

PHY102: Astronomy, Cosmology and Astrophysics
Gustavus Adolphus College Spring Semester 2019

Instructor: Dr. Darsa Donelan (They/Them)

Office: Olin Hall 204

Free Help Sessions: 10:30 AM - 11:30 AM

MWF (in office), TR (in Diversity Center)

Phone: 933-6130

Email: ddonelan@gustavus.edu

Textbooks (Required):

- *Astronomy*, OpenStax (<https://openstax.org/details/books/astronomy>),
Print ISBN 1938168283, Digital ISBN 1947172247
- *Lecture-Tutorials For Introductory Astronomy, Third Edition* by Prather, Slater, Adams, and Brissenden,
©2013, Pearson
- *PHY102 Lab Manual Spring 2019*, by Steve Mellema, Chuck Niederriter, and Darsa Donelan

Course Objectives:

1. Achieve an understanding of “how we know what we know” in science and in astronomy.
2. Come to an understanding of your own, personal position in the universe.
3. Examine the relationship between scientific knowledge and other types of knowledge.
4. Understand the social context of science, and astronomy in particular, both historically and contemporarily.
5. Learn critical thinking, quantitative reasoning, and problem-solving skills and be able to apply them successfully to the solution of scientific problems.

Achievement of these objectives will be demonstrated through writings (answers to group problems, papers, exams, and lab reports) as well as participation in class discussions.

Course Policy and Evaluation:

1. **Lecture Schedule:** The regular class meeting time is Monday, Wednesday and Friday during the 2nd period time slot (9:00-9:50 AM). Class periods will be used for discussion, lecture, problem solving, etc. A daily calendar of activities for the course is posted on Moodle. When a reading assignment is listed for a class discussion, the **reading is expected to be completed before coming to the class.**
2. **Pre-Lecture Questions:** Questions related to the pre-lecture reading and prep material will be posted on Moodle. These questions will be due at 5 pm the day before the lecture they correspond to (i.e. Sundays, Tuesdays, and Thursdays).
3. **Lecture Tutorials and Group Problems:** Frequently, students will work together, in groups of 2-3 members, to cooperatively work on lecture tutorials and solve problems. Students will turn in their own lecture tutorials. For group quantitative problems, only one group solution will be submitted, with all group members receiving the same grade. Late tutorials and group work will be accepted only at the discretion of the instructor with loss of points. There will be no make-up for group problems missed due to excessive absences.
4. **Homework:** Problems will be assigned on an approximately weekly basis and will be promptly graded and returned to the student. Late homework will be accepted only at the discretion of the instructor with loss of points. Homework problems will come out of the back of relevant chapters in the course textbook. While I do not mind if you work together with other students, **your written solutions must be your own.** It is easy to recognize when problems have been copied or solutions have been used (as many online solutions contain

errors which are copied and not recognized) and I will not hesitate to give zeros on assignments and related exams if necessary.

All in class assignments and homework questions and problems will be graded on a 4 point grading scale:

4 - Thorough, detailed, correct response, *at most* one minor science content error

3 – Major ideas present but with an abbreviated or somewhat incomplete description; *more* than half the science content correct

2 - Major errors in science content but thoughtful response

1 - Major errors in science content and very incomplete/abbreviated description; OR unreadable

0 - No meaningful attempt worthy of grading

5. **Labs:** Each student must register for and attend a laboratory class weekly on **either** Tuesday **or** Thursday during the same class period, 9:00-9:50 AM.

a. **Lab Experiments:** Attendance at lab experiments is required. Lab reports will only be accepted from those who signed the lab attendance sheet. Generally, the 50-minute lab period will be long enough for students to take the necessary data, but additional work time will be needed outside of class to finish the analysis and write the lab report.

b. **Evening Observing Labs:** Each student will also be required to complete four evening observing laboratory exercises, one during each month of the semester. The fifth observing lab (Meteor Showers) can be completed for extra credit, but not as a replacement for the required first four observing labs. Students must sign up on the sign up sheet by the time that the observatory opens. If you are not signed up, you may try to come but risk being turned away by the observatory TA if they cannot accommodate.

c. **Lab Reports:** Although lab work will be carried out in groups, each student must submit an individual lab report. While data will undoubtedly be shared among lab-group members, all calculations, conclusions and answers to questions are expected to be done by the individual submitting the report. Lab reports will be worth 10 points each for in-class labs and 20 points each for evening observing labs.

6. **Extra-Credit News Articles:** Students who find a current (less than two years old) news article and submit a 1-2 page summary paper (**summarizing** the article and **relating** it to the course discussions) will receive extra credit of up to 5 points toward the next exam score. The news article must be related to the topics covered on *that* exam and not a previous or future exam. Extra credit points may not carry over past the next hour exam, and no exam score can ever exceed 100%.

7. **Cross-Disciplinary Extra-Credit:** Cross-disciplinary extra credit points may only be awarded once, only go towards one exam, and no exam score can ever exceed 100%.

8. **Exams:** There will be four one-hour exams during the course of the semester (see schedule below) and a two-hour, comprehensive final exam. You will be allowed a calculator for each exam. Students are expected to arrange **in advance** to take an exam other than during the announced time. These requests will be considered on an individual basis (a valid medical or athletic reason is usually necessary) and students should not expect that such permission will automatically be granted. Permission to make up a missed exam after the fact will be at the discretion of the instructor. **Please note that the exam dates are approximate and may need to be adjusted (plus or minus two days at most) based on the pace of lecture.**

You may listen to music during the exams if you like but once the exam has started you are not allowed to access your phone/iPod/etc. to make any changes. This is a one-strike policy, the first instance I notice of someone using this to gain an unfair advantage will lose the privilege for the entire class.

