

60191 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 13 to May 15, 2013

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 (9th 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	Text
1/13	Introduction/Scientific Method	Handout
1/15	Measurement	pp. 1 - 8
1/22	Motion Along a Straight Line	pp. 11 - 37
1/27	Vectors	pp. 38 - 57
1/29	Motions in Multiple Dimensions	pp. 58 - 86
2/3	Forces and Motion I	pp. 87 – 115
2/5		EXAM I
2/10	Forces and Motion II	pp. 116 - 139
2/12	Work and Kinetic Energy	pp. 140 - 165
2/17	Potential Energy	pp. 166 - 186
2/19	Conservation	pp. 186 - 200
2/24	Momentum and Systems of Particles	pp. 201 - 215
2/26	Collisions	pp. 216 – 240
3/5		EXAM II
3/10	Rotations	pp. 241 - 274
3/12	Torque	pp. 275 - 290
3/17	Angular Momentum	pp. 295 - 304
3/19	Gravitation	pp. 330 – 358

4/7

EXAM III

4/14	Oscillations	pp. 386 - 412
4/16	Waves I	pp. 413 - 444
4/21	Waves II	pp. 445 - 475
4/28	Heat and Temperature	pp. 476 - 506
4/30	The 1 st Law of Thermodynamics	pp. 507 - 506
5/5	Kinetic Theory of Gases	pp. 507 - 535
5/7	Entropy and 2 nd Law of Thermodynamics	pp. 536 - 565

5/14

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, or you may stop by Hale 'Akoakoa 213 for more information.

Revised May 10, 2007