

Introduction to Astronomy (Ast 1040) Call no: 85910, Sec. 1

Spring 2009

Time: MWF 11:00 - 11:50

Location: LSci 185

Instructor: Howard Mooers
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Office hours: 12:00 – 13:00 MW, or by appointment

Text: Horizons: Exploring the Universe, 10th Ed., by Seeds (earlier editions may be acceptable)

Course Description (from UMD catalog)

AST 1040 - Introductory Astronomy (LE CAT5)

(3.0 cr; A-F or Aud, fall, spring, summer, every year)

Survey of present knowledge of solar system, interstellar space, stars, galaxies, and universe. Historical development of astronomy as a science.

Course objectives: The overall objective of this course is to provide insights into science and scientific thought through the discipline of Astronomy. *“astronomy noun; the scientific study of the universe and of objects which exist naturally in space, such as the moon, the sun, planets and stars”*

1. Develop an appreciation for the Cosmos, its contents, and origin,
2. Familiarize yourself with the night sky and its seasonal changes,
3. Learn the views of the universe of early cultures and how views have changed through time,
4. Learn the names of the key players and history of the development of modern astronomy,
5. Develop an understanding of the Solar System and the motions and nature of the planets,
6. Develop an understanding of the processes of stellar evolution, galaxy formation, black holes, and more.
7. Explore the question “is there life out there?”

Liberal Education Goals and Objectives – This course fulfills **Category 5** of the UMD liberal education requirements—**Physical and Biological Sciences without Lab**. Courses in this category should focus on the observation, identification, description, experimental investigation, and theory of natural phenomena. We will explore science and scientific thought through the study of astronomy. Since the dawn of the human race the night sky has spawned myths, legends, and stories. The history of astronomy is woven through the very fabric of cultural tradition. Therefore the study of astronomy gives us the opportunity to explore the development of scientific thought over thousands of years of cultural evolution.

Student responsibilities:

1. **** Attendance is Required and Expected!** Lectures are not simply reiteration of textbook material, but will supply additional information and provide emphasis of the most important topics. PowerPoint presentations, videos, and planetarium visits will provide visualization of astronomical concepts and processes. I will occasionally take roll in the course by passing around a sign-up sheet.
2. *Students will take all scheduled exams at the times stated on the schedule above!* In the event of an unforeseen circumstance you cannot take the exams at the scheduled times, you must make alternative arrangements **PRIOR** to the test. Exam Makeup Policy: Makeup exams, if necessary, will consist of 10 Essay Questions and will be given at a time to be arranged by the professor and student
3. *If you miss a lecture it is your responsibility to obtain lecture notes or handouts.*

Special Needs: Individuals who have any disability, either permanent or temporary, which might affect their ability to perform in this class are encouraged to inform the instructor at the start of the term. Adaptation of methods, materials, or testing may be made as required to provide for equitable participation.

Course outline (subject to change)

Week	Dates	Topics	Required Reading	Misc.
1	Jan 20	Course introduction, scale of the cosmos		
2	Jan 26	Stars, constellations, motions of the sky, seasons, orbital motion	Chap. 1.	
3	Feb 2	Motions of the sky (cont.). Human perceptions of the sky, observations, Greek Astronomy: Aristotle, Ptolemy	Chaps. 2, 3.	Online Quiz 1
4	Feb 9	Renaissance Astronomy Copernicus, Brahe, and Kepler	Chap. 3, 4.	Online Quiz 2
5	Feb 16	Galileo and Newton. The electromagnetic spectrum, telescopes and other tools of space exploration.	Chaps. 4, 5.	Online Quiz 3
6	Feb 23	Light, atoms, light spectra, Doppler shift. The Sun.	Chaps. 6, 7.	Online Quiz 4;
7	Mar 2	The Sun (cont.). Stars – brightness, luminosity, size, stellar evolution.	Chaps. 7, 8.	Online Quiz 5 <i>Exam 1</i>
8	Mar 9	Star formation and structure.	Chap. 9.	Online Quiz 6
9	Mar 23	The life and death of stars.	Chap. 10.	Online Quiz 7
10	Mar 30	The life and death of stars (cont.) Exotic phenomena – neutron stars and black holes.	Chap. 10, 11.	Online Quiz 8
11	April 6	The Milky Way.	Chap. 12.	Online Quiz 9
12	April 13	The rest of the Galaxies	Chap. 13, 14.	Online Quiz 10, <i>Exam 2</i>
13	April 20	Cosmology.	Chap. 15.	Online Quiz 11
14	April 27	Origin of the Solar System The terrestrial planets	Chap 16, 17.	Online Quiz 12
15	May 4	Terrestrial planets (cont.) The outer Solar System	Chap. 17, 18, 19, 20	Online Quiz 13
		<i>Final Exam Wednesday May 13, 10:00 – 11:55 am.</i>		

OTHER COURSE REQUIREMENTS:

Planetarium shows: During the weeks of Jan 26, Feb. 2, and Feb, 9 there will several shows scheduled at the Marshall W. Allworth Planetarium. Each student is required to attend a planetarium show that will orient you to the night sky and the motion of the planets. You **MUST** sign up for a time. Attendance at one show is required and will count as part of your grade.

Online Quizzes – There will be 13 online quizzes, one each week except the first two weeks. The quizzes are required. You have the option to view quizzes 5 times and you can submit each quiz two times. The highest score will be counted. Quizzes are due by the times specified on the class website. **THERE WILL BE NO TIME EXTENSIONS ON QUIZZES!**

Point totals and Grading

Planetarium visit	25	
Online weekly quizzes	100 pts	Final point totals will be graded on a curve with the following guarantees:
Exam 1	100 pts	90% and above A
Exam 2	100 pts	80% B
Final Exam	150 pts	70% C
Attendance	50 pts	60% D
TOTAL	525 pts	< 60% F

Grades of “I” (Incomplete) will only be assigned if there is a reasonable expectation that the course can be completed in a timely fashion.

Academic Integrity Policy: All forms of academic dishonesty are prohibited and will have consequences that range from no credit on an assignment, failing exams, failing or being expelled from a course, being expelled from the University, or even legal consequences. To view the complete University of Minnesota policy on academic integrity visit <http://www.d.umn.edu/assl/conduct/integrity/student.html>.