

General Astronomy
Physics ASTR 001
Spring 2008

Instructor: Sajan Saini

Office Hours: Wednesday, 3:00–4:00 PM, room B216

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Textbook: *The Essential Cosmic Perspective, 4th Edition (Media Update)* by J. Bennett, M. Donahue, N. Schneider and M. Voit (Pearson Addison Wesley)

Classroom Response System: iClicker remote (\$10 mail-in rebate)

Class Schedule: Monday & Wednesday, 4:30–5:45 PM, room C201

Overview:

The course introduces students to the general concepts of Astronomy. Topics covered include the history of astronomy and introduction to its key topics: observation of the Moon and stars; planet and solar system formation; the life and death of stars; modern cosmology and the mystery of dark matter. Emphasis will be placed on a qualitative exploration of these topics, focusing on the underlying physical interpretation in favor of mathematical analysis. Online tutorials and online homework assignments will be accessible via the publisher's Mastering Astronomy website. Interactive class discussions will make use of classroom clickers; clickers monitor student participation as well.

As a PLAS course, General Astronomy fulfills an Area of Knowledge and Inquiry requirement by teaching students a natural science and the scientific process: how scientists and mathematicians collect and explain astronomical data, from viewing without instrumentation to observation with optics, spectroscopy, x-ray and gamma rays. The students will appreciate how instruments and theories of science have evolved over time, building on milestone achievements of the past (eg., Newton building on Galileo's work, Einstein's Theory of Relativity leading to the work of Hubble and the Big Bang Theory). Close attention is paid to the process of posing questions in order to keep a theory open to rigorous experimental testing. Students will be engaged to critically think and discuss as active citizens about two modern dialogues in science: (1) the unique role of Earth in the solar system as a habitat for life versus the problem of global climate change; (2) how the birth of nuclear science has led to our understanding of the Sun's energy output, the development of nuclear weapons, and current debate over the control and employment of such weapons or energy sources.

Prerequisite: Not open to students who have passed General Astronomy 2 (ASTR 002)

Grading:

Attendance	10%
Homework Assignments (online submission)	25%
Mid-Term Exam: March 26 (in-class, 1 hour)	25%
Final Exam: date TBA	40%

Make-Up Exams:

No make-up exams are given unless you have informed me **in advance** that you will miss a test, and why. Make-up exams are extremely rare, and always precede the regular exam. There is no “extra credit” assignments or projects; spend your time reading the notes and homework, so you can do well in the exams.

Important Websites:

- CUNY Blackboard class website

<https://doorway.cuny.edu/Doorway?ApplicationName=blackboard>

Select “QC_ASTR_001 E4MBA: General Astronomy [1171]” course link.

- Mastering Astronomy website

<http://www.masteringastronomy.com/>

Click on “The Essential Cosmic Perspective” and register. Registration to the Mastering Astronomy website requires purchase of a new copy of the textbook. A registration PIN will be provided with your new copy. Once you have registered, enroll into the General Astronomy 1 course, using Course ID: MASAINI86987.

- A great NASA website with beautiful photos of stars and planets

<http://antwrp.gsfc.nasa.gov/apod>

- The Star Gazer website

<http://www.jackstargazer.com/>

Lecture Slides:

Lecture Slides for the week will be posted on the CUNY blackboard class website during the previous weekend. (When you registered for this course, you were automatically given access to the CUNY blackboard Astronomy 1 class website.) Students are responsible for printing the slides and bringing them to class; the slides serve as your lecture notes, to which you can add further comments raised in class.

Reading Textbook Chapters:

At the start of each class’ Lecture Slides will be listed the relevant chapter sections that students should read, in order to be suitably prepared for the Homework and Exams.

Homework and Tutorials:

Homework and tutorials for the week will be assigned through the Mastering Astronomy class website, every Thursday. It is each student’s responsibility to login, complete and online submit these assignments within the week, before the next assignment. At the start of each Thursday lecture, there will be an opportunity to ask about the last homework.

Registering iClickers:

In order to register your iClicker remote for logging class attendance and participating in class discussions, go to the iClicker website (<http://www.iclicker.com/registration>) and registers your first name, last name, Queens College student ID and iClicker remote ID (found on the back of your remote). You’ll be prompted to enter a visual security code, and your registration will be complete.

Attendance:

Attendance will be graded via in-class query of your iClicker remote. Attendance is important because:

- Coming to lecture will help you determine what will be the focus of topics for the exams;
- We will review difficult homework questions.

Stargazing:

General Astronomy 1 does not have a lab component, and does not require any nighttime viewing of the stars for your final grade. However, astronomy *is* the very act of observing the heavens... Jack Horkheimer (Executive Director, Miami Museum of Science & Space Transit Planetarium, *aka* The Star Gazer) will give us advice, via his weekly video podcasts, on interesting naked-eye astronomical phenomena to see; you're invited to take an evening stroll outside and look up!

Schedule of Topics**Developing Perspective
(February)**

- Our place in the universe
- Discovering the universe
- The Science of Astronomy

Textbook Part I

**Key Concepts for Astronomy
(February, March)**

- Making sense of the universe: motion, energy, gravity
- Light as a messenger of cosmic information

Textbook Part II

**Learning from Other Worlds
(March, April)**

- Formation of planetary systems: our solar system and beyond
- Earth and the terrestrial worlds
- Jovian planet systems
- Asteroids, comets and dwarf planets

Textbook Part III

**Stars
(April)**

- Our star
- Surveying the stars
- Star stuff and the stellar graveyard

Textbook Part IV

**Galaxies and Beyond
(May)**

- Our galaxy and modern cosmology
- The dark matter mystery

Textbook Part V