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

SYLLABUS

Physics 170 – General Physics I

SEMESTER: Spring 2017 (January 9 – May 12, 2017)

COURSE TIME: MWF 11:30 – 12:20 pm CREDIT: 4 semester hours
SECTION: 001, 002, 003, 007, 008, 009
CRN: 81621, 88187, 88186, 85997, 86824, 86828
LOCATION: PSB 217
INSTRUCTOR: Dr. Mark H. Slovak OFFICE: Watanabe 313
TELEPHONE: (808) 956-2959 UH e-mail: mslovak@hawaii.edu
OFFICE HOURS: Tu 10 – 11:00 am; MWF 3 – 4:00 pm or by appointment.

TEXTBOOK(S): *University Physics*, Young and Freedman, Volume 1. 13th ed.,(2014). Either printed text or etext in *Mastering Physics* website is acceptable. (**Required**)

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

COURSE DESCRIPTION: Physics 170 is the first semester of a two-semester sequence in calculus-based university level physics. Similar in scope to Physics 151, topics covered include one and two dimensional kinematics and dynamics, forces and free body diagrams (FBDs), Newton's laws of motion, theory of gravity and satellite motion. General concepts of work, energy, power, impulse and momentum are defined, as well as torque and rotational motion and equilibrium conditions. Other topics include aspects of solids and fluids, temperature, heat and thermodynamics, simple harmonic motion, waves and sound.

PREREQUISITE: Math 241 (Calculus I) or Math 215 (Applied Calculus I) or higher. Concurrent enrollment in Math 242 (Calculus II) if not previously taken. Knowledge of customary or English units is expected and will be expanded with metric or *Systeme Internationale (SI) units.*

LAB: Students may enroll in PHYS 170L (*General Physics I Lab*). 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).

STUDENT CONDUCT: It is 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 (PHYS170) in the subject header of email so I can identify which class you are in.

RECITATION: Students are required to attend in weekly recitation sections, run by experienced graduate student teaching assistants (TAs). These sessions emphasize group work in problem solving. (**16% of course grade**).

HOMEWORK: In addition to weekly chapter reading assignments, **six (6) homework assignments** in the *Mastering Physics* website will be assigned. Homework is to be completed by the due date listed with each assignment. (**6% 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/Laulima. See Class Schedule for quiz dates. (**18% 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/Laulima. See Class Schedule for exam dates. (**48% of course grade**).

FINAL EXAM: **A *comprehensive* 2 hour final exam** is given on Friday, May 12, 2017 from 2:15 – 4:15 pm in the regularly scheduled classroom (PSB 217). (**12% of course grade**).

STUDENT LEARNING OUTCOMES (SLOs): After successfully completing Physics 152, 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 kinematics and dynamics, unaccelerated and accelerated motion, work, energy, power, impulse, momentum, properties of solids and fluids, thermodynamics and heat, wave properties and simple harmonic motion, sound and sound intensity;
- Recognize the principles of physics that form the basis for technologies and be able to solve algebraic/calculus equations derived from these principles;
- Show a proficiency in recognizing and using the equations of algebraic/calculus physics, including differentiation and integration, 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: 84 - 100% B: 68 - 83% C: 52 - 67% D: 38 - 51% F: < 38%

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.*

SPECIAL SERVICES: Students with special needs and accommodations are requested to contact the UH Manoa KOKUA 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 Bigler 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 170, 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 *Mastering Physics:* Students must enroll in the *Mastering Physics* website which is used for homework. Problems are similar to those at the end of chapters in the *University Physics* textbook. To enroll in *Mastering Physics* follow the instructions at the registration link below:

One (1) semester *Mastering Physics* with or without etext online purchase.
Website URL:
http://www.pearsoncustom.com/hi/uhm_mastphysics/
The class code to enter is: **PHYS170S2017.**

Students must be on the UH roster as registered in Physics 170 before they can enroll in *Mastering Physics*. All registered students must enroll by *the end of the first week* of classes.