

ASTR 110L INTRODUCTION TO ASTRONOMY – LAB

CRN = 62476

3 Credits

Asynchronous Online Course – Check in Daily

INSTRUCTOR: Sean P. Moroney, Ph.D.
OFFICE HOURS: WCC CAMPUS - Imiloa 118
ONLINE - BlackBoard Collaborate To Be Scheduled
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EFFECTIVE DATE: Spring 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.

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: Here we focus on the Earth, Moon and Sun, their properties and interactions.

Section 2: 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: 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 42 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 42 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 14 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 14 Exercises, the lowest 2 grades will be dropped from the calculation of the Final Grade.

- **Projects (20% of the Course Grade):**
 - In each Section, a Project relevant to the current Lab activities will be made available. The Projects 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 3 Sections, the Students will be asked, in a Discussion Forum, 2 questions 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. Based on the response, there will be a follow-up question, probing more deeply into the previous response.
 - With 100 points per AskS, the first response is worth a maximum of 60 points and the second response is worth a maximum of 40 points.
 - After a Section closes out, the questions asked, and their answers, will continue to be visible; no new questions may be posted after that time.

- **Ask the Professor (AskP) (10% of the Course Grade):**
 - In each of the 3 Sections, the Students will ask the Professor, in a Discussion Forum, a question relevant to the current Lab 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 Module closes out, 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 38 of 42	30%
McGraw-Hill Exercises	Best 12 of 14	30%
Projects	3	20%
Ask the Student	6	10%
Ask the Professor	6	10%
	Total =	100%

<p>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.</p>
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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

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.

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 'Akoakoa 213 for more information.

Revised May 25, 2011

COURSE CALENDAR

ASTR 110L OL – Spring 2018

Schedule of Sections and Modules

<u>Section</u>	<u>Topics</u>	<u>Module</u>	<u>Date</u>
Section 1	Earth, Moon, & Sun	1	8 – 21 Jan
		2	15 – 28 Jan
		3	22 Jan – 4 Feb
		4	29 Jan – 11 Feb
		5	5 – 18 Feb
Section 2	The Solar System	6	12 – 25 Feb
		7	19 Feb – 4 Mar
		8	26 Feb – 11 Mar
		9	5 – 18 Mar
		10	12 – 25 Mar
Section 3	Stars & Galaxies	11	19 Mar – 8 Apr
		12	2 – 15 Apr
		13	9 – 22 Apr
		14	16 – 29 Apr
		15	23 Apr – 6 May
Spring Semester Ends		11 May 2018	

Module 11 is a week longer than the other Modules because it contains the Spring Recess, which runs from 25 to 31 March.

CALENDAR OF ASSIGNMENTS

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

SN & MH ASSIGNMENTS			
SECTION	MODULE	SN	MH
1	1	A0	
	2	A1-4	MH1 - GRAVITY VARIATIONS
	3	A5-7	MH2 - SEASONS
	4	A8-11	MH3 - LUNAR PHASES
	5	A12-13	MH4 - ECLIPSE
2	6	B1-3	MH5 - KEPLER'S 2ND LAW
	7	B4-6	MH6 - KEPLER'S 3RD LAW
	8	C1-2	MH7 - ORBITAL VELOCITY
	9	C3-5	MH8 - RETROGRADE MOTION
	10	D1-4	MH9 - EXTRASOLAR PLANETS
3	11	E1-3	MH10 - STELLAR PARALLAX
	12	E4, F1-2	MH11 - DOPPLER SHIFT
	13	F3-5	MH12 - BLACKBODY RADIATION
	14	F6-8	MH13 - BOHR ATOM
	15	G1-3	MH14 - BINARY STARS

CALENDAR OF DUE DATES

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

SN & MH				
SECTION	MODULE	OPEN	DUE	CLOSE
1	1	8-Jan	21-Jan	24-Jan
	2	15-Jan	28-Jan	31-Jan
	3	22-Jan	4-Feb	7-Feb
	4	29-Jan	11-Feb	14-Feb
	5	5-Feb	18-Feb	21-Feb
2	6	12-Feb	25-Feb	28-Feb
	7	19-Feb	4-Mar	7-Mar
	8	26-Feb	11-Mar	14-Mar
	9	5-Mar	18-Mar	21-Mar
	10	12-Mar	25-Mar	28-Mar
3	11	19-Mar	8-Apr	11-Apr
	12	2-Apr	15-Apr	18-Apr
	13	9-Apr	22-Apr	25-Apr
	14	16-Apr	29-Apr	2-May
	15	23-Apr	6-May	9-May

PROJECTS

	Due	Available	
Project	Date	From	To
1	18 February	15 January	21 February
2	18 March	12 February	21 March
3	6 May	19 March	9 May

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

AskS & AskP				
MODULE	ASK	OPEN	DUE	CLOSE
1	1	8-Jan	25-Jan	28-Jan
	2	25-Jan	11-Feb	14-Feb
2	3	12-Feb	1-Mar	4-Mar
	4	1-Mar	18-Mar	21-Mar
3	5	19-Mar	12-Apr	15-Apr
	6	12-Apr	29-Apr	2-May