

ASTR 110L SURVEY OF ASTRONOMY – LAB

CRN = 61119

1 Credit

Asynchronous Online Course – Check in Daily

| | | |
|-----------------|--------------------------|---------------------------|
| INSTRUCTOR: | Sean P. Moroney, Ph.D. | |
| OFFICE HOURS: | WCC CAMPUS - Imiloa 112B | Fridays 12:00 – 2:00 PM |
| | ONLINE - Zoom | Sunday 8:00 – 9:00 PM |
| TELEPHONE: | (808) 236-9117 | EMAIL: moroney@hawaii.edu |
| EFFECTIVE DATE: | Spring 2021 | |

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

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

Activities Required at Scheduled Times Other Than Class Times

No additional activities

PREREQUISITES

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

ONLINE ACCESS

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

ANNOUNCEMENTS

The Announcements section in Canvas is a critically important section for the transmission of rapidly changing information about the course.
The Announcements should be checked frequently.

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:

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

LEARNING RESOURCES

Software:

[Starry Night College](#)

To access the Starry Night College program, paste this URL into your browser:

<https://store.simulationcurriculum.com/collections/college/products/starry-night-college-version-7-student-download>

The Student Access Code is : **ad7d**

[SkySafari Phone App](#) – Download this for Iphone or Android

Course Canvas site:

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



COURSE MODULES & CONTENT

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

The theme developed in this course is how the science of Astronomy has developed, with particular attention given to the planetary Solar System. Our companion course, ASTR 110 - Survey of Astronomy, develops the coverage of the discoveries with reference to the universe as a whole. Here we consider some early models people used to make sense of the near cosmos. We study how the heliocentric model provides simple explanations for how basic astronomical phenomena work and we look at how the guidance from Kepler's Laws permits us to understand the motions of the planetary bodies. We make use of recently developed smartphone technology to study the motions of Solar System bodies as seen from Earth and we continue to experiment with model Solar Systems of our own construction. Finally, we conclude with some actual exploration of our real Solar System by studying the findings of some recent spacecraft data.

Module 1: In this Module, we focus on the Basics of Astronomical investigation, such as the movements of celestial bodies in the sky, the fundamentals of mathematical descriptions for celestial analysis, and the concept of models that can represent reality and that can guide the advancement of Astronomical knowledge. Two models in particular, the Astrological model and the Flat Earth model, will be explored in some detail. We also learn of a method used in Mathematics for representing very large or very small numbers in a manner that permits simpler calculations.

MODULE LEARNING OBJECTIVES:

Upon completion of this Module, the student will be able to:

- 1.1 - Use a smartphone app to locate the main bodies of the Solar System in the sky, as seen from any point on the Earth and at any time within a century of the present time.
- 1.2 - Set up and understand the use of a natal horoscope in Astrology.
- 1.3 - Convert numbers in standard decimal notation into scientific notation, and vice versa.
- 1.4 - Explain the concept of a Flat Earth and how that might be a model with the power to explain the Solar System phenomena around us.
- 1.5 - Explain where the Flat Earth model has shortcomings in its explanations.

Module 2: The focus turns to the interrelationship of the Sun, the Moon, and the Earth, as shown by the phenomena of seasons, eclipses, and lunar phases. The usefulness of the heliocentric model in correctly describing these celestial events and predictions made from them is explored in detail.

MODULE LEARNING OBJECTIVES:

Upon completion of this Module, the student will be able to:

- 2.1 - Discuss how the combination of the elliptical orbit and the tilt of the Earth give rise to the meteorological and climatic phenomena we call the seasons.
- 2.2 - Recognize that other worlds can have periodically changing conditions that, although nothing like those on Earth, can be called seasons.
- 2.3 - Summarize the effects of the lunar motion that gives rise to the phases of the Moon.

- 2.4 - Explain the orbital geometry that permits the Sun-Earth-Moon combination to give rise to the variety of eclipse phenomena that are seen at regular intervals.

Module 3: The ruling force of gravity and its manifestations in Kepler's Laws of Planetary Orbits guides the work in this Module. The common behavior of all the bodies in Kepler's 3 Laws is seen as a unifying factor. The student gets to design interesting varieties of Solar Systems; these may be put on display in a Viewing Gallery for the enjoyment of the whole class.

