



ASTR 100: Stars & Galaxies



Welcome!

Instructor: Dr. Katie Lester, klester@mtholyoke.edu, 213 Kendade Hall

Please feel free to call me Katie, but I also understand if you are more comfortable using a formal title such as Professor Lester, Professor Katie, Dr. Katie... During the week, I will try to answer any emails within 24 hours. Over the weekend, I may not get back to you as quickly. If you do not hear back from me in two days M–F, please email me again.

Office Hours: I will hold office hours each week on Mondays 2–4pm and Thursdays 10am–12pm, so stop by any time you have questions or want to chat. You're also welcome to email me anytime with questions or to arrange a different meeting time that fits both our schedules. You can also schedule meetings on Pathways.

TA Help Hours: The TA's for this class are astronomy or physics majors who are available to help you with the course material or homework questions. They will hold their own help hours during the week (time TBD), so feel free to stop by their sessions if you need help!

Overview

Course Description: Discover how the forces of nature shape our understanding of the cosmos. Explore the origin, structure, and evolution of the earth, the sun and other stars, star clusters, the Milky Way and other galaxies, and the universe as a whole.

Course Website: Moodle will contain lecture slides, homework assignments, announcements, grade book, and all other course materials.

Textbook: *The Cosmic Perspective* (9th edition, ISBN [9780134990781](#)). This book is on reserve at the library for the semester and a PDF copy is posted on Moodle. Each week's readings will be posted on Moodle and a tentative schedule is listed below. Earlier versions are fine, but the section numbers may be slightly different.

Prerequisites: None! This is a great first step into astronomy or science in general.

Grading

Homework

Homework is 100% of your grade! There will be 11 homeworks due on Wednesdays, and I will drop your lowest homework grade. You're encouraged to work on assignments with your classmates, but each of you must write your homework in your own words. You can type or hand write your homework, then turn in a paper copy at the start of class.

Every assignment has a due date, and I expect you to strive to submit each assignment by the due date. This ensures I have an opportunity to give you feedback before we review the homework in class.

Missing one homework often leads to missing another one, and getting behind is overwhelming and can derail your ability to make progress towards our learning goals. I want you to succeed, so if you anticipate a problem meeting a homework due date, email me to propose an extension and we will come to an agreement together. I am always willing to be flexible if you contact me in advance of a due date. Homework turned in 7 or more days past the deadline will be graded for 50% credit.

We will discuss each homework in class the week after it's due. You can work with a partner to explain anything either of you missed, then write a short note explaining how you reviewed each other's work. If you hand this in, you'll get 5 points extra credit on that homework. You must be present in class to do this! The purpose of this practice is to support two major pathways to student learning: correcting wrong answers and teaching other students.

Participation

I hope you come to class and actively participate in this course so you can best engage in learning. We will often do example problems and activities in class, which you're encouraged to work on with your classmates. These activities are not graded but will help you learn the material and practice what will be on the homework. Your participation is not only an important part of your learning, it will also contribute to the learning of your peers. As members of our learning community, each of us has a responsibility to create an environment in which we can all learn from each other.

Letter grades: A > 94 B+ = 87-89 C+ = 77-79 D+ = 67-69 F < 60
A- = 90-93 B = 83-86 C = 73-76 D = 63-66
B- = 80-82 C- = 70-72 D- = 60-62

Learning Goals:

With this course, we present the study of the universe as an interdisciplinary science requiring the study of the night sky, stars, the Milky Way, and the universe as a whole from within the context of astronomy and physics. We strive for students to learn to employ qualitative concepts and analytical thinking, and demonstrate the sensibilities, understandings, and perspectives of a person educated in a liberal arts tradition (particularly as these sensibilities relate to the natural environment). We aspire to prepare students to make informed decisions as stewards of their environment in their roles as voters, consumers, and contributing members of society. Each assignment you complete in this course will contribute to your growth towards meeting specific learning goals:

1. Understand fundamental concepts in astronomy such as gravity, the nature of light, the origin of the universe, and physical characteristics of matter.
2. Understand ways in which astronomers study the universe and employ the scientific method.
3. Demonstrate skills for quantitative analyses, including the ability to form a hypothesis, graphically represent and interpret data, and think critically to solve problems.
4. Critically evaluate representations of science in all types of media.

What you can expect from me:

- I will provide you with a clear, organized course that is designed to ensure you meet our learning goals in a meaningful manner.
- I will provide a variety of activities & assignments to ensure your learning needs are met.
- I will provide a supportive and safe environment for you to share and discuss ideas with your peers.
- I will treat you with dignity and respect and be flexible to support your individual needs.

