

ASTR 110

INTRODUCTION TO ASTRONOMY

3 Credits

TuTh, 10:00 – 11:15 AM

INSTRUCTOR: Sean P. Moroney, Ph.D.
OFFICE: Imiloa 118
OFFICE HOURS: TuTh 8:45 – 9:45 AM
TELEPHONE: 236-9117 **EMAIL:** moroney@hawaii.edu
EFFECTIVE DATE: Spring 2015

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide O'ahu's Ko'olau region and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

Introduction to the astronomical universe for non-science majors.

Activities Required at Scheduled Times Other Than Class Times

No additional activities

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:

1. Outline the development of astronomy from ancient times to present and explain the role of the scientific method in this historical context.
2. Describe and explain the apparent motions of the celestial bodies, especially as related to naked-eye observations.
3. Identify the appropriate instruments used by astronomers to understand the universe.
4. Outline the origins of our solar system and appraise the leading cosmological theories of the origin of the universe.
5. Describe the physical and chemical properties of the objects in our solar system and apply the concept of comparative planetology.
6. Describe the physical and chemical nature of stars, and especially our sun, and apply the astronomical techniques used to measure stellar properties.
7. Outline the evolutionary stages in a star's life and compare and contrast the structure of our Milky Way and other galaxies.
8. Apply astronomical concepts to the search for extraterrestrial life.

COURSE MODULES

The course is structurally divided into 5 Modules:

- Module 1: Here we cover the basics. These include the appearance of the universe from a moving platform (Earth) within the solar system and the basic principles of physics necessary to understand how the universe works. These principles include the laws of motion, gravitation, electromagnetic radiation, and atomic structure.
- Module 2: The origin of the solar system is discussed. Then we conduct a survey of the planets, their moons, and the other bodies orbiting the sun.
- Module 3: We then consider the sun and its properties. The nature and the variety of stars is discussed. The H-R Diagram is introduced both as a tool for cataloging star types and as a way of displaying their evolutionary development. The end-stages of low- and high-mass stars (white dwarfs, neutron stars, and black holes) are discussed.
- Module 4: The Milky Way Galaxy is explored. Then, the various types of galaxies at great distances are reviewed.
- Module 5: Finally, the frontiers of current astronomical discoveries are discussed. The topics here include dark matter, dark energy, the cosmology of the Big Bang, and the search for extraterrestrial life.

COURSE TASKS

The course tasks are described as follows:

- Homeworks:
The Homework assignments, related to each Module, will be drawn from the textbook, from the www.masteringastronomy.com website, and from other sources.
- MasteringAstronomy Quizzes:
These Quizzes will be accessed from the www.masteringastronomy.com website. The Quizzes' content will be related to the topics covered in each Module.
- Group Projects:
In each Module, Teams will explore specific topics and will prepare presentations to be given in class and/or to be posted onto the course site in Lulima.
- Astro Paper:
A specific topic will be explored in some detail and a written report on the topic will be submitted by the end of the course. Details will be provided separately.
- Midterm Exam:
A summative examination of the material covered up to the approximate midpoint of the course will be given.
- Final Exam:
A summative examination of the entire course, with emphasis on the latter half, will be given at the course's end.

GRADING OF COURSE TASKS

The course grade will be computed from a set of quizzes and tests and a final examination, as follows:

	Number	Max. Score
Homeworks	Best 16 of 18	20%
MA Quizzes	Best 16 of 18	15%
Group Projects	5	25%
Astro Paper	1	20%
Midterm Exam	1	10%
Final Exam	1	10%
	Total =	100%

(MA = MasteringAstronomy)

Course work submitted after specified Due Dates will be subject to a Lateness Deduction, to be specified. The lateness may be excused for a valid documented reason.

GRADING SCALE

The final letter grade will be based on the total percentage that the student has earned from all the course tasks. Each letter grade and its respective level of achievement is provided in the following table:

Letter Grade	Definition
A	90% - 100% of cumulative points possible
B	80% - 89.9% of cumulative points possible
C	70% - 79.9% of cumulative points possible
D	60% - 69.9% of cumulative points possible
F	below 60% of cumulative points possible

Other grades may be assigned as listed in the WCC Catalog.

LEARNING RESOURCES

Textbook:

The Essential Cosmic Perspective Plus MasteringAstronomy with eText – Access Card Package, 7th ed. by Bennett, Donahue, Schneider, and Voit. Pearson Education, Inc. ISBN = 9780321927842

Website:

www.masteringastronomy.com: Pearson Education's Astronomy website, replete with animations, videos, and eText. This will also house the Quizzes for the course, permitting their completion according to the student's own schedule.

ATTENDANCE

Regular attendance is important for success in this course. Roll will be taken in every class.

DISABILITIES ACCOMMODATION STATEMENT

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale 'Akoakoa 213 for more information.

Revised May 25, 2011

COURSE CALENDAR**ASTR 110 – Spring 2015**

Class	Date	Module	Topics
1	Tue - 13 Jan		Course Introduction
2	Thu - 15 Jan	1 - Basics	Selected Topics from Chs. 1 - 5
3	Tue - 20 Jan		
4	Thu - 22 Jan		
5	Tue - 27 Jan		
6	Thu - 29 Jan	2 - Solar System	Selected Topics from Chs. 6 - 9
7	Tue - 3 Feb		
8	Thu - 5 Feb		
9	Tue - 10 Feb		
10	Thu - 12 Feb		
11	Tue - 17 Feb		
12	Thu - 19 Feb	Project #2	
13	Tue - 24 Feb	3 - Sun and Stars	Selected Topics from Chs. 10 - 13
14	Thu - 26 Feb		
15	Tue - 3 Mar		
16	Thu - 5 Mar		
17	Tue - 10 Mar		
18	Thu - 12 Mar	Project #3	
19	Tue - 17 Mar		Review
20	Thu - 19 Mar		Midterm Exam (Modules 1 - 3)
21	Tue - 31 Mar	4 - Galaxies	Selected Topics from Chs. 14 & 15
22	Thu - 2 Apr		
23	Tue - 7 Apr		
24	Tue - 9 Apr		
25	Thu - 14 Apr	5 - Frontiers	Selected Topics from Chs. 16 - 18
26	Tue - 16 Apr		
27	Tue - 21 Apr		
28	Thu - 23 Apr		
29	Tue - 28 Apr		
30	Thu -30 Apr	Project #5	
31	Tue -5 May		Final Topics and Review
	TBA		Final Examination (Comprehensive)

