PHYS 171 – Fall 2013

Meets: MWF 9-9:50, STB 118; T or Th 3:30-4:45, STB 118
Instructor: Philippe Binder, pbinder@hawaii.edu, STB 220
Office hours: 11-12 WF, 2-3 TR or by appointment.
Final exam: Dec 18 (W) 7:30 am – 9:30 am

Welcome to the calculus-based Freshman electricity, magnetism and optics class. The pre-requisites are Phys 170 or equivalent and Math 205, and the co-requisite is Math 206. This course is worth 4 credits. The lab (Phys 171L) may be taken concurrently but it is not a co-requisite.

The course will operate in the flipped classroom modality. You will be asked to watch about 32 lectures from Walter Lewin's MIT OpenCourseware ***before*** class. The material can be accessed at the URL below and the lecture numbers are given in the program.

http://ocw.mit.edu/courses/physics/8-02-electricity-and-magnetism-spring-2002/video-lectures/

Homework will be distributed through the Mastering Physics system, accessible at URL

www.masteringphysics.com ;

sign up for course P171F13. It will typically be due Friday afternoons, except on weeks that have a Friday test. It is computer-graded and no late homework will be accepted.

Grading: 10% flipped classroom verification; 15% homework; 25% each two tests and final exam. Standard scale (A/A-: 90 to 100, B-/B/B+: 80-89, etc.) will be applied; this can be modified for the benefit of the students.

Tentative Program:

Date	Flipped Lecture	Topic	Hw due	
8/26	1	Charges and induction		
8/28	2	Electric fields and dipoles		
8/30	3	Electric flux and Gauss's Law		
TR		*No meetings*		
9/2	---	*No class: Labor Day*		
9/4	4	V and electric energy		
9/6	5	E and V, equipotentials, conductors		
TR			Friday	
9/9	7	Capacitance		
9/11	8	Polarization, dielectrics		
9/13	9	Current, resistivity, Ohm's Law		
TR			Friday	
9/16	10	Batteries and EMF		
9/18	11	Magnetic field and Lorentz force		
9/20				
TR			Friday	
9/23	13	Moving charges in magnetic fields		

9/25	14	Biot-Savart Law		
9/27		Test #1 (Through 9/13 lecture)		
TR			Saturday	
9/30	15	Ampere's Law		
10/2	16	Electromagnetic induction		
10/4				
TR			Friday	
10/7	17	Motional EMF and dynamos		
10/9	18	Displacement current, synchronous motors		
10/11		Flipped lecture 19 in class		
TR			Friday	
10/14		Maxwell's Equations		
10/16	20	Inductance and RL circuits		
10/18				
TR			Friday	
10/21	21	Magnetic materials		
10/23	22	Hysteresis, electromagnets		
10/25				
TR			Friday	
10/28	24	Transformers, coils, RC circuits		
10/30	25	Driven circuits and resonance		
11/1		Test #2 (Through 10/23 lecture)		
TR			Saturday	
11/4	26	Travelling and standing waves		
11/6	28	Index of refraction, Poynting vector		
11/8				
TR			Friday	
11/11		*No class: Veterans' Day*		
11/13		Geometric optics: Lenses		
11/15		Geometric optics: Mirrors		
TR			Friday	
11/18	29	Snell's Law, refraction and total reflection		
11/20	30	Polarizers		
11/22				
TR			Friday	
11/25	33	Double-slit interference		
11/27		Thin films		
11/29		*No class: Thanksgiving break*		
TR		*No class: Thanksgiving break*		
12/2		Diffraction		
12/4	34	Gratings and resolving power		
12/6		Flipped lecture 31 in class		
TR			Friday	
12/9		Flipped lecture 35 in class		
12/11		Final review		
TR				

Advising helps students complete their degree and major requirements. Students should consult with their advisor at least once a semester. Advising is a shared responsibility, but students have final responsibility for meeting degree requirements.

Any student with a documented disability who would like to request accommodations should contact the University Disability Services Office at 933-0816, 933-3334 (TTY), Campus Center 311, as early in the semester as possible.

Student Academic Expectations and Responsibilities

Develop an academic plan.

Outline your educational goals and objectives, keeping in mind the requirements of your planned degree. Use this to construct a realistic academic plan. In deciding on courses and academic load, carefully consider your level of preparation, as well as any extracurricular commitments and responsibilities.

Read and understand the syllabus for each course you are enrolled in.

The syllabus is more than a listing of course times and material. It also outlines what an engaged and responsible student can expect to learn; describes examination, grading, and student conduct policies; outlines the permitted use of electronic devices; and informs students how they may contact their professor for additional guidance.

Develop your own set of study skills, and use them regularly.

Learn what study techniques work for you personally. Plan adequate time for studying class material (a useful estimate is at least 3 hours of extracurricular work per lecture hour). Set aside extra time to complete big assignments, such as term papers or presentations. Expect to have material covered at a much faster pace than in high school. Additionally, expect that the pace and difficulty of material will increase as a student progresses from 100-level to 400-level courses.

Come to class prepared.

As a student, it is your responsibility to come prepared to each and every class. This includes completing reading, problem-solving or other assignments prior to the lecture. This also means coming to class mentally prepared, being awake and attentive, and taking useful notes.

Take full advantage of available academic resources.

*Attend office hours regularly and get to know your instructors. Frequent t**he** Edwin H. Mookini Library and become familiar with all library services and resources such as reserve materials, article databases, and the extensive book collections (both print and e-books). Be aware of your academic performance throughout the semester, and should you need additional help, advising and tutoring services are available.*

Participate in your own education.

Become engaged in your own education. It is your responsibility to ask questions when you don't fully understand course material, and to seek additional help if needed.

Adhere to the UHH Student Conduct Code.

You have a responsibility to familiarize yourself with and adhere to the tenets of the UH Hilo Student Conduct Code. Violations of the Code (e.g. academic dishonesty, disruptive behavior, personal threats) are subject to disciplinary procedures that may include expulsion from the University.

Keep a healthy mind and body.

Excessive stress, fatigue, or unhealthful habits can interfere with your academic success. Be aware of your mental and physical state and how it impacts your performance in class. Counseling services are available, and take advantage of these services in a proactive manner should you be experiencing personal or academic difficulties.

Approved by Faculty Congress January, 2012

Approved by Interim Vice Chancellor for Academic Affairs February 2012