

# ASTR 300B Radiation & Matter 2018 Syllabus

EDUC 432 MWF 2-3pm



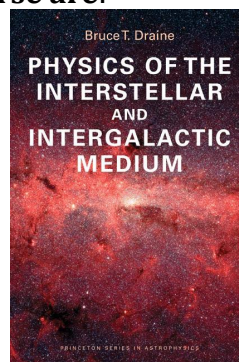
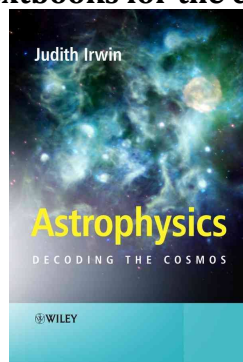
**Instructor: Dr. Yancy Shirley**                      **Phone: 626-3666**  
**[yshirley@email.arizona.edu](mailto:yshirley@email.arizona.edu)** (include "ASTR300B" in title)  
**N310 Steward Observatory "Open Door Policy"**  
**Office Hours:**  
<http://eldora.as.arizona.edu/~yshirley/Arizona/AST300B/>

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ASTR 300B is a class studying the physical processes that emit, absorb, and scatter light in the context of the physics 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. Topics we shall cover in this class include: continuum emission processes due to dust emission and absorption, free-free emission, and synchrotron emission; atomic ionization and recombination and electronic bound-bound transitions; statistical mechanics (Boltzmann Equation) and equilibrium; and molecular rotational, vibrational, and electronic transitions.

**Co-requisites:** It is expected that you have completed or are currently taking PHYS 331 (E&M I) and PHYS 371 (Quantum Mechanics I).

**The two reference textbooks for the course are:**



**Grading:** Homeworks (75%)      Final Exam (25%)

The final grade maximum scale is set at: A(>85%), B(>70%), C(>60%), D(>50%).

Your grade in this course will depend on your performance on the homeworks (75% of total including both in-class and take-home questions) and the final exam (25% of total). We will have several in-class homework problems where you will work in pairs (or occasionally a group of 3). In-class attendance is required to receive full credit for in-class problems (half credit will be given for in-class problems turned in as normal homework with skipped attendance). Homework assignments are due at the beginning of class. Homework due dates will be posted on the course webpage. Emergencies and life circumstances happen! Please contact me *in advance* if you know you will miss a class or cannot turn in a homework and we can work out a solution. If you incorrectly solve a homework problem, you may correct the problem and turn it back in for half additional credit with the next homework assignment. The final homework score for the class is the sum of all homework problem grades. You may drop your lowest homework problem scores in the calculation of the final grade.

**Final Exam:** is open-note meaning you will be allowed to use your notes, old homeworks, and books/readings for the class. **May 4<sup>th</sup> 1-3pm in EDUC 432**

Students 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. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

What this means specifically for our class is: Do your own work for take home assignments and the final exam. Feel free to talk to the instructor or other students about homework assignments. We will have in-class collaborative assignments where you work together. But the work you turn in for take home problems must be your own -- don't just copy out of class homework assignments. Copying is cheating and will be handled according to the university policies. Using or copying homework solutions from last year's class is also cheating. The repercussions for those found guilty of violating the Code will include loss of credit for the work and may include failure of the course or more extreme measures.

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

**Dispute of Grade:** Grades for homework may be disputed up to one week after they have been graded and handed back. Final course grades will be submitted by Monday May 7<sup>th</sup>.

## **POLICIES:**

- The University is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harrassment-policy>
- 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. Please be courteous to your fellow classmates (e.g., no texting, chatting, reading a newspaper, making phone calls, web surfing, etc. during class).
- The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendanceparticipation-and-administrative-drop>
- The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.
- Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See <https://deanofstudents.arizona.edu/absences>
- The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.
- Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact the Disability Resource Center (520-621- 3268) to establish reasonable accommodations. For additional information on the Disability Resource Center and reasonable accommodations, please visit <http://drc.arizona.edu>
- If you have reasonable accommodations, please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate.
- 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.