PHYS-272   SYLLABUS   FALL 16/17

Course Instructor: Prof. Jelena Maricic ([jelena@phys.hawaii.edu,](mailto:jelena@phys.hawaii.edu) WAT-311)
Office hours: Mon/Wed: 10-11 am

Textbooks: UNIVERSITY PHYSICS: by H. D. Young and R. A. Freedman, 13th ed. Pearson/Addison Wesley.

Course Website: https:/laulima.hawaii.edu

Learning Outcomes

On completion successful students will be able to:

a) Demonstrate mastery of problem solving skills in general
b) Demonstrate an understanding of the Coulomb's law, Gauss's law, electric field, potential and electric potential
c) Demonstrate mastery of solving circuits and currents
d) Demonstrate an understanding of the magnetic field for steady currents and moving charges.
e) Calculate magnetic properties of simple current distributions using Biot-Savart and Ampère's laws.
f) Demonstrate an understanding of electromagnetic induction and related concepts, making calculations using Faraday and Lenz's laws.
g) Demonstrate an appreciation of the physical content of Maxwell's laws in integral form.
h) Demonstrate an understanding of electromagnetic waves and AC circuits
j) Demonstrate an understanding of nature of propagation of light and basic laws of geometric optics

NOTES:
1. The course week starts with the Tuesday lecture. (9:00 – 10:15am/10:30 – 11:45am, Watanabe-112 and Bilger-150). Lectures will be held every Tuesday and Thursday.

Preparation prior to EACH course session:
   a) Review PowerPoint lecture notes posted on the web for the chapter being discussed that week and read the relevant sections in the textbook.

   b) Online homework assignment (~ 2-3 simple problems) will be assigned from the *Mastering Physics* website (required) for each class session. Some of the daily homework may involve simple calculations or be of conceptual nature. Assigned problems will involve concepts that will be discussed in the next course session.

   Weekly written homework:
   A written weekly problem set (consisting of 2-3 problems) will be due each Thursday at the beginning of the class. Please submit solutions that are clear and detailed in addition to being correct. Solutions copied from solution manual will receive 0 credit.

Mastering Physics course code: **MPMARICIC25437 (section 2)**
MPMARICIC87373 (section 3)

3. **iClickers** (required): iClickers are available at the UH Bookstore. They will be used for in-class quizzes and 2-minute problems. iClickers should be brought to EVERY course session.

Week-1 (08/23/16)
Lectures Chapter 21: secs.1-7
Electric Forces and Electric Fields **,** Coulomb's Law.
Weekly HW: check the course website

Week-2 (08/30/16)
Lectures Chapter 22: secs. 1-5
Concepts of electric field and flux. Gauss' Law and its applications
Weekly HW: check the course website

Week-3 (09/06/16)
Lectures Chapter 23: secs.1-5
Electric potential and electric potential energy: Discrete and continuous charge distributions.
Weekly HW: check the course website

Week-4 (09/13/16)
Lectures Chapter 24: secs.1-5
Capacitance, series and parallel combinations, energy stored in a capacitor, dielectric-filled capacitors
Weekly HW: check the course website

Week-5 (09/20/16)
Lectures Chapter 25: secs. 1-5
Electric current, Ohm's law, electric energy and power.
Weekly HW: check the course website

Week-6 (09/27/16)
Lectures Chapter 26: secs. 1-2 Kirchhoff''s
rules and dc-circuit analysis.
Weekly HW: check the course website
MIDTERM EXAM #1: 09/29/16, CH21-25

Week-7 (10/04/16)
Lectures Chapter 26: secs. 3-4 Kirchhoff''s
rules and dc-circuit analysis. **Lectures**
Chapter 27: secs. 1-4
Magnetic field and its interaction with moving charges and currents.
Weekly HW: check the course website

Week-8 (10/11/16)
Lectures Chapter 27: secs. 5-8
Magnetic field and its interaction with moving charges and currents.