MODULE LEARNING OBJECTIVES:

Upon completion of this Module, the student will be able to:

- 3.1 - Quantitatively categorize the types of planetary orbits that are possible.
- 3.2 - Explain the role of changing velocities in the determination of the types of orbits that can be possible.
- 3.3 - Compare the effects on planetary orbits of changes in the mass of the Sun and/or the mass of the planet.
- 3.4 - Explain the effects of Kepler's 2nd Law.
- 3.5 - Generalize the findings of Kepler's 3rd Law to the planets of our Solar System.
- 3.6 - Describe the characteristics of what makes a Solar System stable and unstable.

Module 4: From the Earth, the "fixed stars" provide a seemingly unchanging background for the motions of the Solar System bodies. But these motions, as analyzed by a smartphone app can provide clues to some irregularities that can be detected.

MODULE LEARNING OBJECTIVES:

Upon completion of this Module, the student will be able to:

- 4.1 - Identify and explain the rising of the Sun, as seen from various points on the Earth's surface.
- 4.2 - Illustrate and interpret the retrograde motion of a superior planet, explaining its mechanics and why this motion is not so obvious to the casual observer.
- 4.3 - Analyze the Sun's motion in the sky and look for irregularities in its motion throughout the year in the zodiac.

Module 5: Lastly, using datasets collected by NASA in its exploration of nearby worlds, we'll do a simulated exploration of the surfaces of the Moon and Mars, and will conclude with a tour of the Solar System.

MODULE LEARNING OBJECTIVES:

Upon completion of this Module, the student will be able to:

- 5.1 - Identify and explain the nature of selected surface features of the Moon.
- 5.2 - Examine, in a simulation, and comment upon selected surface features of Mars.
- 5.3- Interpret the differences between the worlds visited in a tour of the Solar System.

COURSE TASKS

The Course Tasks (also called Assignments) described here rely considerably upon active involvement and participation by all course members.

The availability of each Course Task will be made known by an Announcement, which will also be emailed. Three days before a Course Task is Due, an Announcement to that effect will be posted and emailed.

Further details on all these course tasks will be by the Announced placement of labeled documents in the Course Docs section of the Left Menu.

In all Course Tasks, submissions will be inspected for errors or flaws in spelling, grammar, and sentence structure. If necessary, it will be useful to have someone with good language skills function as a proofreader for each Assignment.

- **Starry Night (SN) Exercises (25% of the Course Grade):**
 - In each Module, students will perform various tasks using the Starry Night software and will complete several brief Quizzes on each Chapter section.
 - The SN Exercises provide an organized introduction to observing and to understanding the objects in the sky and their motions.
 - 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' Availability Dates and their Due Dates will be posted and emailed at regular intervals in the Course Canvas site.
 - The **best 38 of the 42 SN Exercise scores** will be counted toward the Final Grade.
 - The SLOs and MLOs for the Course apply to these Assignments.

- **Lab Exercises (25% of the Course Grade):**
 - In each Module, students will perform various experimental tasks using the Lab Exercises provided and will complete a Lab Report on each.
 - The structure of a Lab Report is discussed in the Course Docs section of Modules in the Left Menu of Canvas.
 - Insights gained from the Starry Night Exercises should be included in the Lab Reports.
 - There will be 15 such Lab Reports during the term. The Lab Reports will have Due Dates that are listed in the Table below. Announcements regarding the opening of Lab Reports and their Due Dates will be posted at regular intervals in the Course Canvas site.
 - The **best 13 of the 15 Lab Exercise scores** will be counted toward the Final Grade.
 - The SLOs and MLOs for the Course apply to these Assignments.

