

## 60140 Physics 272

3 Credits

M W; 5:30 – 6:45 pm

<b>INSTRUCTOR:</b>	Dr. Jacob V. Hudson Jr
<b>OFFICE:</b>	Hale Imiloa Rm 112
<b>OFFICE HOURS:</b>	M F; 4:30 – 5:30 pm
<b>TELEPHONE:</b>	X9112
<b>EFFECTIVE DATE:</b>	August 24, 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 second in a rigorous, calculus-based physics course for the professional or engineering major. The study of the concepts of physics including the fundamental principles and theories of electricity, magnetism, light and optical theory.

### STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:

1. Demonstrate a solid conceptual understanding of electricity, magnetism, light, and optical theory.
2. Solve applicable problems using calculus and vector analysis.
3. Apply the laws of physics to computational problems in electricity, magnetism, and wave phenomena.

### 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 (~40%), midterms (~30%) 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 (9<sup>th</sup> 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)

	Subject	Text
	Electric Charge	pp. 561-579
	Electric Fields	pp. 580-604
	Gauss’s Law	pp. 605-627
	Electric Potential	pp. 628-655
	Capacitance	pp. 656-681
9/28		EXAM I
	Current and Resistance	pp. 682-704
	Circuits	pp. 705-734
	Magnetic fields	pp. 735-763
	Magnetic fields and Currents	pp. 764-790
10/26		EXAM II
	Induction and Inductance	pp. 791-825
	Maxwell’s Equations	pp. 826-860
	EM Oscillations and AC	pp. 861-888
	Electromagnetic Waves	pp. 889-923
11/23		EXAM III
	Images	pp. 924-957
	Interference	pp. 958-989
12/16		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 May 10, 2007