

**63132 Physics 170**  
4 Credits  
M, W; 5:30 to 7:10 pm

**INSTRUCTOR:** Dr. Jacob Hudson  
**OFFICE:** Hale Imiloa Rm. 112  
**OFFICE HOURS:** M, T, W, Th; 4:30 pm to 5:30 pm  
**TELEPHONE:** X9112  
**EFFECTIVE DATE:** January 12 to May 10, 2015

### **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 is the first of a rigorous, calculus-based course in physics for the professional or engineering majors. The study of the concepts of physics including the fundamental principles and theories of mechanics, energy, waves and thermodynamics.

### **STUDENT LEARNING OUTCOMES**

The student learning outcomes for the course are:

1. Demonstrate a solid conceptual understanding of kinematics, dynamics, wave phenomena, and thermodynamics.
2. Solve applicable problems using differential calculus and vector analysis.
3. Apply the laws of physics to computational problems in kinematics, dynamics, wave phenomena, and thermodynamics.

### **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. For example, physics explains why the sky is blue, why rainbows have color, what keeps a satellite in orbit, and what atoms and nuclei are made of. 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. Whether the student is contemplating a career as a scientist, an engineer, a teacher, a physician, a lawyer, or a business person, one can get no better grounding in fundamental, logical and critical thinking than is possible in physics.

## ASSESSMENT TASKS AND GRADING

**Grading:** Student assessment will be determined from class participation (~10%), homework (~45%), midterms (~35%) and the Final (~20%). All students are required to take the Final exam in May.

**Class Participation** – In addition to the class lecture, students are to take part in the problem solving that will be emphasized each class.

**Homework** – A homework assignment will be given each class. The assignment is due at the beginning of the next class period. No *Late* assignments will be collected.

**Exams** – There are three midterm exams, each yielding approximately 12% of the overall point total of the semester grade. The final exam is at the scheduled time, and is worth approximately 20% of the overall point total of the semester grade.

## LEARNING RESOURCES

*Text:* **Fundamentals of Physics (Latest Edition); D. Haliday, R. Resnick, & J. Walker**  
J. Wiley and Sons, Inc.

In addition to the above mentioned text, students will need 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)

Date	Subject
1/12	Introduction/Scientific Method
1/14	Measurement
1/21	Motion Along a Straight Line
1/26	Vectors
1/28	Motions in Multiple Dimensions
2/2	Forces and Motion I
2/9	EXAM I
2/11	Forces and Motion II
2/18	Forces and Motion II
2/23	Work and Kinetic Energy
2/25	Potential Energy and Conservation
3/2	Potential Energy and Conservation
3/4	Momentum and Systems of Particles
3/9	Systems of Particles
3/11	Collision
3/16	EXAM II
3/18	Rotations
3/30	Torque and Angular Momentum
4/1	Gravitation (history)
4/6	Gravitation

4/8	Oscillations	
4/13	Waves	
4/15	Waves I	
4/20	Waves II	
4/27		EXAM III
4/29	Heat and Temperature	
5/4	The 1 <sup>st</sup> Law of Thermodynamics	
5/6	Kinetic Theory of Gases	
5/13		FINAL EXAM

### 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](mailto:lemke@hawaii.edu), or you may stop by Hale 'Akoakoa 213 for more information.*

Revised 1/9/2012