- I will reach out to you when I sense that you need support.

What I will expect from you:

- You will strive to be an active participant in this course by coming to class, taking notes, and participating in peer discussion or class activities.
- You will focus on understanding the concepts and performing the skills of this course, aiming for your own personal best.
- You will strive to meet due dates, but will contact me if you have a concern about completing an upcoming assignment.
- You will uphold academic integrity by submitting only work that you understand and completed for yourself.
- You will be thoughtful in your interactions with peers, while taking extra care to respect diverse perspectives. You will support your classmates as you share this learning space and treat them with dignity and respect.
- You will give yourself grace. You will challenge yourself to keep an open mind and recognize that mistakes are a vital part of the learning process.

Class Guidelines

Accommodations

Please let me know if you need any accommodations from the Disability Services office (Mary Lyon Hall 3rd Floor or by [email](#)). I would like to meet with you and discuss your approved accommodations and how we can apply them to this class. (For more information on who might be eligible for accommodations and the application process please see the [Disability Services website](#).)

Because of we will do peer review of homeworks in class, students with accommodations are allowed a maximum of five extra days on any homework. In consultation with the Disability Services office, we believe that this time frame will meet the accommodation needs of most students approved for additional time while still fitting in the course structure. How this works – all homework are posted to Moodle by Friday mornings. For students without accommodations, they are due in 5 days (on Wednesday). For students with accommodations for extra time, the homework is due in 10 days (the following Monday). Then we will review the homework in class during the next lecture. If you have concerns about how this might impact you and your accommodation needs, please reach out to me or Disability Services.

Academic Integrity

I encourage you to work together on homework, since science is often very collaborative. You can help each other with questions and try to figure them out together, but each person must write up their work individually. You are expected to follow MHC's [academic integrity policy](#), and any work that does not will be given a zero and reported to the Academic Honor Board. Each student is required to write up and submit their own work. Using artificial intelligence on assignments is prohibited; students should not have another person/entity do the writing of any portion of an assignment for them, which includes AI tools like ChatGPT.

Mount Holyoke College is a community of students, faculty, staff, and administrators committed to free inquiry and the pursuit of knowledge in the tradition of the liberal arts. The decision to join this academic community requires acceptance of special rights and responsibilities that are essential for its effective

functioning and the realization of its mission. All members of the community share the responsibility to uphold the highest standards of academic integrity. I expect all your work to abide by the MHC Honor Code: "I will honor myself, my fellow students, and Mount Holyoke College by acting responsibly, honestly, and respectfully in both my words and deeds." Any work that does not will be reported to the Academic Honor Board.

Tips for success

To help reduce that stress and improve your own likelihood of getting the best grades possible, allow yourself the time and space you need to do your best work. Do not procrastinate and if you get stuck on an assignment, please reach out to me or the TA's. I welcome your questions and I am happy to help you think through your ideas so you can successfully complete an assignment. Sometimes just a quick conversation or email exchange is all you need resolve a problem. Struggle is a natural part of learning, but if you're feeling frustrated that means it is time to reach out for some assistance.

Many of the homework questions will ask you to give an answer *and* to explain your reasoning, which shows your understanding of the course material and critical thinking skills. You need both components to receive full credit for the question, so try to explain your reasoning in detail. Imagine you are explaining the answer to your classmates – walk through each step in your thought process and give evidence to support your ideas.

Tentative Course Schedule:

Week	Date	Topics	Reading sections
1	Sept 4	Introduction	1.1, Appendix C
2	Sept 9, 11	The Night Sky, Historical astronomy	2.1–2.4, 3.1–3.4, 4.2, 4.4
3	Sept 16, 18	Light, Telescopes	5.1–5.4, 6.2–6.4
4	Sept 23, 25	The Sun	14.1–14.3
5	Sept 30, Oct 2	Types of Stars	15.1–15.3
6	Oct 7, 9	Star Formation, Star Lifecycles	16.1–16.3, 17.1–17.4
7	Oct 17	Star Lifecycles	17.1–17.4
8	Oct 21, 23	Star Lifecycles	18.1–18.3
9	Oct 28, 30	No class – spring break	
10	Nov 4, 6	The Milky Way	19.1–19.4
11	Nov 11, 13	Types of Galaxies	20.1–20.4
12	Nov 18, 20	History of the Universe	22.1–22.3, 23.1–23.4
13	Nov 25	TBD	
14	Dec 2, 4	Exoplanets	13.1–13.2, 24.1–24.3
15	Dec 9	Review trivia, course evals	