	Introduction to the Course, Chapter 8	03/08 (3)	Relativity, Chapter 18
01/18 (3)	Chapters 8/9	03/15 (3)	Chapter 19
01/25 (3)	Chapter 9	03/22 (3)	Chapter 20
02/01 (3)	Chapter 10	03/29 (3)	Chapter 21
02/08 (3)	Chapter 11	04/05 (3)	Chapter 22
02/15 (3)	Chapter 12	04/12 (3)	Chapter 23
02/22 (1)	Chapter 12, Relativity	04/19 (1)	Chapter 24
03/01 (3)	Relativity, Midterm Exam	04/30 (10:00 AM – 12:00 PM)	Final Exam