



UNIVERSITY of HAWAII
WINDWARD COMMUNITY COLLEGE

Ke Kulanui Kaiāulu o ke Ko'olau

[ASTR110L, Survey of Astronomy Lab]

[Spring 2026]

[1] Credits | CRN [63035]

* This syllabus and/or our Course Schedule is subject to change at any time. I will notify you of any changes via (indicate communication tool/method). Mahalo!

About Windward Community College

Mission Statement

O keia ka wā kūpono e ho'ōnui ai ka 'ike me ka ho'omaopopo i kō Hawai'i mau ho'oilina waiwai. Aia nō ho'i ma ke Kulanui Kaiāulu o ke Ko'olau nā papahana hou o nā 'ike 'ake akamai a me nā hana no'ēau. Me ke kuleana ko'iko'i e ho'ōhiki ke Kulanui e kāko'o a e ho'okumu i ala e hiki kē kōkua i ka ho'ōnui 'ike a nā kānaka maoli. Na mākou nō e ho'olako, kāko'o a paipai i nā Ko'olau a kō O'ahu a'e me nā hana no'ēau ākea, ka ho'ona'auao 'oihana a me ka ho'ōnui 'ike ma ke kaiāulu—hō'a'ano a e ho'oulu i nā haumāna i ka po'okela.

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 the Ko'olau region of O'ahu and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment —inspiring students to excellence.

'Āina

Windward Community College is located in the ahupua'a of Kāne'ōhe and He'e'ia in the moku of Ko'olaupoko on the island of O'ahu. Both ahupua'a are directly connected to the mo'ō 'ōlelo of Pāpa and Wākea, who are seen as the ancestors of the Hawaiian nation. The campus sits beneath the pu'u of Keahiakahoe, which is also connected to many mo'ō 'ōlelo of this 'āina. Because wind names and rain names are associated with specific 'āina, the rain name of Kāne'ōhe is known as the 'Āpuakea and the rain name of He'e'ia is the Ulumano.

Instructor Information

About Your Instructor

Aloha Class,

My name is Dr. Larry Harrison and I will be your instructor for this course. I thoroughly enjoy the fascinating science of astronomy, as it combines several science disciplines in an attempt to understand our solar system, galaxy, and universe. I am currently residing on Maui, where I teach at UH Maui College fulltime.

How to Contact Your Instructor

Larry Harrison, Natural Sciences Lecturer, Windward Community College

Virtual Office: ZOOM: Zoom URL

- **Office Hours:** MW Zoom only, by appointment, 10:00AM-12:00PM and 4:00PM-6:00PM
- **Email:** larryhar@hawaii.edu
- **Zoom:** <https://hawaii.zoom.us/j/99817130279>
- **Passcode: 442744 (By appointment only)**
-

Response time: I generally respond to email questions within 12 hours. Do not hesitate to ask questions regarding the course or if you are having difficulties with an assignment.

Asking Course Questions

Email specific questions regarding the class, grading and/or personal matters, per FERPA, to keep your information protected. Please use [Lamakū Email](#) instead of UH Gmail or other email.

[* While Lamakū has an Instant Message feature, I prefer email. Please feel free to use Instant Message to communicate with your classmates if you like.]

Alternate Contact Information

If you are unable to contact the instructor, have questions that your instructor cannot answer, or for any other issues, please contact the Academic Affairs Office:

- Location: Alaka'i 121
- Phone: (808) 235-7422

Contingency Plan

If there is an outage, weather situation, or family emergency on my end, I will do my best to find a way to communicate an update as soon as possible about my return to the course. Mahalo in advance for your understanding and I hope you will do the same.

Course Format & Structure

This course is offered in a 16-week time frame. Please note that this is not a self-paced course; our course schedule is provided in this syllabus.

Course Purpose

The purpose of this course is to support the theories and concepts discussed during the lecture class. Furthermore, students will learn how to use various online simulators, telescope sites, and astroimage editing programs.

Course Description

The lab course will be a series of exercises which may be precluded by a brief lecture on the topic to be investigated that day. The students will learn a little bit about the equipment they are about to use before they go step-by-step through a manual that instructs students on how to use a device (Stellarium or online remotely accessed telescopes). Recorded data will be analyzed by the students after class and a report will be submitted with their findings.

