

AS 701 – Introduction to Astrophysics Syllabus – Fall 2016

Instructor

Prof. Elizabeth Blanton

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Office hours: M 1:00 – 2:30 pm, W 12:30 – 2:00 pm, or by appointment

Class Hours and Location

MW 9:30 – 11:00 am; CAS 502

Required Text

An Introduction to Modern Astrophysics, 2nd edition, Carroll & Ostlie, ISBN-13: 978-0805304022. Available in the Barnes & Noble bookstore in Kenmore Square.

Course Description

This course will provide a general introduction to astrophysics for incoming graduate students. It is intended to introduce students with physics backgrounds to a wide range of astrophysical topics, and to fill in gaps for students who have more of an astrophysical background. Topics covered will include light, stellar atmospheres, stellar interiors, star formation and evolution, compact objects, interstellar medium, the Milky Way, galaxy formation and evolution, large-scale structure of the universe, and cosmology.

The course meets twice a week for lectures. Active class participation is encouraged.

Problem Sets

Problem sets will be assigned approximately weekly and will generally be due one week after they are assigned. It is important to keep up with the problem sets since we will be covering a large amount of material in a fairly short time period.

Exams

There will be one midterm and one final exam. The midterm exam will be on October 24 during regular class time. The final exam will be on December 16 from 9 – 11 am in room 502.

Grading

Problem Sets and Participation	35%
Midterm Exam	30%
Final Exam	35%

Academic Conduct

Please read and abide by Boston University's academic conduct code:
<http://www.bu.edu/cas/students/graduate/forms-policies-procedures/academic-discipline-procedures/>

AS 701 – Course Outline

Date	Topic	Reading
Sept. 7	Introduction, light, parallax, diagnostic survey	
Sept. 12	Light, magnitudes, blackbody rad., Planck func.	Ch. 3
Sept. 14	Stellar colors, light and matter	Ch. 3, 5
Sept. 19	Binary stars, masses, Kepler's laws	Ch. 7, 2
Sept. 21	Stellar spectra, Max.-Boltz., Saha, HR diagram	Ch. 8
Sept. 26	Stellar spectra, Max.-Boltz., Saha, HR diagram	Ch. 8
Sept. 28	Stellar atmospheres, intensity, flux, opacity	Ch. 8, 9
Oct. 3	Optical depth, radiative transfer, Eddington approx	Ch. 9
Oct. 5	Stellar interiors, HSE, Kelvin-Helmholtz	Ch. 10
Oct. 10	Holiday, NO CLASS	
Oct. 11	(TUES) Stellar interiors, pp chain, CNO cycle	Ch. 10
Oct. 12	Solar interior	Ch. 10, 11
Oct. 17	Star formation, ISM, protostars, Jeans M/R	Ch. 12
Oct. 19	Stellar evolution, post MS	Ch. 13
Oct. 24	MIDTERM EXAM	
Oct. 26	Stellar evolution, pulsation	Ch. 15, 14
Oct. 31	NO CLASS	
Nov. 2	White dwarfs, neutron stars, pulsars	Ch. 16
Nov. 7	Black holes, relativity	Ch. 17
Nov. 9	Close binaries, accretion	Ch. 18
Nov. 14	Milky Way Galaxy	Ch. 24
Nov. 16	Milky Way Galaxy	Ch. 24
Nov. 21	Galaxies	Ch. 25
Nov. 23	THANKSGIVING, NO CLASS	
Nov. 28	Galaxies	Ch. 25
Nov. 30	Galaxy Formation and Evolution	Ch. 26
Dec. 5	Structure of the Universe, Hubble Law, Clusters	Ch. 27
Dec. 7	Active Galaxies	Ch. 28
Dec. 12	Cosmology	Ch. 29
Dec. 16	FINAL EXAM, 9 – 11 am	