University of Hawai'i at Manoa
Department of Physics & Astronomy

SYLLABUS

Physics 151 – College Physics I

SEMESTER: Fall 2016 (August 22 – December 16)

COURSE TIME: MWF 9:30 – 10:20 am
CREDIT: 3 semester hours
SECTION/CRN: Section 001/CRN 72122
LOCATION: PSB 217

INSTRUCTOR: Dr. Mark H. Slovak
OFFICE: Watanabe 313
TELEPHONE: (808) 956-2959
UH e-mail: mslovak@hawaii.edu
OFFICE HOURS: TuTh10:00 – 11:00 am; 2:00 – 3:00 pm or by appointment.

TEXTBOOK(S): *College Physics*, Openstax. This an open use etext (PDF) in Dropbox. (**Required**)

SUPPLIES: A scientific graphing calculator, capable of scientific notation, logarithmic, exponential and trigonometric functions (including inverse functions). (**Required)**

COURSE DESCRIPTION: Physics 151 is the first semester of a two-semester sequence in college level physics. It begins with a basic review of algebra/trigonometry essentials leading into vector algebra. One and two dimensional kinematics and dynamics are covered as well as Newton's laws of motion and theory of universal gravitation. General concepts of momentum, impulse, work and energy are developed and motivate an introduction to torque and rotational motion. Other topics include simple harmonic motion (SHM), fluids (static and dynamic), heat, thermodynamics, statistical physics, and basic wave theory with an emphasis on mechanical waves (like sound).

PREREQUISITE: Math 140 (Trigonometry/Analytic Geometry) or Math 215 (Applied Calculus I) or higher. Basic knowledge of customary or English units is expected and will be expanded with metric or *Systeme International d'unites* (SI) units.

LAB: Students may enroll in PHYS 151L (*College Physics Laboratory I*). It is highly recommended that students enroll in the lab concurrently with the lecture.

CLASS POLICIES: The University does not have a mandatory attendance policy nor is roll taken each class period. Occasional unannounced quizzes are given and serve as proof of attendance. Each student is responsible for all materials presented, including lecture notes and in-class demonstrations. If a class is missed for a valid reason (family

emergency, medical, university-related travel), it is the student's responsibility to contact the instructor (using UH Manoa e-mail mslovak@hawaii.edu) to obtain any assignments or additional information. My faculty mailbox is in the department office (Watanabe 416) and ALL items should be placed in it ONLY (do not slip papers under my door as they may be discarded).

STUDENT CONDUCT: It is also the student's responsibility to be familiar with the University *Code of Conduct* outlining the University's policy regarding academic dishonesty and other prohibited behaviors. Important excerpts are listed below:

University of Hawaii: **Conduct – Rules and Regulations**

Engaging in any of these behaviors subjects a student to the disciplinary process and sanctions on each campus.

1. Acts of dishonesty, including but not limited to the following:

   a. *Cheating, plagiarism, or other forms of academic dishonesty*.

   The term "cheating" includes, but is not limited to: (1) use of any unauthorized assistance in taking quizzes, tests, or examinations; (2) use of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; (3) the acquisition, without permission, of tests or other academic material belonging to a member of the UH faculty, staff or student (4) engaging in any behavior specifically prohibited by a faculty member in the course syllabus or class discussion.

2. Disruption or obstruction of teaching, research, administration, disciplinary proceedings, other UH activities. Creating noise or other disturbances on campus sufficient to disrupt the normal functioning of campus activities including classroom instruction.

3. Threatening or endangering the health or safety of any person including but not limited to, physical abuse, verbal abuse, threats, intimidation, harassment, coercion, or stalking.

4. Sexual advances, requests for sexual favors or other behavior of a sexual nature that is unwelcome and sufficiently severe or pervasive that it interferes with a person's academic or professional performance or creates an intimidating, hostile or offensive educational environment.

CIVILITY: Students are expected to be on-time for class, courteous about not talking and silencing phones during lecture and not banging desktops near the end of lecture. *Always* put your class (PHYS151) in the subject header of email so I can identify which class you are in.

