

ASTR400B Syllabus

Theoretical Astrophysics: Galaxies and Cosmology

Details:

Professor: Daniel Stark

email: dpstark [at] email.arizona.edu

Office hours: Time by appointment. Zoom link will be provided once appointment made.

Graduate TA: Andrew Sevrinsky

email: sevrinsky [at] email.arizona.edu

Office hours: TBA or by appointment.

The class is scheduled to be in-person and will meet Tuesday and Thursday at 2-3:15pm in Steward 204. The D2L course site will contain up-to-date information on the course, including lectures, HW, and exam review sheets.

Required Textbook

Introduction to Cosmology, Second Edition (2017), B. Ryden

Optional Textbook

Galaxies in the Universe: An Introduction, Second Edition (2007), L.S. Sparke & J.S. Gallagher

The course will follow the Ryden in the first 2/3 of the semester as we cover topics of modern cosmology and galaxy formation. The Sparke & Gallagher textbook will cover material that we will cover in the 1/3 of the class on galaxy evolution and dynamics. It is a good resource if you are interested in galaxies or star cluster dynamics and will supplement the lecture material, but it is not required for the course.

Grading:

Homework: 30%

Class Participation/Attendance: 20%

Exams: 50%

Homework

The homework sets will be accounted in class and provided on D2L. Students should first attempt to solve problems on their own. Books and published papers may be consulted, but students should not look at old homework solutions or solutions of the problems that may be available online. Discussion of the problems with other students is permitted after students have tried the problems on their own. The submitted homework should represent each student's individual work. Homework will be submitted *before* class on the due date. Anything turned in after the due date will be considered late. Work turned in before the next class period will receive 75% credit. Work turned in two class periods following the due date will receive 50% credit. Work turned in more than two class periods late will not receive credit. Exceptions can be made for some extraordinary circumstances.

Midterms and Final Exam

There will be a midterm examination during class on **Thursday, March 3**. The exam will be in-class and closed book and closed notes. The internet is not to be consulted during the exam. The final will also be

in-class closed book and will take place on **Monday May 9** from 3:30 pm to 5:30 pm. A review sheet will be provided, as will relevant equations. This will be scheduled by the professor and TA at a later date.

Class Participation / Attendance

This will be assessed through attendance, discussion/participation, and in-class activities. Please come to class ready to learn and engage with your peers. In order to ensure a productive learning environment for all students, please note the following rules:

1. Laptops, tablets, and cell phones must only be used for note taking.
2. Follow the University of Arizona Code of Academic Integrity

Additional guidelines on 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 your instructor(s) if you will be missing a course meeting or an assignment 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 your instructor.
- 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 booster is available for all students at [Campus Health](#).
- Visit the [UArizona COVID-19](#) page for the most up-to-date information.

Goals and Learning Outcomes for ASTR 400B

1. Demonstrate the ability to meaningfully analyze, apply and integrate the principle findings, common applications, current problems, fundamental techniques, and underlying theory of cosmology and galaxy formation.
2. Employ discipline skills related to the observational techniques, instrumentation, computational methods, and software applications used to investigate modern astrophysical phenomena and problems.
3. Develop proficiency with communicating, translating and interpreting fundamental astronomical concepts and research results in oral and/or written formats.
4. Develop mastery-knowledge of the study of cosmology and galaxies.

If you anticipate barriers related to the format or requirements of this course, please meet with me so that we can discuss ways to ensure your full participation in the course. If you determine that disability-related accommodations are necessary, please register with Disability Resources (621-3268; <https://drc.arizona.edu/>) and notify me of your eligibility for reasonable accommodations. We can then plan how best to coordinate your accommodations.

Code of conduct: Students are expected to understand and follow the Student Code of Conduct, which is available at <https://deanofstudents.arizona.edu/policies-codes>.

Some lectures may be recorded on Zoom and be placed available on D2L. For 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.

Additional information which may be of use:

- **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.
- **Statement on compliance with COVID-19 mitigation guidelines:** As we enter the Spring 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.