- **Ask the Student (AskS) (10% of the Course Grade):**
 - During the timeframe of the fifteen (15) Weeks, in forums set up for this purpose, the Instructor will pose thought-provoking questions on topics relevant to the current Module. There will be two (2) such AskS questions in each Module.
 - Questions asked may have multiple sub-questions; these will be placed on separate lines and will be designated as *a, b, c, etc.* or as *1, 2, 3, etc.* Answers given are required to use the *a, b, c, etc.* or as *1, 2, 3, etc.* system. This guarantees that each sub-question is fully answered.
 - Students should just copy the question block into the answer space and compose each answer directly beneath its question.
 - Students are expected to explore the Module topics in some detail and to post considered and thoughtful responses.
 - Any answers previously posted will not be visible to an answering student until that student submits his/her own answer.
 - The answers to the questions must be given in a short essay of about 75 or more words. The answers should go into some depth and may bring in related ideas and information from current astronomical news items or from other sources.
 - If information is drawn from an outside source, the answer should include a Reference to the source. It is proper educational etiquette to give credit where credit is due.
 - The grade given for the answer(s) will depend on the quality of the answer(s), with a minimalist answer getting a lower grade and a well-thought-out answer getting a higher grade.
 - In addition, each student must offer a critique to two (2) answers from two (2) fellow students. Critiques may be positive (adding in supporting information) or negative (pointing out or correcting errors). All critiques must abide by the rules of Netiquette and must be professionally phrased. Critiquing is an important part of our interactions; the critiques will be totaled into the Assignment grade.
 - Critiques must be substantive and must add to the knowledge base being built in the class. Comments such as praising fellow students, repeating what they said, saying how much you learned from them, or the like, are not substantive comments; any such comment will be ignored in the grading.
 - **The rules and behavior of Netiquette are to be observed at all times and in all our online interactions.**
 - After a Grace Period closes out, the questions asked, and their answers, will continue to be visible; no new answers may be accepted after that time.
 - There will be ten (10) AskS assignments in total. The schedule of the AskSs is given below.
 - The **best 9 of the 10 AskS scores** will be counted toward the final grade.
 - The SLOs and MLOs for each Module apply to these Assignments.

- **Ask the Professor (AskP) (10% of the Course Grade):**
 - During the timeframe of each of the five (5) Modules, in forums set up for this purpose, each student will be asked to pose two separate thought-provoking questions on specific Module-related topics, which the Instructor will then explore in some detail.
 - Questions asked must not be simple look-up-the-answer-style questions; there must be some depth to each question. The AskP question must be related to the subject matter of the Chapters of its Module.
 - Any question that is asked must make sense and must not contain errors in the science. Improper spelling, grammar, and/or sentence structure can disqualify a question. Any such questions will be rejected; the question may be reworked for credit to be earned.
 - If a question has multiple sub-questions, each should be placed on separate lines and should be designated as a, b, c, etc. or as 1, 2, 3, etc. This guarantees that each sub-question is fully answered.
 - Acceptable thought-provoking questions do not include asking for the Instructor's opinion on any subject. This does not mean that a speculative question cannot be asked; speculations explore the edges of our knowledge and are quite welcome.
 - The Instructor will give reasonably in-depth answers and will pose questions in response. Any such questions must be answered before the Grace Period ends.
 - The grade given for an accepted question will depend on the quality of the question, with a trivial question getting a lower grade and a more profound thought-provoking question getting a higher grade.
 - Follow-up questions from the same student and/or from different students are welcome.
 - After a Grace Period closes out, the questions asked, and their answers, will continue to be visible; no new questions may be posted after that time.
 - There will be ten (10) AskP assignments in total. The schedule of the AskPs is given below.
 - The **best 9 of the 10 AskP scores** will be counted toward the final grade.
 - The SLOs and MLOs for each Module apply to these Assignments.

- **Lab Projects (25% of the Course Grade):**
 - There will be three (3) Lab Projects during the term. The Lab Project Reports will have Due Dates that conform, in general, to the Module Schedule.
 - Instructions will be available in the Info Text Headers in both the Lab Project Topics and the Lab Project Reports, located in the Assignments section of the Left Menu. Instructions will also be available in the Left Menu / Modules / Course Docs.
 - The Topic specifically selected for each Lab Project Report must be submitted for approval by a particular Due Date. Instructions for this are posted in the Assignment site; a reminder will be posted as an Announcement.
 - The Topic selection is valued as 10 points of the 100 points for the Project. The Topic may be resubmitted continuously during a Grace Period until it is approved. If no Topic is selected, any subsequent Report will not be approved.