9. **Attendance:** While you are technically not required to attend lecture and I will not ask you to sign-in, you are required to attend all of your respective lab periods. Regular attendance at all lectures is expected and

excessive absenteeism will result in reduction of your final grade. Students are responsible for all announcements and assignments made during class.

10. **Evaluation:** Grades will be assigned using the following as a guide:

40% Hour Exams (10% each) 15% Homework 5% Pre-Lecture Questions 15% Final Exam
10% Group Problems 15% Lab Reports

Final course grades will use the following scale as a guide:

94-100 A	90-94 A-	86-90 B+	82-86 B	78-82 B-
74-78 C+	70-74 C	66-70 C-	62-66 D+	58-62 D
				0-58 F

Assignment of final letter grades will also take into account the instructor's subjective evaluation of the student's attendance, initiative, class participation, preparation (particularly the quality of homework), and evidence of improvement. Final grades will be rounded to the nearest percentage point.

11. **Academic Honesty:** You are expected to live up to the high expectations that the college sets regarding academic honesty (see the college's honor code below). By writing your name on any graded assignment for this class, you are attesting to the fact that it has been completed in accord with the highest standards of academic honesty. I take this responsibility seriously and I expect that you will also. If you have any doubt about what constitutes appropriate use of someone else's work, please ask. Any student found in violation of these policies will be dealt with appropriately.

HONOR CODE

As a community of scholars, the faculty and students of Gustavus Adolphus College have formulated an academic honesty policy and honor code system, which is printed in the Academic Bulletin and the Gustavus Guide. As a student at Gustavus Adolphus College I agree to uphold the honor code. This means that I will abide by the academic honesty policy, and abide by decisions of the joint student/faculty Honor Board.

HONOR PLEDGE

On my honor, I pledge that I have not given, received, or tolerated others' use of unauthorized aid in completing this work

12. **Incompletes:** A grade of incomplete will **only** be given for work not completed due to circumstances beyond the control of the student (*this is the College policy*).

13. **Change of Registration:** The College's deadline for late registration is Friday, February 22nd (the tenth class day). The last day to withdraw from the course with a "W" is April 26th (the end of the eleventh week of the semester).

14. **Accessibility Resources:** Gustavus Adolphus College is committed to ensuring the full participation of all students in its programs. If you have a documented disability, or you think you may have a disability of any nature (e.g., mental health, attentional, learning, chronic health, sensory, or physical) and, as a result, need reasonable academic accommodation to participate in class, take tests or benefit from the College's services, then you should speak with Accessibility Resources staff for a confidential discussion of your needs and appropriate plans. Course requirements cannot be waived, but reasonable accommodations may be provided based on disability documentation and course outcomes. Accommodations cannot be made retroactively; therefore, to maximize your academic success at Gustavus, please contact Accessibility Resources as *early* as possible. Accessibility Resources (<https://gustavus.edu/care/accessibility/>) is located in the Center for Academic Resources and Enhancement. Accessibility Resources Coordinator, Katy Clay, (clayk@gustavus.edu or x7197), can provide further information.

15. **Multilingual Student Support:** Some Gustavians may have grown up speaking a language (or languages) other than English at home. If so, we refer to you as “multilingual.” Your multilingual background is an incredible resource for you, and for our campus, but it can come with some challenges. You can find support through the Center for International and Cultural Education’s (<https://gustavus.edu/cice/>) Multilingual and Intercultural Program Coordinator (MIPC), Carly Overfelt (overfelt@gustavus.edu). Carly can meet individually for tutoring in writing, consulting about specific assignments, and helping students connect with the College’s support systems. If you want help with a specific task (for example, reading word problems on an exam quickly enough or revising grammar in essays), let your professor and Carly know as soon as possible. In addition, the Writing Center (<https://gustavus.edu/writingcenter/>) offers tutoring from peers (some of whom are themselves multilingual) who can help you do your best writing.
16. **Mental Wellbeing:** The Gustavus community is committed to and cares about all students. Strained relationships, increased anxiety, alcohol or drug problems, feeling down, difficulty concentrating, and/or lack of motivation may affect a student’s academic performance or reduce a student’s ability to participate in daily activities. If you or someone you know expresses such mental health concerns or experiences a stressful event that can create barriers to learning, Gustavus services are available to assist you. You can learn more about the broad range of confidential health services available on campus at <https://gustavus.edu/counseling/> and <https://gustavus.edu/deanofstudents/services/>.
17. **Title IX: Sexual Misconduct Prevention and Resources:** Gustavus Adolphus College recognizes the dignity of all individuals and promotes respect for all people. As such, we are committed to providing an environment free of all forms of discrimination including sexual and gender-based discrimination, harassment, and violence like sexual assault, intimate partner violence, and stalking. If you (or someone you know) has experienced or is experiencing these types of behaviors, know that you are not alone. Resources and support are available; you can learn more online at <https://gustavus.edu/titleix/>.

Please know that if you choose to confide in the lab instructors, they are mandated by the College to report to the Title IX Coordinator, because Gustavus and they want to be sure you are connected with all the support the College can offer. Although it is encouraged, you are not required to respond to outreach from the College if you do not want to. You may speak to someone confidentially by contacting the Sexual Assault Response Team (SART/CADA), Chaplains, Counseling Center, or Health Service staff; conversations with these individuals can be kept strictly confidential. SART/CADA can be reached 24 hours a day at 507-933-6868. You can also make a report yourself, including an anonymous report, through the form at <https://gustavus.edu/titleix/>.