Online lab students will have access to remotely operate and request telescope data

- **Content release:** This course is designed to release weekly content in conjunction with weekly assignments. At times, the assignments will be by-weekly, however, new content will be shared under the lessons tabs in your Lamaku Classroom.
- This class is 100% online and asynchronous, meaning no scheduled meeting times or Zoom classrooms. However, if you are having difficulties with an assignment, I am always willing to help.
- **Course Benefits:** There will be no textbook required for this course, and all online applications will be easily accessible and free of charge.

Regular Substantive Interaction (RSI)

Online courses at Windward Community College follow the college's [RSI Definition](#) for ensuring quality instruction. You can expect me to communicate with you frequently (and in a timely fashion) about our coursework in the following ways during our 16-week course:

- **Announcements:** I use the announcements area of Lamaku to post Google Drive links (which will be needed later in the semester), office hours, and other important class information.
- **Assignments:** Throughout the semester, you will have several homework assignments. Many of these assignments will include interactive websites/ simulators to aid in answering the questions posed in the assignments.
 - *All assignments will have a given point value. Most assignments require answering questions concerning the given lab experiment, and points are deducted for incorrect answers. I will make comments in the Lamaku assignment area for your review. If you submit your work via Google Docs, I can add comments directly to your document.*
- **Discussions:** This class will only have one required discussion post in the first. This post will be an introduction post, where you will introduce yourself to the class and include some details about why you are interested in taking the class. You will be required to respond to your classmates and their post as well (minimum 4 responses).

- **Quizzes and Exams:** This class will not have quizzes or exams, however, you will have a final project, which includes a minimum of an 11 slide PowerPoint or Google slides presentation, with speaker notes explaining the various slides in the presentation.

All course activity due dates are listed in Lamakū on the Calendar. Please check your UH email often and set your [Lamakū Notifications](#) (both email and D2L Brightspace [Pulse App](#)) to receive course notices, such as grading updates, announcements, and activity reminders. I will keep our Lamakū course Grades as current as possible.

Participation Verification

Campuses are required by federal regulations to verify the participation of students in their classes. In accordance with [Executive Policy 7.209](#), all students in the University of Hawai'i system are required to establish "participation" to ensure that they are not dropped from their class(es). Effective Fall 2021, students who fail to participate by the late registration period for a class will be administratively dropped from that class. Students may also be dropped from dependent prerequisite and/or corequisite classes if both courses do not establish participation.

Course Information

Catalog Description

Demonstration of astronomical principles through laboratory observations and analysis of astronomical data. Not required for ASTR 110.

Prerequisites

Credit for or registration in ASTR 110 or consent of the instructor.

Course Outcomes

- Apply the scientific method to a selected group of topics in astronomy.
- Collect, report and analyze data obtained in a laboratory and/ or observatory setting in a manner exhibiting organization, proper documentation and critical thinking.
- Demonstrate a basic understanding of the use of standard astronomical instruments.
- Perform image analysis, especially as related to astronomical photographic data.
- Identify environmental factors, which affect the outcome of an experiment or observation and apply basic error analyses techniques.

- Demonstrate a working knowledge of computer on-line and Internet astronomical programs.

Student Learning Outcomes

Students can expect to attain the following outcomes as a result of taking this course:

Student Learning Objectives (SLOs)

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 the structure of our Milky Way and other galaxies.
8. Apply astronomical concepts to the search for extraterrestrial life.

The schedule is subject to change.

Each week begins on Monday and ends on Sunday.

Week 1 (01/12/26-01/18/26): Topic(s) of the week

Introduction to the class, review of the syllabus, review of scientific notation, and the first homework assignment titled "Astronomical Distances and Sizes"

Week 2 (01/19/26-01/25/26): Topic(s) of the week

Introduction to the online Stellarium star mapping software and Assignment 2, titled "Stellarium/Star Charting and Mapping"

Week 3 (01/26/26-02/01/26): Topic(s) of the week

Introduction to a lunar phase simulator online program and Assignment 3, titled "Lunar Phases and the Lunar Simulator"

Week 4 (02/02/26-02/08/26): Topic(s) of the week

The Sun and Space Weather

Week 5 (02/09/26-02/15/26): Topic(s) of the week

Lunar Cratering and the heavy bombardment era. This lab will include hands on experiments. This will be a two week assignment.

Week 6 (02/16/26-02/22/26): Topic(s) of the week

Lunar Cratering and the heavy bombardment era. This lab will include hands on experiments. This will be the second week of this assignment.

