



ASTR 300B Radiation & Matter - Fall 2022

Instructor: Dr. Yancy Shirley (yshirley@arizona.edu – include “ASTR 300B” in Title/Subject)

TA: Samantha Scibelli (sscibelli@arizona.edu – include “ASTR 300B” in Title/Subject)

- **Class meetings**

- This class is scheduled to be taught in the in-person modality
- MWF 1-2pm Steward 208
- Final Exam Dec 12, 2022, 1-3pm in Steward 208

- **Drop-In Office Hours (Steward 360*):** Mo/We 4-5pm
- **Office Hours (By email appointment: Zoom/Steward 360):** Tu/Th 10am-5pm
- **TA Office Hours (By email appointment: Zoom/Steward T106):** Tu/Th 2-3pm

Course Description: ASTR 300B is a class studying the physical processes that emit, absorb, and scatter light in the context of the astrophysics of the interstellar medium. In this class you will learn radiative transfer in one dimension, learn the fundamental physics of thermal and non-thermal emission processes in the interstellar medium, and learn the basics of atomic and molecular spectroscopy.

Co-requisites: Completed ASTR 300A and have completed or are currently taking PHYS 331 (E&M I) and PHYS 371 (Quantum Mechanics I).

Course Learning Outcomes: Upon completion of this course, you will be able to:

1. Demonstrate the ability to meaningfully analyze, apply and integrate the principal findings, common applications, current problems, fundamental techniques, and underlying theory of the astronomy discipline.
2. Employ discipline skills related to the observational techniques, instrumentation, computational methods, and software applications used to investigate modern astrophysical phenomena and problems.
3. Participate in the scholarly, ethical, and discipline specific practices of the field at an emergent level.

Let's work together!

Emergencies and life circumstances happen, especially during this pandemic! Please contact me (yshirley@arizona.edu ; include ASTR 300B in the email subject line) if you know you will miss a class or cannot turn in a homework, and we can work out a solution. Please communicate with me during the semester – I will help you to succeed!

- **Statement on compliance with COVID-19 mitigation guidelines:** As we enter the Fall semester, the health and wellbeing of everyone in this class is the highest priority. Accordingly, we are all required to follow the university guidelines on COVID-19 mitigation. Please visit www.covid19.arizona.edu for the latest guidance.

*Steward 360 is my temporary office until the water leaks in Steward N326 are fixed.



- **Classroom attendance:**

- If you feel sick, or if you need to isolate or quarantine based on [University protocols](#), **stay home**. Except for seeking medical care, avoid contact with others and do not travel.
- Notify Dr. Shirley (yshirley@arizona.edu ASTR 300B in the email title/subject line) if you will be missing a course meeting or an assignment deadline before the deadline.
- Non-attendance for any reason does **not** guarantee an automatic extension of due date or rescheduling of examinations/assessments.
 - Please communicate and coordinate any request directly with Dr. Shirley.
- If you must miss the equivalent of more than one week of class, please contact the Dean of Students Office DOS-deanofstudents@email.arizona.edu to share documentation about the challenges you are facing.
- Voluntary, free, and convenient [COVID-19 testing](#) is available for students on Main Campus.
- If you test positive for COVID-19 and you are participating in on-campus activities, you must report your results to Campus Health. To learn more about the process for reporting a positive test, visit the [Case Notification Protocol](#).
- The COVID-19 vaccine and boosters are available for all students at [Campus Health](#).
- Visit the [UArizona COVID-19](#) page for the most up-to-date information.

Behavior: To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, Web surfing, etc.).

Dr. Shirley promises to be respectful of all students. He expects you will do the same as stated in the Student Code of Conduct and other University guidelines concerning disruptive and threatening behavior.

<http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting>

The University's Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself.

<https://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>

Accessibility and Accommodations: At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, <https://drc.arizona.edu>) to establish reasonable accommodations.

Please meet with Dr. Shirley to discuss your accommodations.



Nondiscrimination and Anti-harassment: Dr. Shirley is committed to creating and maintaining an environment free of discrimination as described in the University's policy at the link posted below. Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. He also wants to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

<http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Grading: Homework (67-90% - you decide) Final Exam (10-33% - you decide)
The final grade maximum scale is set at: A(>88%), B(>75%), C(>62%), D(>50%).

