

# Physics 160: Introduction to Astronomy

## Syllabus · Fall 2016



Hubble Space Telescope

**Instructor:** Dr. Kate Brown, [kjonesm@hamilton.edu](mailto:kjonesm@hamilton.edu)

**Lecture:** 2:30-3:45 PM Tuesday & Thursday, Science Center G041

**Office Hours:** Wednesday & Friday 3-5 PM; Thursday 9-10 AM and by appointment

**Text:** *The Cosmic Perspective*, Bennett, Donahue, Schneider & Voit. 8th ed. (Older editions are fine.)

**Grading Scheme:** Homework: 25%; two mid-semester exams: 19% each; final exam: 25%; engagement: 12%.

**Educational Goals:** Our goals in this course are: To understand the basic structure of the cosmos, from the solar system and planetary dynamics to clusters of galaxies and the fate of the universe; To use a few key physical principles (e.g. conservation of energy and Newton's laws of motion) to explain wide-ranging phenomena relevant to astronomical systems; To understand how our scientific models of the cosmos have changed over time, as well as the content of and evidence for the current cosmological paradigm.

**Policies & Expectations:** Note: These policies are discussed at length on the first day of class.

(i) *Attendance:* Generally you should attend lecture. If you need to miss an occasional class, you do not need to let me know or make special arrangements. If you miss class on a regular basis and/or miss several consecutive classes, you will need to provide a legitimate, documentable excuse in order to not lose any points in the engagement category.

(ii) *Cell phones, laptops, etc:* Laptops, cell phones, tablets, etc. are generally not allowed in lecture. If you wish to take notes it should be on paper by hand. If this poses any difficulty for you please let me know and we can find a solution that suits your needs. Attempts to use these devices surreptitiously are obvious from the front of the class and are not appreciated. Please refrain from use or do not come to class.

(iii) *Engagement:* I hope this class will be interesting and fun. I do expect you to show up and pay attention. Twelve percent of your grade is determined by your 'engagement' with the class. If you show up, pay attention, and occasionally ask questions or come talk to me in office hours, you will get a perfect score for

this portion of the class. Excessive absences, more than one cell phone policy violation, studying for other classes during lecture, and things of that sort will result in a zero for this component.

**Topics Covered:** We will cover standard topics for an introductory astronomy class. We will aim to cover most if not all of the 24 chapters in the text. The chapter titles give a good idea of the purview of this course; they are:

- Chapter 1: A Modern View of the Universe (Scale and structure of cosmos)
- Chapter 2: Discovering the Universe for Yourself (Constellations, basics of the night sky)
- Chapter 3: The Science of Astronomy (Ancient astronomy, Copernican revolution & geocentric view)
- Chapter 4: Making Sense of the Universe: Understanding Motion, Energy & Gravity
- Chapter 5: Light and Matter
- Chapter 6: Telescopes
- Chapter 7: Our Planetary System
- Chapter 8: Formation of the Solar System
- Chapter 9: Planetary Geology: Earth and the Other Terrestrial Worlds
- Chapter 10: Planetary Atmospheres: Earth and the Other Terrestrial Worlds
- Chapter 11: Jovian Planet Systems
- Chapter 12: Asteroids, Comets, and Dwarf Planets: Their Nature, Orbits, and Impacts
- Chapter 13: Other Planetary Systems: The New Science of Distant Worlds
- Chapter 14: Our Star
- Chapter 15: Surveying the Stars
- Chapter 16: Star Birth
- Chapter 17: Star Stuff
- Chapter 18: The Bizarre Stellar Graveyard (White Dwarfs, Neutron Stars, Black Holes)
- Chapter 19: Our Galaxy
- Chapter 20: Galaxies and the Foundation of Modern Cosmology
- Chapter 21: Galaxy Evolution
- Chapter 22: The Birth of the Universe
- Chapter 23: Dark Matter, Dark Energy, and the Fate of the Universe
- Chapter 24: Life in the Universe

**Accommodations:** If the policies and expectations for this class are restrictive of your academic efforts in any way please let me know and I would be happy to work with you to find a solution. I request that anyone needing academic adjustments or accommodations speak with me during the first two weeks of class. All discussions will remain confidential. Students with disabilities should also contact Allen Harrison, Associate Dean of Students for Multicultural Affairs and Accessibility Services in the Office of the Dean of Students (Elihu Root House; ext. 4021) who coordinates services for students with disabilities.