ASTR 110L INTRODUCTION TO ASTRONOMY – LAB

CRN = 63067

1 Credit

Asynchronous Online Course – Check in Daily

INSTRUCTOR: Sean P. Moroney, Ph.D.

OFFICE HOURS: WCC CAMPUS - Imiloa 118 Thursdays, 10:00 AM – 12:00 PM

ONLINE - Zoom Sundays, 8:00 – 9:00 PM

TELEPHONE: (808) 236-9117 **EMAIL:** moroney@hawaii.edu

EFFECTIVE DATE: Summer I 2018 (21 May – 29 June 2018)

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

Laboratory course to accompany ASTR 110 for non-science majors.

Activities Required at Scheduled Times Other Than Class Times

No additional activities

ONLINE ACCESS

This course may be found at windwardcc.instructure.com.

LEARNING RESOURCES

Software:

Starry Night College

Course Canvas site:

www.windwardcc.instructure.com: It is here that the course comes alive. Explore this site and ask questions about its features.

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 SECTIONS/MODULES

The course is structurally divided into 3 Sections, each of which is composed of 5 Modules, within which various Course Tasks are to be carried out and completed. The Course Calendar below identifies those time segments.

Section 1 (Weeks 1 & 2): Here we focus on the Earth, Moon and Sun, their properties and interactions.

Section 2 (Weeks 3 & 4): The focus turns to the solar system, which includes the planets, their moons, and the other bodies orbiting the sun. Finally, the discoveries of exoplanets are reviewed.

Section 3 (Weeks 5 & 6): Lastly, we focus on the stars and their properties, and then finish with a review of the Milky Way and other galaxies.

COURSE TASKS

The course tasks described here rely considerably upon active involvement and participation by all course members. Details on all these course tasks will be supplied separately.

- **Starry Night (SN) Exercises (30% of the Course Grade):**
  - In each Module, students will perform various tasks using the Starry Night software and will complete a brief Quiz on each.
  - There will be 44 such Exercises during the term. The Exercises will have Due Dates that are listed in the Table below. Announcements regarding Exercises opening and their Due Dates will be posted at regular intervals in the Course Canvas site.
  - Of the 44 Exercises, the lowest 4 grades will be dropped from the calculation of the Final Grade.

- **McGraw-Hill (MH) Exercises (30% of the Course Grade):**
  - In each Module, students will perform various tasks using the McGraw-Hill website and will complete a Lab Report on each. Insights gained from the Starry Night Exercises should be included in the Lab Reports.
  - There will be 10 such Lab Reports during the term. The Lab Reports will have Due Dates that are listed in the Table below. Announcements regarding Lab Reports opening and their Due Dates will be posted at regular intervals in the Course Canvas site.
  - Of the 10 Exercises, the lowest 2 grades will be dropped from the calculation of the Final Grade.

- **Project (20% of the Course Grade):**
  - There will be a Project relevant to the course that will begin at the start of the course and that will be completed before the end of the course. The Project will measure the knowledge gained and applied from the various activities of each of the Sections. Details will be provided in Canvas.

- **Ask the Student (AskS) (10% of the Course Grade):**
  - In each of the 6 Weeks, the Students will be asked, in a Discussion Forum, a question relevant to the current Starry Night and McGraw-Hill activities. The Student will be unable to read any other Students' answers until he/she posts his/her response.
  - The answer given will be judged on the depth and correctness of the information provided.
  - After the Due Date has passed, the questions asked, and their answers, will continue to be visible; **no new answers may be posted after that time**.

- **Ask the Professor (AskP) (10% of the Course Grade):**
  - In each of the 6 Weeks, the Students will ask the Professor, in a Discussion Forum, a question relevant to the current Week's activities. The questions asked should be thought-provoking and indicative of genuine curiosity.
  - Follow-up questions from the same student and/or from different students are welcome.
  - The grade given for the question will depend on the quality of the question, with a trivial question getting a lower grade and a profound thought-provoking question getting a higher grade.
  - After a Due Date has passed, the questions asked, and their answers, will continue to be visible; **no new questions may be posted after that time.**

GRADING OF COURSE TASKS

The course grade will be computed as follows:

	Number	Max. Score
Starry Night Exercises	Best 40 of 44	30%
McGraw-Hill Exercises	Best 10 of 11	30%
Projects	1	20%
Ask the Student	Best 5 of 6	10%
Ask the Professor	Best 5 of 6	10%
	Total =	**100%**

Course work submitted after specified Due Dates will be subject to a Lateness Deduction, which will generally be 10% per calendar day late after the Due Date. The Lateness Deduction 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.

ATTENDANCE

Checking in regularly and interacting with the Instructor and the class is expected. It will be important to observe the Due Dates for the course. A steady progress forward will get us all successfully to the goal.

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 ʻAkoakoa 213 for more information.

Revised May 25, 2011

COURSE CALENDAR

ASTR 110L OL – Summer 2018

Week	Date
1	21 – 27 May
2	28 May – 3 June
3	4 – 10 June
4	11 – 17 June
5	18 – 24 June
6	25 – 1 July
	Summer I Semester Ends 1 July 2018

CALENDAR OF ASSIGNMENTS

STARRY NIGHT (SN) & MCGRAW-HILL (MH) EXERCISES

MODULE	DUE DATE	DATES AVAILABLE	SN	MH
1	29 May	21 to 31 May	A0, A1-A7	MH1 - GRAVITY VARIATIONS
2	5 June	28 May to	A8-13	MH2 - SEASONS
		7 June		MH3 - LUNAR PHASES
3	12 June	4 June to	B1-C2	MH4 - ECLIPSE
		14 June		MH5 - KEPLER'S 2ND LAW
4	19 June	11 June to	C3-D4	MH6 - KEPLER'S 3RD LAW
		21 June		MH7 - ORBITAL VELOCITY
5	25 June	17 June to	E1-F4	MH8 - RETROGRADE MOTION
		27 June		MH9 - EXTRASOLAR PLANETS
6	1 July	21 June to	F5-G3	MH10 - BLACKBODY RADIATION
		1 July		

PROJECT

	Due	Available	
Project	Date	From	To
1	24 June	21 May	26 June

CALENDAR OF ASSIGNMENTS

ASK THE STUDENT/PROFESSOR (Ask-S/Ask-P)

	Due	Available	
Module	Date	From	To
1	27 May	21 May	29 May
2	3 June	28 May	5 June
3	10 June	4 June	12 June
4	17 June	11 June	19 June
5	24 June	18 June	25 June
6	1 July	25 June	1 July