

## Astr 325: Astrophysics Spring 2025

**Course Description:** This course introduces the physics of celestial objects. Topics will include formation, structure, and evolution of stars, the physics of the interstellar medium, stellar remnants (white dwarfs, neutron stars, black holes), galaxies, and the large-scale structure of the universe.

### Course Objectives:

- Apply basic physical principles to astronomical situations, such as the equations for stellar structure
- Understand spectroscopy and its use in characterizing astronomical objects
- Describe the birth, life, and death of stars.
- Understand the techniques and methods used to gain new knowledge in astronomy

**Prerequisites:** Math 262, Phys 212 or Phys 214, 24 Earned Hours

**Class Meeting Time:** MWF 11:00 – 11:50 am in Lewis 109

**Instructor:** Dr. Jennifer Meyer (call me Dr. Meyer or Prof. Meyer)  
**Office:** Lewis 211B  
**Phone:** 662-915-2673  
**E-mail:** [jameyer2@olemiss.edu](mailto:jameyer2@olemiss.edu) (this is the best way to reach me)

**Office Hours:** MWF 4:00 – 4:50 in CSTI 137, after class, or  
 setup a 1:1 appointment at this link: <https://calendly.com/jameyer2/oneonone>

**Textbook:** [Foundations of Astrophysics](#) by Ryden and Peterson 978-1-108-83195-6

**Required Materials:** Scientific or graphing calculator (not on phone) such as TI-36X Pro.

<b>Grading:</b>	In Class Activities	100 points
	Homework	300 points (12 x 25 points each)
	Exam 1	100 points
	Exam 2	100 points
	Exam 3	100 points
	Final Exam	100 points
		-----
	Total Possible	800 points

### Grading scale:

$736 \leq \text{points} < 800$	A	(percentage $\geq 92\%$ )
$720 \leq \text{points} < 736$	A -	( $90\% \leq \text{percentage} < 92\%$ )
$696 \leq \text{points} < 720$	B +	( $87\% \leq \text{percentage} < 90\%$ )
$656 \leq \text{points} < 696$	B	( $82\% \leq \text{percentage} < 87\%$ )
$640 \leq \text{points} < 656$	B -	( $80\% \leq \text{percentage} < 82\%$ )
$616 \leq \text{points} < 640$	C +	( $77\% \leq \text{percentage} < 80\%$ )
$560 \leq \text{points} < 616$	C	( $70\% \leq \text{percentage} < 77\%$ )
$480 \leq \text{points} < 560$	D	( $60\% \leq \text{percentage} < 70\%$ )
points $< 480$	F	(percentage $< 60\%$ )

**In Class Activities:**

Research indicates that people learn best when they are actively engaged with the material, not just listening passively to a lecture. Because I want you to learn as much as possible this semester, our class time will be interactive, including voting questions, group discussions, lecture-tutorials, practice problems, etc. Reading the sections listed on the last page of this syllabus **before** class will drastically increase your enjoyment and effectiveness of these in-class activities. Some of the in-class activities will be turned in for points, for a total of 100 points over the course of the semester. If you are interested in reading about the pedagogical research that backs the use of active learning strategies, here is a good place to start: <https://www.pnas.org/doi/10.1073/pnas.1821936116>

**Homework:**

The due dates for the homework assignments are listed on the last page of this syllabus. Each of 12 homework assignments will be worth 25 points, for a total of 300 points. Solutions will be posted three days after the due date or as soon as everyone has submitted their assignment, if that is less than three days. No late work will be accepted after the solutions are posted.

**Academic Honesty:**

You may work with other students on the homework, but you cannot copy their work. Make sure that all work submitted is your own, so that you would be able to fully explain it to me or redo a similar problem if asked. Uploading the materials from this class to Chegg, Coursehero, or other cheating websites or using any solutions that are posted there would violate the UM Standards of Honesty. The consequences for academic dishonesty depend on the seriousness of the offense and will be at least a zero on the assignment or exam and may include an overall grade of F.

**Exams:**

Three midterm exams and a **mandatory comprehensive final**, as shown on the schedule on the last page. The dates of the exams and final will not change unless class is canceled for unforeseen reasons (weather, emergency, etc.). The chapters covered on each exam may change, if needed. No make-up exams will be given unless arrangements are made in advance or in case of unforeseeable emergencies.

The lowest midterm exam score (including a zero) can be replaced with the final exam score, if the final exam score is higher than the lowest midterm exam score. At the end of the term, the Blackboard gradebook will show this adjustment in a column marked “Replace Lowest.” which will add the point difference between your final exam and lowest midterm grade IF the final was higher.

Each exam will consist of 10 multiple choice questions, worth 2 points each, and choose 4 out of 5 or 6 free-response questions worth 20 points each, for 100 total points. You can use one page of notes, double-sided, which must be in your own handwriting.

**Attendance:**

Consistent lecture attendance is important for your learning. **However, please do not come to class if you are feeling ill or are contagious!** If you do need to miss class due to illness, personal emergencies, university obligations, religious observances, and other circumstances, look at the notes from class posted on Blackboard to catch up before the next class.

**Inclusion:**

I commit to fostering a classroom environment that fully supports, values, and engages every student on their learning journey. You can help by treating yourself and your classmates kindly and with respect.

**University-wide Policies:**Attendance

The university requires that all students have a verified attendance at least once during the first two weeks of the semester for each course. If your attendance is not verified, you will be dropped from the course and any financial aid will be adjusted accordingly. Please see <http://olemiss.edu/gotoclass> for more information.