Week 7 (02/23/26--03/01/26): Topic(s) of the week

Introduction to the Harvard/Chandra MicroObservatory and image editing

Week 8 (03/02/26-03/08/26): Topic(s) of the week

Selection of astronomical objects to image with the Las Cumbres Observatories (LCO)

Week 9 (03/09/26-03/15/26): Topic(s) of the week

Introduction to the JS-9 Image editing tools to reduce and edit LCO images to color images.

Spring Break 03/16/26-03/22/26**Week 10 (03/23/26-03/29/26): Topic(s) of the week**

Introduction to the SAO DS-9 Image editing program and beginning to build to your portfolio of images for your final project. .

Week 11 (03/30/26-04/05/26): Topic(s) of the week

Advanced DS-9 tutorial and editing two more images for your final project.

Week 12 (04/06/26-04/12/26): Topic(s) of the week

Continuation of image editing and analysis

Week 13 (04/13/26-04/19/26): Topic(s) of the week

Begin researching interesting information concerning your first five images.

Week 14 (04/20/26-04/26/26): Topic(s) of the week

Learning advance features of the DS-9 image editing program, and producing two more images for your final project.

Week 15 (04/27/26-05/03/26): Topic(s) of the week

Finally, you will begin to assemble your final project using images created during the class periods, and produce your final three images.

Week 16 (05/04/26-05/06/26): Topic(s) of the week

Preparation and continuation of image editing.

Last Day of Instruction 05/06/26

Final Evaluation Period 05/07/26 - 05/15/26

Course Materials

Required

This course does not require a textbook, all assignments will be web-based.

- Regular access to a computer with internet (desktop or laptop), you will need a windows based PC or MacBook with the most recent updated operating system.
 - Windward has computers, WiFi hotspots, software, and discounts available to students; see Ka Piko [Student Tech Support](#) for information.
 - UH Online provides an [online learning Readiness Activity](#) and an [Orientation to Online Learning](#) that Windward CC students may take to see if online learning is a good fit.
- Additional required materials will be posted in Lamakū Content, if required.

[Recommended]

- [D2L Brightspace Pulse App](#) (free download from app stores)

Lamakū Learning Management System (<https://lamaku.hawaii.edu/d2l/home>)

- [UHCC Lamakū Student Resources](#) (how-to videos)
 - Contact [UH ITS](#) for 24/7 Lamakū assistance.
- [Keeping Accessibility and UDL in Mind](#)
 - If you find any course content that needs remediation and/or updating, please kindly share and I will immediately work to make the content accessible.
- Lamakū courses will appear 5 days before the first day for the academic term and will become inactive (no longer be available to access) 3 weeks after the end of the term. Be sure to save any coursework you may need from Lamakū *during* the term.
- Lamakū automatically logs you out *if it does not detect activity for three hours*. A warning message will appear, notifying you of the lack of activity. Activity is defined as clicking a button in Lamakū, such as "Save Draft" or "Next" (in a test), clicking on a course tab, or taking an action that sends information to the server.

Other Technology

D2L Brightspace, the parent company of Lamakū, recommends users choose the latest versions of [Google Chrome](#), [Mozilla Firefox](#), [Microsoft Edge](#), or [Apple Safari](#) as their internet browser.

We recommend that students update their internet browser at the start of each term, search how to allow pop-up windows, adjust their cookies, and clear device history. Also, fully restart your computer and/or device from time-to-time to optimize performance.

Review the privacy/security policies before using the technologies we will be using in this class. Contact me if you would like to discuss the use of alternate options or technologies.