- The Lab Project Report is valued as 90 points of the 100 points for the Project. Details of the formatting, etc., of the Lab Project Report will be posted in the Course Docs section of the Left Menu.
 - All Lab Project Reports will be placed in a Viewing Gallery for all to see and read. Students may, there, leave comments and questions for each other. The Instructor will also ask questions.
 - The Instructor will post some review comments and some questions in a Lab Projects Discussion Forum. Follow-up discussion from the same student and/or from different students are welcome. As a graded part of the Assignment, each student is expected to meaningfully answer any and all questions posed by the Instructor and/or by other students.
 - In addition, each student must offer a critique of two (2) Lab Projects from two (2) different fellow students. Critiques may be positive (adding in supporting information) or negative (pointing out or correcting errors). All critiques must abide by the rules of Netiquette and must be professionally phrased. Critiquing is part of our interactions; the critiques will be totaled into the Assignment grade.
 - Critiques must be substantive and must add to the knowledge base being built in the class. Comments such as praising fellow students, repeating what they said, saying how much you learned from them, or the like, are not substantive comments; any such comment will be ignored in the grading.
 - **The rules and behavior of Netiquette are to be observed at all times and in all our online interactions.**
 - The SLOs and MLOs for the Course apply to these Assignments.
- **Participation (P) (5% of the Course Grade):**
 - Being active in this online course each Week is important for your academic progress.
 - A maximum Participation grade of 10 points per week can be earned by visibly making postings and engaging in discussions with the other students and/or with the Instructor.

GRADING OF COURSE TASKS

The course grade will be computed as follows:

| | Number | Max. Score |
|------------------------|----------------|-------------|
| Starry Night Exercises | Best 38 of 42 | 25% |
| Lab Experiments | Best 13 of 15 | 25% |
| Lab Projects | 3 | 25% |
| Ask the Student | Best 9 of 10 | 10% |
| Ask the Professor | Best 9 of 10 | 10% |
| Participation | 15 | 5% |
| | Total = | 100% |

Course work submitted after specified Due Dates will be subject to a Lateness Deduction, which will generally be 5% per calendar day late after the Due Date. The Lateness Deduction may be excused for a valid documented reason.

Assignment Grading will be completed within one week after the Due Date for each Assignment.

If a Grade is disputed, that dispute must be originated within three (3) weeks after the Due Date.

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 | 90.0% - 100% of cumulative points possible |
| B | 80.0% - 89.9% of cumulative points possible |
| C | 65.0% - 79.9% of cumulative points possible |
| D | 50.0% - 64.9% of cumulative points possible |
| F | below 50.0% of cumulative points possible |

Computed grades will not be rounded up.

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

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 Accessibility Counselor to discuss reasonable accommodations that will help you succeed in this class. Roy Inouye can be reached at (808) 235-7448, royinouy@hawaii.edu, or you may stop by Hale Kāko'o 106 for more information.

SEX DISCRIMINATION/GENDER-BASED VIOLENCE RESOURCES (TITLE IX)

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:

Kaahu Alo, Student Life Counselor & Designated Confidential* Advocate for Students
 Phone: (808) 235-7354
 Email: kaahualo@hawaii.edu
 Office: Hale 'Ākoakoa 232
 *confidentiality is limited

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

Karla K. Silva-Park, Title IX Coordinator
 Phone: (808) 235-7468
 Email: karlas@hawaii.edu
 Office: Hale 'Ākoakoa 220

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, the University's Title IX resources and the University's Policy, Interim EP 1.204, go to manoa.hawaii.edu/titleix/

INCOMPLETE GRADE PROCEDURE

Incomplete grades are reserved for cases of illnesses and other emergencies that cause a student to be unable to complete the course by the Last Day of Instruction. In such cases, the instructor has the option of issuing an "Incomplete" grade at the end of the semester. Requests for an "Incomplete" must be accompanied, in a timely manner, by substantive documentation. The Instructor must be notified of such issues in the shortest time; requests for an Incomplete grade must be made before the course is completed.

If granted, the "Incomplete" grade will then require a written agreement between the instructor and the student clearly defining the remaining course requirements and the time frame within which they are to be completed. The College will review "I" grades six months subsequent to posting. Unresolved "I" grades will be converted to "F" grades subsequent to the review.

Be aware that active duty military can be charged for tuition for not completing a course as soon as 90 days after the end of the course if the "I" is not changed to a passing grade. Therefore, completing the course in a timely manner is prudent.

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 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 failing grades for plagiarized assignments.
- All cases of academic dishonesty are referred to the Vice Chancellor for Student Affairs.

