AS 203 – Principles of Astronomy 2
Introduction to Stellar and Galactic Astronomy
Syllabus – Spring 2014

Instructor
Prof. Elizabeth Blanton
Room: CAS 519
Email: eblanton@bu.edu
Phone: 617-353-2633
Office hours: W 12:00 – 1:30 pm, F 1:00 – 2:30 pm or by appointment

Teaching Fellow
Brandon Harrison
Room: CAS 524
Email: zephyr@bu.edu
Phone: 617-353-6445
Office hours: M 12:00 – 1:30 pm
W 1:00 – 2:30 pm

Teaching Fellow
Chad Madsen
Room: CAS 605A
Email: cmadsen@bu.edu
Phone: 617-353-8917
T 3:00 – 4:30 pm
Th 1:30 – 3:00 pm

Class Hours and Location

Lectures: MWF 11:00 am – 12:00 pm; CAS 502

Labs: You must sign up for one section; indoor labs are in CAS 521 or CAS 606
B1 Mon. 5:00 – 6:30 pm
B2 Tues. 5:00 – 6:30 pm
B3 Wed. 5:00 – 6:30 pm

Observing Labs: CAS rooftop telescopes
Observing (night) labs will be held immediately after the indoor (day) labs from 6:30 – 7:30 pm. You should go to observing labs on the same day that you go to your indoor labs. Later in the semester, the night labs will be moved to 7:30 – 8:30 pm since the sun will be setting later. In case of poor weather, observing labs will not be held. Your TFs will determine whether or not the observing lab will be held before the conclusion of the indoor lab. An audio recording will also be posted on the observatory messaging service (353–2630) that gives the weather status of lab. The J. B. Coit Observatory is located on the roof of the CAS building. The stairwell to the observatory is next to CAS room 520. Please note that the observatory is often windier and colder than street temperatures. Observing labs will often require extended periods outdoors so please dress accordingly. Observing labs may sometimes meet in the Astronomy Department Computer Lab, CAS room 606.

Course Website

There is a Blackboard Learn site for this course. I will post slides from lectures as well as homework assignments here. Note that classes will sometimes be taught using the chalkboard rather than powerpoint slides, so you cannot rely on the website to get all of the class notes (only powerpoint slides will be posted). https://learn.bu.edu

Required Text

Universe: Stars and Galaxies, Freedman, Geller & Kaufmann, 5th ed.
ISBN-13: 9781464135279
The text is available at the BU Barnes & Noble bookstore in Kenmore Square.

Other Texts

The following texts are at a higher level than the required, primary text and you may find them useful to consult. They will be on reserve in the 6th floor Astronomy library.

The Physical Universe: An Introduction to Astronomy, Shu
Astronomy: A Physical Perspective, Kutner

Course Description

In this course, we will study the properties of stars and galaxies, as well as their formation and evolution. Cosmology, the study of our Universe as a whole, will also be a component of the course. The course will consist of three lectures / week as well as weekly indoor and outdoor labs. There will be two midterms and one final exam. Several problems sets will be assigned over the course of the semester for homework.

Introduction to Stellar and Galactic Astronomy is intended as a first year course for those intending to major in Astronomy or Astronomy & Physics, those with a serious interest in astronomy, or those with some background in mathematics. As such, it will be more quantitative than the 100-level introductory astronomy courses.

Labs

The indoor and outdoor labs are an important part of this course. You are expected to attend your indoor session weekly. You also need to attend the outdoor portion weekly, weather permitting.

You should purchase a lab notebook for recording observations, notes, measurements, etc. from your labs. Lab write-ups will usually be due one week after the completion of each lab. The write-ups should include: a title, the purpose of the lab, the procedure you followed, any data you collected including estimates of errors, a description of the analysis of the data and the results you obtained, discussion, and conclusions.

Homework

There will be several problem sets assigned over the course of the semester. Many of the problems will be from your textbook. You must show all of your work in order to get full credit for the problems. The problem sets will generally be due one week after they are assigned.

Exams

There will be two midterm exams and one final exam. The dates of the midterm exams are **Friday, Feb. 21** and **Friday, March 28**. You may only take an exam on a different date if there are extreme circumstances, so please plan around these dates. The final exam will be on **Thursday, May 8, 12:30 – 2:30 pm**.

Grading

Grades will be calculated on the following basis:

Homework	25%
Labs	25%
Avg. of 2 Midterms	25%
Final Exam	25%

Academic Conduct

Collaboration with other students on homework and labs is acceptable. However, all work turned in must be by the student, and in the student's own words. Please read and abide by the Academic Conduct Code:
http://www.bu.edu/academics/resources/academic-conduct-code

Important Dates

Monday, January 20	Holiday, classes suspended
Wednesday, January 29	Last day to add class
Monday, February 17	Holiday, classes suspended
Wednesday, February 19	Substitute Monday schedule of classes
Thursday, February 20	Last day to drop without a W grade
Friday, February 21	**Midterm Exam #1**
Saturday, March 8 – Sunday, March 16	Spring Recess
Friday, March 28	**Midterm Exam #2**
Friday, March 28	Last day to drop with a W grade
Monday, April 21	Holiday, classes suspended
Thursday, April 24	Substitute Monday schedule of classes
Wednesday, April 30	Last day of AS 203
Thursday, May 8	**Final Exam**, 12:30 – 2:30 pm

Labs (other labs may be added or substituted)

Indoor	*Outdoor*
Time, Coordinates, and Navigation	Observing Constellations and Time
Intro to IDL (Interactive Data Language)	The Distance to Zeta Gem (Cepheids)
Characterization of CCD Detectors	
The Hyades Star Cluster	
The Distance to Zeta Gem (Cepheids)	

AS 203 – Course Outline

Dates	Topic	Reading
Jan. 15	NO CLASS	
Jan. 17	Introduction, night sky	Ch. 1
Jan. 20	Holiday, classes suspended	
Jan. 22 – 27	Night sky, celestial sphere, time, light	Ch. 2, 5
Jan. 29 – Feb. 3	Spectra, optics, telescopes, detectors	Ch. 5, 6
Feb. 5 – 10	Inverse square law, parallax, stars, magnitudes	Ch. 17
Feb. 12 – 14	Stellar colors, HR diagram, solar interior	Ch. 17, 16
Feb. 17	Holiday, classes suspended	
Feb. 19	(Monday schedule) Midterm review	
Feb. 21	**MIDTERM EXAM #1**	
Feb. 24 – 26	Solar interior, stars, stellar birth	Ch. 16, 18
Feb. 28 – Mar. 3	Stellar evolution, star clusters, binaries	Ch. 19
Mar. 5 – 7	Stellar death, white dwarfs, neutron stars	Ch. 20
Mar. 10 – 14	Spring Break!	
Mar. 17 – 19	Special relativity, general relativity, black holes	Ch. 21
Mar. 21 – 24	Milky Way Galaxy	Ch. 22
Mar. 26	Midterm review	
Mar. 28	**MIDTERM EXAM #2**	
Mar. 31 – Apr. 4	Galaxies	Ch. 23
Apr. 7 – 11	Galaxies, clusters of galaxies	Ch. 23
Apr. 14 – 18	Galaxies, active galaxies	Ch. 23, 24

AS 203 – Course Outline (cont.)

Dates	Topic	Reading
Apr. 21	Holiday, classes suspended (Mon. schedule on Thurs., Apr. 24)	
Apr. 23 – 28	Cosmology & Early Universe	Ch. 25, 26
Apr. 30	Summary and review	
May 8	**FINAL EXAM (12:30 – 2:30 pm)**	