

Syllabus

Astronomy 400B: Galactic and Extragalactic Astrophysics

University of Arizona, Spring 2015
Tuesdays and Thursdays, 9:30-10:45am
Steward Observatory, Room 204

Instructor: Asst. Prof. Brant Robertson
Office: Steward N312
Email: ua.astro400B@gmail.com
Office Hours: Monday 1-3pm

Course Description

Astronomy 400B studies astrophysics on galactic and extragalactic scales. Topics will include the properties and evolution of the Milky Way, its stellar, gaseous, and dark matter components, the formation of structures (like galaxies) in the universe, and the cosmological evolution of the universe on large scales. We will apply the knowledge learned in the previous Astro 300A, 300B, and 400A courses to astrophysical problems and learn new topics such as galactic dynamics and cosmology.

Pre-requisites

The required pre-requisite courses are 300A, 300B, and 400A.

Grading

Homework 60%: six assignments, approximately bi-weekly
Midterm 20%: Thursday, March 12, in class, closed book/notes
Final 20%: Tuesday, May 12, 8:00-10:00am, closed book/notes

Homework Policy

Homework will be due at the beginning of class (by 9:35am) on the due date. Please turn in your homework in person. If you would like to turn your homework in early, please send me an email to make arrangements. Homework turned in after the due date / time will be considered late. Late homework will be given 75% credit if turned in within 2 days of the due date / time. After 2 days, no credit will be given. If you expect that you will need to turn your homework in late, please let me know in advance via email.

Required Text:

Galaxies in the Universe, 2nd Edition by Linda Sparke and John Gallagher.

Recommended Text:

Introduction to Cosmology by Barbara Ryden.

Classroom Expectations:

Astronomy 400B is a lecture course, and distracting behavior will prove a detriment to the class room experience. In class cell phone usage, texting, and use of computers beyond note taking (Facebook, Twitter, etc.) is prohibited and the instructor may ask you to leave the classroom if you engage in these distracting behaviors. Repeat occurrences may result in your dismissal from the course. Threatening behavior of any kind will not be tolerated and will be handled according to University of Arizona policies:

<http://policy.web.arizona.edu/threatening-behavior-students>

Academic Integrity:

We expect that students abide by the University of Arizona Code of Academic Integrity:

<http://deanofstudents.arizona.edu/academicintegrity>

Calendar of Religious Holidays:

We respect the University of Arizona Calendar of Religious Holidays:

<http://www.registrar.arizona.edu/religiousholidays/calendar.htm>

Guest Lecturers:

Occasionally, guest lecturers will give class sessions. These guest lecturers should be given the same attention and have the same authority as the course instructor.

Students with Disabilities:

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; drc.arizona.edu) and notify me of your eligibility for reasonable accommodations. We can then plan how best to coordinate your accommodations.

Order of Topics (subject to change)

1. Week of Jan 19: Introduction; SG Ch 1
2. Week of Jan 26: Milky Way, SG Ch 2
3. Week of Feb 2: Orbits, SG Ch 3;
4. Week of Feb 9: Galaxy Classification SG Ch 4;
5. Week of Feb 16: Spiral Galaxies, SG Ch 5
6. Week of Feb 23: Elliptical Galaxies, SG Ch 6
7. Week of Mar 2: quasars and black holes; local group
8. Week of Mar 9: Midterm (Mar 11); groups and cluster, SG Ch 7
9. Week of Mar 16: Spring break
10. Week of Mar 23: Intro to cosmology SG Ch 8.1, 8,2

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| 11. | Week of Mar 30: | Cosmological tests |
| 12. | Week of Apr 6: | Dark energy and Dark Matter |
| 13. | Week of Apr 13: | Hot big bang, CMB and the Early Universe |
| 14. | Week of Apr 20: | Galaxy formation SG 8.3 |
| 15. | Week of Apr 27: | Large Scale Structure SG 8.4 |
| 16. | Final review: | May 5 (Last Class) |
| 17. | Final Exam: | May 12 |