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

ADDITIONAL INFORMATION

- **Instructor Bio - Sean Moroney, PhD**
 - I've had a life-long interest in the sciences, with physics as a particular favorite. I've taken a BS in Physics, a MS in Physics, and a PhD in Engineering Mechanics, with a specialty in Biomechanics. Astronomy, as exemplified in all of our space-age discoveries, has been a source of continued wonderment as everyone learns more and more about the cosmos we are in.

- **Attendance and Participation**
 - 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.
- **Communication Expectations**
 - Students are expected to behave politely, respectfully, and professionally while communicating with their peers and the Instructor in online discussions, email, video conferencing, and in other forms of interactions. The UH Internet Etiquette (i.e., “Netiquette”) is available for review in Canvas / Modules / Course Docs.
- **Work Submitted Late**
 - Work submitted after the Due Date will receive a Lateness Deduction of 5% per calendar day (or fraction thereof) for each day late. This will happen during the Grace Period which begins directly after the Due Date is past. Grace Periods tend to be no more than four (4) days in duration. If there are extenuating circumstances that can be documented, the Lateness Deductions may be waived, in whole or in part; however, the Instructor must be notified about the circumstances in the shortest possible time.
- **Missed Work**
 - Generally, work not submitted will receive the grade of zero. It is the student’s responsibility to stay current with the Assignments and to keep track of upcoming Due Dates. If there are extenuating circumstances that interfere with this orderly progression, the Instructor must be notified at the earliest date, so that accommodations can be made. If an overly long time period has passed in which a sizable amount of coursework is not submitted, It may not be possible to request that more than a small fraction of that work may be eligible for completion.
- **Extra Credit**
 - Extra Credit is not generally offered in this course. However, a small number of the lowest-graded assignments in most of the categories will be removed from the pool of scores contributing to the Final Grade. This will happen at the end of the term.
- **MySuccess**
 - Students may receive extra help or advising through the MySuccess program. These resources can be explored at MySuccess.hawaii.edu and at windward.hawaii.edu/MySuccess.

OTHER RESOURCES

Course Technology:

Learning Management System utilized by this course is [Laulima](#), accessible from the [WCC main web site](#), under “Services for Students” tab. To log in, please use your University of Hawaii login information, the same one used to log into your UH email and MyUH/STAR systems. To access Laulima (Sakai) Accessibility information follow this link: [Laulima Accessibility](#).

Hardware and Software Expectations:

Students should be comfortable operating a computer browser, such as Mozilla Firefox or Safari, using email, downloading and uploading files. In addition, students should be comfortable using Adobe Acrobat Reader ([download the free software here](#)) and basics programs within Microsoft Office package (Word, Excel and PowerPoint). Microsoft Office can be obtained via University of Hawai'i's [Information Technology Services](#). In addition, students should make sure they have the free Adobe Acrobat Reader.

It is recommended that you:

- Use a more recent model desktop or laptop (2014 or later), either Windows or Mac.
- Have access to reliable high-speed Internet connection.
- Use Mozilla Firefox as your web browser, as Lulima is designed to work best with it. Note: that we do not recommend using Internet Explorer for submitting work or taking tests in Lulima.
 - Depending on your browser settings, PDF files may open in a new window or tab or automatically download to your download folder

Lulima and other technical support:

University of Hawai'i's [Information Technology Services Help Desk](#) is available 24 hours a day, 7 days a week (including holidays) either via email (help@hawaii.edu) or by phone (808-956-2669). Lulima support can also be accessed directly from any Lulima page by clicking on Request Assistance link at the bottom of the page.

Accessibility at UH and software accessibility information:

- University of Hawai'i's accessibility policies and services are available at the following link: [Accessibility at UH](#).
- To access the accessibility information for each software used in the course, follow the links below:
 - [Macintosh Accessibility Info](#)
 - [Lulima Accessibility Info](#)
 - [Mozilla Firefox Accessibility Info](#)
 - [Microsoft Office Accessibility Info](#)
 - [Adobe Acrobat Reader Accessibility Info](#)

ACADEMIC SUPPORT SERVICES

Tutorial services

Tutorial services are offered free of charge and are open to all WCC students currently enrolled. Tutoring may be long-term, short-term, or single visit, depending upon the needs of the student. To sign up for a tutor, refer to one of the many programs listed below:

- **Tutor.com:** The University of Hawaii Community Colleges offers free online, on-demand tutoring, through [Tutor.com](#).