- [Delete this text before publishing the syllabus: Listed below are commonly used tools prepopulated with accessibility statements and privacy policies. Please feel free to add, edit, or delete this list based on tools used in your own course. If your tool is not included in this list, check the [UH ITS Reviewed Instructional Third Party Online Tools](#) list before including it in your syllabus. Delete the instructions after you have completed your list.]
- [Canva](#) is a presentation, graphic design software, and more ([accessibility statement](#), [privacy policy](#))
- [Google Drive](#) is UH-provided cloud storage ([accessibility statement](#), [privacy policy](#))
- [Google Docs](#) is used to create documents ([accessibility statement](#), [privacy policy](#))
- [Google Sheets](#) is used to create assignment and reference worksheets ([accessibility statement](#), [privacy policy](#))
- [Google Slides](#) is a presentation authoring software provided by UH ([accessibility statement](#), [privacy policy](#))
- [H5P](#) is used for creating review activities ([accessibility](#), [privacy policy](#))
- [Kahoot!](#) is used for review activities ([accessibility statement](#), [privacy policy](#))
- [Loom](#) is used for screen recording (accessibility statement not provided, [privacy policy](#))
- [Mentimeter](#) is used for interactive presentations and activities ([accessibility statement](#), [privacy policy](#))
- [Miro](#) is used for graphically organization information ([accessibility statement](#), [privacy policy](#))
- [Nearpod](#) is used for interactive presentations ([accessibility statement](#), [privacy policy](#))
- [Padlet](#) is used for some of the discussion activities ([Padlet Accessibility Statement](#), [Padlet privacy policy](#))
- [PearDeck](#) is used for interactive presentations (accessibility statement not provided, [privacy policy](#))
- [ScreenPal](#) is used for video and screencapture ([accessibility statement](#), [privacy policy](#))
- [Quizlet](#) is used for interaction (accessibility statement not provided, [privacy policy](#))
- [YouTube](#) is used for delivering some of the course content ([accessibility statement](#), [privacy policy](#))
- [Zoom](#) is used for the Synchronous Sessions and virtual office ([accessibility statement](#), [privacy policy](#))

Grading Policy

Grades will be based as follows:

Letter grades for the course will be based on the percentage guidelines below. Grades will be posted in Lamaku and will not be discussed via email. If you would like to discuss grades, please make an appointment.

Assessment Categories and Weighting:

Grades will be based on the following:

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Complete lab assignments (Homework)=80%

Final Project= 20%

Total = 100%

Late Assignment Policy

Late assignments are not accepted.

Grading Policy

Percentage Guideline and Grading Scale

Final semester grades are based on the following point system:

- A – (90-100%)
- B – (80-89%) ● C – (70-79%)
- D – (60-69%)
- F – (0-59%)

Course Schedule: Each week, new lessons will be found in the content area of the Lamaku classroom, and a new assignment will be posted.

Students may check the Windward [Student Notifications](#) page on the website for canceled classes and/ or school closures.

Academic Integrity

Work submitted by a student must be the student's own work. The work of others should be explicitly marked, such as through the use of quotes or summarizing with reference to the original author.

In this class, students who commit academic dishonesty, cheating, or plagiarism will have the following consequence(s):

- Students will receive a failing grade for plagiarized assignments.
- All cases of academic dishonesty are referred to the Vice Chancellor for Student Affairs.

[Windward CC Student Conduct Information](#)

[UH System Student Conduct Policy EO 7.208](#)

The use of ChatGPT or any other AI website or service is strictly prohibited and constitutes cheating. Do not use ChatGPT or any AI website or service to complete your assignments or tests. The use of ChatGPT/ AI services may result in receiving an F for the class and/ or expulsion from the class and school.

Student Kuleana

- Please review our [Hawai'i-Style Netiquette](#), which blends the values of ALOHA with approaches to how we treat each other online.
- Three hours per week of class and up to three hours of lab report writing.
- Windward CC has [Grievance Procedures](#) in place, but I encourage us to try to work together first to see if we can work through any troubles. Mahalo!

Academic and Technical Support

Academic Support

- [Windward Community College Library](#)
- [Library eResources](#)
 - [We are lucky to have our very own Windward CC Librarian embedded in our course to help you! Meet [insert WCC Librarian name/ link + link to subject matter Lib Guide from the [Library Staff Directory](#) page]
- [Library Research Units \(LRUs\)](#)
- [Ka Piko Writing Lab](#)
- [Ka Piko Speech Lab](#)
- [Ka Piko Math Lab](#)
- [Online Learning at Windward Community College](#)
- [STAR Balance](#)

Technical Support

- [UH ITS Help Desk](#): email help@hawaii.edu or call (808) 956-8883 (or 1-800-558-2669) for Lamakū and most technology support. Available 24 hours a day, 7 days a week, including holidays.
- Student Tech Support: email winhelp@hawaii.edu, call (808) 235-7437, or stop by in person at Hale La'akea 228. Available Monday–Friday from 8:00 am–4:00 pm.
- Lamakū: Click on the [Lamakū Help](#) link in the menu bar at the top of the Lamakū homepage to fill out and submit a question and get your answer via email.
- [Information Security for Students](#)

College Policies & Support Services

Your instructor may also provide additional resources in your Lamakū course.

