UNIVERSITY of HAWAI'I®
WINDWARD
COMMUNITY COLLEGE

[272L, Physics Lab]

1 Credits (CRN 64384)]

Friday; 4:00 pm – 6:45 pm

INSTRUCTOR: Jacob Hudson

OFFICE: Imiloa 122

OFFICE HOURS: [M,W; 5:45 pm – 7:00 pm.]

TELEPHONE: [(808) 236 – 1222] EMAIL: [jacobh@hawaii,edu]

EFFECTIVE DATE: [Spring 2023]

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 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.

CATALOG DESCRIPTION

[

This laboratory course is a rigorous, calculus-based study for professional or engineering majors. Laboratory exercises are designed to reinforce the fundamental concepts of electricity, magnetism, light, and optical theory.]

STUDENT LEARNING OUTCOMES

As a result of taking this course, students can expect to attain the following outcomes:

1. Demonstrate an experimental understanding of some basic physical concepts and theories.

2. Demonstrate familiarity with various instruments and their use in making reliable and precise measurements.

3. Calculate a result with the appropriate number of significant figures.

4. Analyze data using calculation and graphical methods.

5. Organize an accurate and complete laboratory notebook.

CONNECTION WITH GLOs

- Develop the ability to perceive how people interact with their cultural and natural environments, through their own worldview and through the worldview of others, in order to analyze how individuals and groups function in local and global contexts.
- Identify information needed in a variety of situations, and access, evaluate, and use relevant information effectively and responsibly.
- Make judgements, solve problems, and reach decisions using analytical, critical, and creative thinking skills.
- Use written, visual, and oral communication to discover, develop, and communicate meaning, and to respond respectfully to the ideas of others in multiple environments.

COURSE PHILOSOPHY

Physics is an interesting and challenging subject. It is also the basic science, the foundation of all other physical sciences. Physics attempts to describe the fundamental nature of the Universe and how it works, striving for the simplest explanations common to its diverse behavior. In a rapidly changing environment, the key to success is adaptability. There is no other field of study available which offers the student greater flexibility in this high-tech society of ours. Whatever the career being pursued by the student, one can get no better grounding in fundamental, logical and critical thinking then is possible in physics.

It cannot be emphasized as to how important the lab experience is to the student. In many cases, the validity of a calculated result is based on the assumptions that student made during problem solving. By meeting nature, as it is rather some idealized form, students can test the validity of these assumptions and come to a better understanding of the central concepts of physics. It has often been said that the labs are the defining experience upon which all of scientific knowledge is based. At the very least, lab experiments emphasize the critical thinking that is needed to succeed in physics.

ASSESSMENT TASKS AND GRADING

Grading: Student assessment will be determined from class participation (~25%), Lab reports (~45%), and the lab notebook (~30%).

Class Participation – A laboratory course requires hands-on experiences. Attendance at all classes, on time, and at the scheduled time is necessary. Students are expected to arrive before assignments and instructions are given. The student, before coming to class, should read the experimental procedure that will be carried out.

Notebook - Students will be keeping a notebook of all the experimental work they will be doing. The notebook is not expected to be neat, but it should be organized; include a table of contents with page numbering. The notebook should not be "loose leaf" - the pages should be permanently attached. The notebook is expected to be well organized, in the student's own words, showing all thoughts and measurements that were pertinent to the experiment, a statement of the problem for each experiment, what the general concept was that was being tested, a description of the procedure followed, as well as having a summary of the results, with suitable error analysis and conclusions.

Lab Reports – Three lab reports will be turned in during the semester. The lab report is due at the beginning of the lab session following the session in which the experiment was performed.

COURSE CONTENT

Tentative Schedule:

Date	Experiment
1/13	Introduction/Graphical Methods
1/20	Introduction to the Oscilloscope
1/27	Voltage, Current, and Resistance
2/3	Exam Review (no lab)
2/10	DC Circuits
2/17	Simple Semi-Conductor Lab
2/24	RC – Circuit and Capacitance
3/3	Exam Review (no lab)
3/10	Magnetic Field Mapping
3/24	Refection and Refraction
4/14	Exam Review (no lab)
4/21	Geometrical Optics
4/28	Polarization

LEARNING RESOURCES

Students will need a spiral bound notebook (quadrille is highly recommended), a straight edged protractor, and a 'non-QWERTY' type calculator. A graphing calculator (such as a TI-85) is highly recommended.

ADDITIONAL INFORMATION

- MySuccess: Students may be referred for extra help or advising through MySuccess. Students can also explore resources at MySuccess.Hawaii.edu and windward.hawaii.edu/MySuccess

DISABILITIES ACCOMMODATIONS

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 Kākoʻo 106 for more information.

SEX DISCRIMINATION AND 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:

Jojo Miller, Confidential Advocate
Phone: (808) 348-0663
Email: advocate@hawaii.edu
Office: Hale Kākoʻo 110

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

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

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 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.

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: Alakaʻi 121
- Phone: (808) 235-7422