- **TRiO Student Support Services (TRiO SSS):** The purpose of [TRiO SSS](#) is to provide services (everything from tutoring to filing taxes to financial aid and food) and to foster an institutional climate supportive of the success of low-income, first-generation, and/or disabled college students.
- **Ho'onui Ike:** [Ho'onui Ike](#) is an academic assistance program that utilizes peer-assisted study and coaching sessions.
- **Ka Piko Student Success Services:** [Ka Piko Student Success Services](#) are free to all WCC students and consist of the following resources (please follow the links below for more information):
 - [Math Lab](#)
 - [Writing Center](#)
 - [Speech Lab](#)
 - [Supplemental Instruction](#) (SI)
 - [Peer Mentoring Center](#)

Other student services

- [WCC Library](#), located in Hale La'akea, provides access to printed and digital books, periodicals, articles and more. In addition, it provides access to video and audio resources, as well as computers, individual and group study areas and rooms.
- [WCC Bookstore](#): textbooks, computers, software, food items and more can be purchased here.
- [Testing Center](#) (located in Hale La'akea) provides test proctoring services for placement tests, distance education online and written tests and make-up tests for campus courses.
- WCC [Counseling and Advising](#) department, located in Hale 'Ākoakoa 212, is comprised of college counselors, faculty and support staff who work to support students' personal and academic growth and development.
- WCC [Mental Health and Wellness](#) provides a range of counseling services and activities on campus to support students' life goals and academic goals.
- [Disabilities Services](#), located in Hale La'akea 232, provides information and services to students with disabilities in order to perform functions that might otherwise be difficult or impossible. Testing and academic accommodations can include the following: tape recorded material, note takers, use of adaptive equipment and more.

COURSE DOCS IN CANVAS

The Course Docs section in the Modules section of the Left Menu in Canvas is another critically important section that contains some necessary information about the Assignments and other aspects of the Course.

The Course Docs section should be reviewed carefully in the early Weeks of the Course.

CALENDAR OF ASSIGNMENTS

STARRY NIGHT (SN) & LAB EXERCISES

| SN & LAB ASSIGNMENTS | | | |
|----------------------|------|----------|--------|
| MODULE | WEEK | SN | LAB |
| 1 | 1 | A0 | LAB 01 |
| | 2 | A1-4 | LAB 02 |
| | 3 | A5-7 | LAB 03 |
| 2 | 4 | A8-11 | LAB 04 |
| | 5 | A12-13 | LAB 05 |
| | 6 | B1-3 | LAB 06 |
| 3 | 7 | B4-6 | LAB 07 |
| | 8 | C1-2 | LAB 08 |
| | 9 | C3-5 | LAB 09 |
| 4 | 10 | D1-4 | LAB 10 |
| | 11 | E1-3 | LAB 11 |
| | 12 | E4, F1-2 | LAB 12 |
| 5 | 13 | F3-5 | LAB 13 |
| | 14 | F6-8 | LAB 14 |
| | 15 | G1-3 | LAB 15 |

(The LAB Assignments will be Announced and will be posted in the Canvas Course Site.)

CALENDAR OF DUE DATES

STARRY NIGHT (SN) EXERCISES

| Module | Week | SN | OPEN | DUE | CLOSE |
|--------|------|----------|--------|--------|--------|
| 1 | 1 | A0 | 11 Jan | 17 Jan | 21 Jan |
| | 2 | A1-4 | 18 Jan | 24 Jan | 28 Jan |
| | 3 | A5-7 | 25 Jan | 31 Jan | 4 Feb |
| 2 | 4 | A8-11 | 1 Feb | 7 Feb | 11 Feb |
| | 5 | A12-13 | 8 Feb | 14 Feb | 18 Feb |
| | 6 | B1-3 | 15 Feb | 21 Feb | 25 Feb |
| 3 | 7 | B4-6 | 22 Feb | 28 Feb | 4 Mar |
| | 8 | C1-2 | 1 Mar | 7 Mar | 11 Mar |
| | 9 | C3-5 | 8 Mar | 14 Mar | 18 Mar |
| 4 | 10 | D1-4 | 22 Mar | 28 Mar | 1 Apr |
| | 11 | E1-3 | 29 Mar | 4 Apr | 8 Apr |
| | 12 | E4, F1-2 | 5 Apr | 11 Apr | 15 Apr |
| 5 | 13 | F3-5 | 12 Apr | 18 Apr | 22 Apr |
| | 14 | F6-8 | 19 Apr | 25 Apr | 29 Apr |
| | 15 | G1-3 | 26 Apr | 2 May | 6 May |