HOMEWORK: In addition to weekly chapter reading assignments, **seven (7) homework assignments** in the *ExpertTA* website will be assigned. Homework is to be completed by the due date listed with each assignment. (**10% of course grade**).

QUIZZES: Announced quizzes will usually be given during a Friday lecture for a total of **four (4) quizzes**. Occasional *unannounced quizzes* will be given for *attendance* purposes. Solutions to quizzes will be posted in Dropbox. See Class Schedule for quiz dates. (**20% of course grade**).

EXAMS: **Three (3) in class exams** are scheduled during the semester. Each exam covers the material since the previous exam and includes extra credit questions. Solutions to exams will be posted in Dropbox. See Class Schedule for exam dates. (**54% of course grade**).

FINAL EXAM: **A *comprehensive* 2 hour final exam** is given on Monday, December 12, 2016 from 9:45 – 11:45 am in the regularly scheduled classroom (PSB 217). (**16% of course grade**).

STUDENT LEARNING OUTCOMES (SLOs): After successfully completing Physics 151, students should be able to:

- Demonstrate significant physics problems solving and calculator skills;
- Perform unit conversions, basic dimensional analysis and vector algebra;
- Define and explain the terminology of vectors, mechanics, accelerated vs. unaccelerated motion, work, energy, momentum, torque, rotational motion, thermodynamics, heat, and wave properties;
- Recognize the principles of physics that form the basis for various modern technologies and be able to solve the relevant algebraic equations that are derived from such principles;
- Show proficiency using a scientific graphing calculator to perform numerical operations to solve equations of algebraic physics, including trigonometric, exponential and logarithmic functions and their inverses;

PROVISIONAL GRADING: The preliminary grading scale used to assign the final grade is given below and is subject to minor revision (i.e. "curving") at the discretion of the instructor based on class performance.

A: 90 - 100% B: 80 - 89% C: 70 - 79% D: 60 - 69% F: < 60%

MAKEUP: Students are strongly encouraged NOT to miss any quizzes or exams during the semester, unless a valid reason such as medical emergency arises or excused university travel. *All makeup quizzes or exams will be scheduled during the instructor's office hours or by appointment only and must be made up within one (1) week of quiz/exam date unless exceptional circumstances arise.*

SPECIAL SERVICES: Students with special needs and accommodations are requested to contact the UH Manoa KOKAU program for accommodation regarding extended time and assistance for quizzes and exams. Go to http://www.hawaii.edu/kokua/ for more information.

ADDITIONAL RESOURCES: For additional help outside of office hours and forming student study groups, students may receive additional assistance at:

- The Physics Learning Center in Watanabe 421. Open whenever Watanabe Hall is open (not on weekends). Physics Lab TAs schedule two weekly office hours in

this room for tutoring. Couches, chalkboards, and many reference texts are available. Check schedule posted in Watanabe 421

- The Natural Science Learning Emporium in Bilger Addition 209, open weekdays for all students taking lower division math and science classes. Schedule for tutors for physics is posted on BilA 209 and can be found at http://www.hawaii.edu/natsci/physics.php.
- The Learning Assistance Center in Sinclair Library offers free, one-on-one tutoring for PHYS 151, as well as for other math and science classes. Go to http://manoa.hawaii.edu/undergrad/learning/tutoring for more information.

There are many physics websites available, with video lectures, demonstrations, explanations and simulations. Some are free to access and others require a fee. One free website that is recommended is *The Physics Classroom* at:

http://www.physicsclassroom.com/

HOMEWORK WEBSITE *ExpertTA:* Students must enroll in the *ExpertTA* website which is used for homework. Problems are assigned from chapters in *College Physics* textbook and a student solution manual is posted in Dropbox. To enroll in *ExpertTA* follow the instructions at the registration link below:

Expert TA Student Registration Fall 2016
Registration: PHYS 151 (Fall 2016) College Physics I w/ Dr. Slovak Cost: $27.50.
Link: https://www.theexpertta.com/registration
Student Class Code: **USC13HI-B9CAB1-1ED**

Students *must* be on the UH roster as registered in Physics 151 *before* they can enroll in *ExpertTA*. All registered students should enroll by *the end of the second week* of classes to be able to access assigned homework in a timely manner.