Basic Needs

Basic needs include food and housing, childcare, mental health, financial resources, and transportation. Student basic needs security is critical for ensuring strong academic performance, persistence and graduation, and overall student well-being. If you or someone you know is experiencing basic needs insecurity, please see the [UH System Basic Needs](#).

Disabilities Accommodations Statement

Windward Community College's Disability Student Services Office (WCC-DSSO) is committed to providing equal access to qualified students with disabilities.

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to participate fully in this class, you are encouraged to contact the Disability Specialist Counselor, Roy Inouye, to discuss reasonable accommodations that will help you succeed in this class. The Disabilities Counselor can be reached at (808) 235-7448, wccdsso@hawaii.edu, or stop by the office (Hale Kako'o 106) for more information.

Financial Aid

If you are receiving financial aid and are contemplating not completing the course it is highly recommended that you contact the Financial Aid Office at (808) 934-2712 or email them at wccfao@hawaii.edu **BEFORE** you withdraw to discuss the impact this decision may have on your financial aid eligibility.

LGBTQ+

The University of Hawai'i system and Windward Community College are committed to building an inclusive community that supports and advocates for all students, staff, and faculty. We welcome all members of our campus community to our campuses: transgender, māhū, and people of all gender identities. All members of our campus community deserve a work and educational environment free from harassment or bullying based on their sexual orientation, gender identity, or expression. For more information, see the [University of Hawai'i Commission on LGBTQ+ Equality](#). Windward Community College Commissioner: Scott Sutherland, scottjks@hawaii.edu

Mental Health Counseling

Mental Health and Wellness at Windward Community College provides counseling services and activities on campus to support students' life goals as well as their academic goals. Information about services can be found at [WCC Mental Health & Wellness](#).

Student Conduct Code

Windward Community College follows the University of Hawai'i Code of Student Conduct which defines expected conduct for students and specifies those acts subject to University sanctions. Students should familiarize themselves with the Code of Student Conduct since, upon enrollment at Windward Community College, they have placed themselves under the policies and regulations of the University and its duly constituted bodies. The disciplinary authority is

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exercised through the Office of the Vice Chancellor for Student Affairs. Copies of the [Student Conduct Code](#) are available at the Office of the Vice Chancellor for Student Affairs.

TRiO Program

The Federal TRiO Programs are educational opportunity outreach programs designed to motivate and support students from disadvantaged backgrounds. TRiO includes six outreach and support programs targeted to serve and assist low-income, first-generation college students and students with disabilities in progressing through the academic pipeline from middle school to post-baccalaureate programs. Information about services can be found at [Windward CC TRiO](#).

Title IX- Sex Discrimination And Gender-Based Violence Resources

Windward Community College is committed to providing a learning, working, and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking.

If you or someone you know is experiencing any of these, WCC has staff and resources to support and assist you. To report an incident of sex discrimination or gender-based violence, as well as receive information and support, please contact one of the following:

Desrae Kahale, UH System Confidential Advocate
 Phone: (808) 235-7393
 Email: advocate@hawaii.edu
 Office: Hale Kāko‘o 101

Desrae Kahale, Mental Health Counselor & Confidential Resource
 Phone: (808) 235-7393
 Email: dkahale3@hawaii.edu
 Office: Hale Kāko‘o 101

Mykie E. Menor Ozoa-Aglugub, J.D., Title IX Coordinator
 Phone: (808) 235-7468
 Email: mozoa@hawaii.edu
 Office: Hale Kāko‘o 109

Karen Cho, Deputy Title IX Coordinator
 Phone: (808) 235-7404
 Email: kcho@hawaii.edu
 Office: Hale ‘Alaka‘i 120

As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and I cannot guarantee confidentiality, you will still have options about how your case will be handled. My goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.

For more information regarding sex discrimination and gender-based violence, refer to the University’s [Title IX](#) resources, and the University’s Policy, [EP 1.204](#).

UH Alerts

The UH Alert emergency notification system alerts the university community in the event of a natural, health or civil emergency. The information you provide will only be used in the event of an emergency that impacts the health and safety of the UH community or the closure of whole campuses. It will not be shared with others or used for routine UH communications or announcements. To sign up, visit [UH Alerts](#) for more information.