CALENDAR OF DUE DATES

LAB EXERCISES

| MODULE | WEEK | LAB | OPEN | DUE | CLOSE |
|--------|------|--------|--------|--------|--------|
| 1 | 1 | LAB 01 | 11 Jan | 24 Jan | 28 Jan |
| | 2 | LAB 02 | 18 Jan | 31 Jan | 4 Feb |
| | 3 | LAB 03 | 25 Jan | 7 Feb | 11 Feb |
| 2 | 4 | LAB 04 | 1 Feb | 14 Feb | 18 Feb |
| | 5 | LAB 05 | 8 Feb | 21 Feb | 25 Feb |
| | 6 | LAB 06 | 15 Feb | 28 Feb | 4 Mar |
| 3 | 7 | LAB 07 | 22 Feb | 7 Mar | 11 Mar |
| | 8 | LAB 08 | 1 Mar | 14 Mar | 18 Mar |
| | 9 | LAB 09 | 8 Mar | 28 Mar | 1 Apr |
| 4 | 10 | LAB 10 | 5 Mar | 4 Apr | 8 Apr |
| | 11 | LAB 11 | 29 Mar | 11 Apr | 15 Apr |
| | 12 | LAB 12 | 5 Apr | 18 Apr | 22 Apr |
| 5 | 13 | LAB 13 | 12 Apr | 25 Apr | 29 Apr |
| | 14 | LAB 14 | 19 Apr | 2 May | 6 May |
| | 15 | LAB 15 | 26 Apr | 9 May | 13 May |

CALENDAR OF DUE DATES

LAB PROJECTS

| Project | Available From | Due Date | Available Until |
|---------|----------------|----------|-----------------|
| 1 | 18 Jan | 14 Feb | 18 Feb |
| 2 | 15 Feb | 14 Mar | 18 Mar |
| 3 | 22 Mar | 18 Apr | 22 Apr |

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

| MODULE | ASK# | OPEN | DUE | CLOSE |
|--------|------|--------|---------------|--------|
| 1 | 1 | 11 Jan | 21 Jan | 25 Jan |
| | 2 | 21 Jan | 31 Jan | 4 Feb |
| 2 | 3 | 1 Feb | 11-Feb | 15 Feb |
| | 4 | 11 Feb | 21-Feb | 25 Feb |
| 3 | 5 | 22 Feb | 4 Mar | 8 Mar |
| | 6 | 4-Mar | 14 Mar | 18 Mar |
| 4 | 7 | 22-Mar | 1 Apr | 5 Apr |
| | 8 | 1-Apr | 11 Apr | 15 Apr |
| 5 | 9 | 12-Apr | 22 Apr | 26 Apr |
| | 10 | 22-Apr | 2 May | 6 May |

COURSE CALENDAR

ASTR 110L OL – Spring 2021Schedule of Modules

| <u>Modules</u> | <u>Topics</u> | <u>Week</u> | <u>Date</u> |
|---------------------------------|-------------------------|--------------------|----------------|
| Module 1 | Some Basics | 1 | 11 -17 Jan |
| | | 2 | 18 -24 Jan |
| | | 3 | 25 -31 Jan |
| Module 2 | Earth, Moon, & Sun | 4 | 1 - 7 Feb |
| | | 5 | 8 - 14 Feb |
| | | 6 | 15 - 21 Feb |
| Module 3 | Gravity & Kepler's Laws | 7 | 22 - 28 Feb |
| | | 8 | 1 - 7 Mar |
| | | 9 | 8 - 14 Mar |
| SPRING BREAK | | 15 - 21 Mar | |
| Module 4 | Motion Analysis | 10 | 22 - 28 Mar |
| | | 11 | 29 Mar - 4 Apr |
| | | 12 | 5 - 11 Apr |
| Module 5 | Actual Exploration | 13 | 12 - 18 Apr |
| | | 14 | 19 - 25 Apr |
| | | 15 | 26 Apr - 2 May |
| CONCLUSION and SUMMATION | | 3- 5 May | |
| Finals Time | | 6 - 14 May | |
| Aloha! | | 18 May 2021 | |