60308  Physics 170L
1 Credit
F; 3:00 to 5:55 pm

INSTRUCTOR: Dr. Jacob Hudson
OFFICE: Hale Imiloa Rm. 112
OFFICE HOURS: M, T, W, Th; 5:00 pm to 6:00 pm
TELEPHONE: X9112
EFFECTIVE DATE: January 26 to May 15, 2009

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College is committed to excellence in the liberal arts and career development; we support and challenge individuals to develop skills, fulfill their potential, enrich their lives, and become contributing, culturally aware members of our community.

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 kinematics, mechanics, energy, waves and thermodynamics.

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:

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.

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 laboratory experience is to the
student. In many cases, the validity of a calculated result is based on the assumptions the
student made during problem solving. By meeting nature, as it is rather then 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 preformed.

Notebook - Students will be keeping a notebook of all the experimental work they will
be doing. The notebook is expected to be well organized, in the students 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. A lab report is to
be a complete entity in itself. The lab report should have, in your own words, a
description of the procedure followed, your data, and discussion of your results,
conclusions, and sources of error. The lab report is due at the beginning of the lab
session following the session in which the experiment was performed.

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** *(tentative schedule)*

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<td>Introduction/Graphical Methods</td>
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<td>Vectors</td>
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<td>Statistical Evaluation of Errors</td>
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<td>2/27</td>
<td>Determination of g: Pendulum</td>
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<td>3/6</td>
<td>Determination of g: Air Track</td>
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<td>3/13</td>
<td>Exam Review (no lab)</td>
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<td>3/20</td>
<td>Energy Transfer in Collisions</td>
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<td>Kinetic and Potential Energy</td>
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**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.*