Academic integrity and honesty

Students are expected to adhere to the University of Mississippi Creed and the Standards of Honesty as described in Policy Code ACA.AR.600.001 and the [M Book](#). Students are reminded that cheating in any form will not be tolerated. Performance on all tests and assignments shall represent the individual work of the student. Those who violate the Standards of Honesty will be reported and subject to the appropriate sanction, which may include expulsion from the University.

Intellectual property

All materials distributed electronically and in hard copy in this class are protected under intellectual copyright. Any attempt to upload these documents to a file sharing service or to profit from their distribution by any means constitutes theft and will be in violation of intellectual property law and the UM Academic Conduct Code unless expressly permitted for by the instructor.

Nondiscrimination policy

The University complies with all applicable laws regarding affirmative action and equal opportunity in all its activities and programs and does not discriminate against anyone protected by law because of age, color, disability, national origin, race, religion, sex, sexual orientation, handicap, or status as a veteran or disabled veteran.

Disability Access and Inclusion

The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation, or to accurate assessment of your achievement, please contact the course instructor as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content, and the use of non-captioned or non-transcribed video and audio files. If you are registered with SDS, you must log in to your Rebel Access portal at [rebel-access-portal](#) to request approved accommodations. If you are NOT registered with SDS, you must complete the process to become registered. To begin that process, please visit our website at [apply-for-services](#). SDS will:

1. Complete a comprehensive review to determine your eligibility for accommodations,
2. If approved, disseminate to your instructors a Faculty Notification Letter,
3. Facilitate the removal of barriers, and
4. Ensure you have equal access to the same opportunities for success that are available to all students.

If you have questions, contact SDS at 662-915-7128 or [sds@olemiss.edu](mailto:sds@olemiss.edu).

### Student Support Services

The University Counseling Center is a professional counseling facility offered by the University of Mississippi to assist students, faculty, and staff with many types of life stressors which interrupt day-to-day functioning. We offer individual counseling, couple's counseling, group counseling, crisis intervention, assessments and referrals, outreach programs, psychiatric services, consultations, and substance abuse services. There is **no fee** for currently enrolled University students and everything you say to your counselor is confidential. You can contact the Counseling Center for information about mental health issues at <https://counseling.olemiss.edu>, counslg@olemiss.edu, 662-915-3784, and 320 Lester Hall. You can schedule an appointment or get information about appointments by calling the UCC at 662-915-3784.

### Examinations and last week of class

Regulations governing all examinations — A student's failure to appear for an examination without an acceptable excuse, inability to present valid identification, absence from the room during the course of an examination without the consent of the examiner, or attempting any portion of an examination without submitting his or her answers shall result in failure of the examination. Tardiness beyond 15 minutes forfeits a student's right to an examination.

Final examinations — A final examination, to be given at the time posted in the examination schedule, is required in each undergraduate course, unless the appropriate chair and dean have approved an exception. A student who has three or four final examinations in one day may arrange with the course instructor to take the noon or 7:30 p.m. examination at another time. In order to give a final examination at any time other than that shown in the posted examination schedule, an instructor must have prior approval of the department chair and dean.

Last week of class — The following guidelines exist to allow sufficient time for students and instructors to prepare for final examinations. These guidelines apply to the week preceding final examinations for undergraduate courses held during Fall and Spring semesters.

- During the period of Wednesday through Friday of the last week of class, instructors are not to give exams, tests, or quizzes that contribute more than 10% of the final grade for a class. An instructor can obtain approval of the department chair and dean to give an exam, test, or quiz, of this weight, during this three day period. Instructors should return graded work and/or inform students of their grades on exams, tests, or quizzes prior to the beginning of finals week.
- Exceptions to the above statement are automatically made for lab-based courses, technical writing courses, seminar courses that assign a term paper, and senior design courses that assign a multi-faceted project in lieu of a final exam. Major projects of the above types, which contribute more than 10% of the final grade and which are due during this Last Week period, should be assigned in the syllabus at the beginning of the semester and any substantial change in the assignment should be made known to students before the drop deadline.

Planned schedule: Please read these sections before class each day.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 1/20 – 1/24	No class		Syllabus 1.1 – 1.6		2.1 – 2.5
Week 2 1/27 – 1/31	2.6		3.1 HW 1 due		3.2 – 3.4
Week 3 2/3 – 2/7	5.1 – 5.3		5.4 – 5.6 HW 2 due		5.7
Week 4 2/10 – 2/14	13.1 – 13.2		<b>Exam 1: Ch 1-3, 5</b> HW 3 due		13.3 – 13.4 ♥
Week 5 2/17 – 2/21	13.5 – 13.6		14.1 – 14.2 HW 4 due		14.3 – 14.4
Week 6 2/24 – 2/28	15.1		15.2 – 15.3 HW 5 due		15.4
Week 7 3/3 – 3/7	16.1 – 16.2		<b>Exam 2: Ch 13-15</b> HW 6 due		17.1
Spring Break 3/10 – 3/14	No class	No class	No class	No class	No class
Week 8 3/17 – 3/21	17.2		17.3 HW 7 due		18.1
Week 9 3/24 – 3/28	18.2		18.3 HW 8 due		18.4
Week 10 3/31 – 4/4	19.1		<b>Exam 3: Ch 16-18</b> HW 9 due		19.2 – 19.3
Week 11 4/7 – 4/11	19.7		20.1 – 20.2 HW 10 due		20.3
Week 12 4/14 – 4/18	20.4		20.5 HW 11 due		No class
Week 13 4/21 – 4/25	21.1 – 21.2		21.3 – 21.5 HW 12 due		22.1 – 22.3
Week 14 4/28 – 5/2	23.1 – 23.5 conceptual		24.1 – 24.2 conceptual		24.3 – 24.4 conceptual
Finals Week 5/5 – 5/9	<b>12:00 noon</b> <b>Lewis 109</b>				