Your grade in this course will depend on your performance on the homework (67-90% of total) and the final exam (10-33% of total). We will be working on homework in class. Homework assignments are due at the beginning of class and **may be turned in by replying directly to the email in which they are sent as an attachment (either take a photo with your phone/tablet/computer or save as a pdf = preferable)**. *Please do not send a separate email.* Grades for homework may be disputed up to one week after they have been graded. All homework will be graded by Dr. Shirley. If you incorrectly solve a homework problem, I will email you suggestions and you may correct the problem and turn it back in for half additional credit within the next week (reply to the original email). Please be reasonable – don't turn-in a bunch of homework to re-grade near the end of the semester. I will not be handing out solutions to the homework – it is expected that you will solve all the problems yourself. The final homework score for the class is the average of all homework problem grades. You have the choice of how much homework will count for your final grade in this class between 67% and 90% of the total. This means you can decide how much the final exam will count toward the final grade (10% to 33%; you chose this percentage on the final exam). The final exam is open note meaning you will be allowed to use your notes, old homework, and books/readings for the class. The final exam will take place Monday Dec 12, 2022, 1-3pm in Steward 208.

Collaborative Learning

Active engagement in collaborative learning activities during class is **expected**. You are encouraged to share intellectual views and discuss freely the principles and applications of course materials. Modern science is collaborative, and people learn from talking to each other. However, graded work/exercises must be the product of independent effort unless otherwise instructed. What this means specifically for our class is: Do your own work for homework assignments and the final exam. Feel free to talk to the instructor or other students about homework assignments. We will have in-class collaborative homework assignments where you strongly encouraged to work together **during** the class period. However, don't just copy someone else's solutions. Always write up your own solutions. *Using or copying homework*

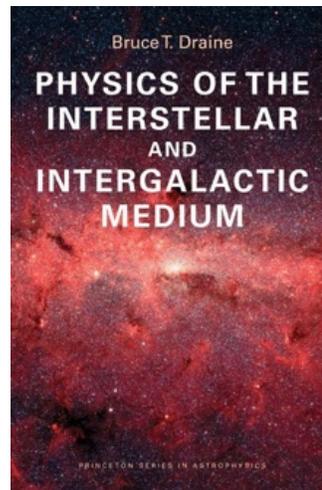
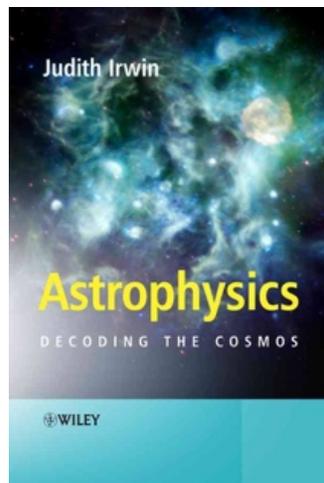


solutions from previous year's class is cheating. Sharing homework solutions (for instance on a Discord server, by email, etc.) is cheating. If there is cheating on a homework, then the final exam will be mandatory and count 33% of the final grade while homework will count 67%. Copying is cheating and will be handled according to the university policies. The repercussions for those found guilty of violating the Code will include loss of credit for the work, a mandatory final exam (33% of grade), and may include failure of the course. Students are expected to adhere to the UA Code of Academic Integrity.

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at

<http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete>
<http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal>

Equipment and software requirements: The two reference textbooks (optional) for the course are:



Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

- **Class Recordings:**

- For any lecture recordings, which are used at the discretion of the instructor, students must access content in D2L only. Students may not modify content or re-use content for any purpose other than personal educational reasons. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with [UArizona values](#) and educational



policies ([Code of Academic Integrity](#) and the [Student Code of Conduct](#)) are also subject to civil action.

- **Academic advising:** If you have questions about your academic progress this semester, please reach out to your academic advisor (<https://advising.arizona.edu/advisors/major>). Contact the Advising Resource Center (<https://advising.arizona.edu/>) for all general advising questions and referral assistance. Call 520-626-8667 or email to advising@arizona.edu.
- **Life challenges:** If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The [Dean of Students Office](#) can be reached at (520) 621-2057 or [DOS-deanofstudents@email.arizona.edu](mailto:deanofstudents@email.arizona.edu).
- **Physical and mental-health challenges:** If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520) 621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.
- **Food Insecurity:** Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live and believes this may affect their performance in the course, is urged to contact the Dean of Students for support. In addition, the University of Arizona Campus Pantry is open for students to receive supplemental groceries at no cost. Please see their Web site: <http://campuspantry.arizona.edu>

The University of Arizona provides a wide variety of resources to help you feel more at home in the UA environment. Examples of student resource/cultural centers include:

- The African-American Student Center
- The Asian & Pacific American Student Center
- The Guerrero Student Center
- The Immigrant Student Resource Center
- The LGBTQ+ Student Center
- The Native American Student Center
- The Transfer Student Center
- The Veterans Education and Transition Services Center
- The Women & Gender Resource Center

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.