Lectures: Chapter 28: secs. 1-4
The Bio-Savart law, interaction between two current carrying wires, the Ampere's law, magnetic field produced by simple current carrying shapes- loops, solenoids and toroids.
Weekly HW: check the course website

Week-9 (10/18/16)
Lectures Chapter 28: secs. 5-7
The Bio-Savart law, interaction between two current carrying wires, the Ampere's law, magnetic field produced by simple current carrying shapes- loops, solenoids and toroids.
Lectures: Chapter 29: secs. 1-4
Faraday's and Lenz's laws of induction, induced *emf*, self inductance and mutual inductance
Weekly HW: check the course website

Week-10 (10/25/16)
Lectures Chapter 29: secs. 5-7
Faraday's and Lenz's laws of induction, induced *emf*, self inductance and mutual inductance
Lectures Chapter 30: secs. 1-3
Inductance
Weekly HW: check the course website

Week -11 (11/01/16)
Lectures Chapter 30: secs. 4-6
Inductance
Lectures Chapter 31: secs. 1-3
Alternating currents
Weekly HW: check the course website

Week -12 (11/08/16)
Lectures Chapter 31: secs. 4-6
Alternating currents
Weekly HW: check the course website

MIDTERM EXAM#2: 11/08/16, CH26-30

Week -13 (11/15/16)
Lectures Chapter 32: secs. 1-5
Electromagnetic waves **Problems**
Weekly HW: check the course website

Week -14 (11/22/16)
Lectures Chapter 33: secs. 1-7
The Nature and Propagation of Light
Weekly HW: check the course website

Week -15 (11/29/16)
Lectures Chapter 34: secs. 1-4
Geometric Optics and Optical Instruments
Weekly HW: check the course website

Week -16 (12/06/16)
 Lectures Chapter 34: secs. 1-4
 Geometric Optics and Optical Instruments
 Weekly HW: check the course website

Note: Minor changes may be made to the Syllabus whenever considered appropriate.

QUIZZES: Students use ONLY iClickers for the in-class quizzes (responses written on the paper will not be accepted). These quizzes last approximately 10 minutes and consist of 3 multiple choice questions (A...E or A...D for most questions, and True/False for others) that can be answered in 2-3 minutes: either conceptual or simple calculation problems. The students have to work alone, with no talking during the quiz. Quizzes will take place at the beginning of the lecture to check the student preparation for the class.

In-class 2-minute problems are of a conceptual nature involving application of principles being discussed in each lecture. The questions are multiple choice, very similar to the quizzes. However, in contrast to the quizzes, students are encouraged to discuss the possible answers among themselves before clicking.

The same grading scheme is used for 2-minute problems and for quizzes: 4 points for a correct answer; 1 point for an incorrect answer (a point for participation and effort).

MIDTERMS Two in-class 75-min. midterms will be given during the term. If you miss a midterm and have a documented, valid reason for doing so, please come and discuss it with me as soon as possible. It is not enough just to send an e-mail message about your absence from a midterm. You should state in writing why you missed a midterm (the fill-out form is at the end of the syllabus). A single make-up midterm with material covering chapters 21-30 will be given toward the end of the term. In case that no form is received, a score of zero will automatically be assigned for the missed midterm.

TENTATIVE MIDTERM SCHEDULE

WEEK	Date/Time	Rooms
6	Thur., 09/29/16	In-class
12	Thur., 11/08/16	In-class

(**NOTE**: **If you are going to be away on a scheduled UH-related activity and miss a midterm, it is your responsibility to discuss it with me at least two weeks before such an expected absence.**

FINAL EXAM: The final exam is comprehensive – it will be based on all the subject material covered in the course. However, the material covered during the second half of the term is given more emphasis.

Grading: The final course grade will be based on the following weights.

Daily Quizzes/Midterm 1/Midterm 2   10%/ 20%/ 20%
MP online Homework/Written Homework   10%/ 15%
Final Exam   25%
In-class 2-minute problems   10% EXTRA CREDIT

Grade assignment *guidelines*: A 90-100
                                                    B 80 - 90
                                                    C 70-80
                                                    D 60-70
                                                    F < 60

Minor adjustments to the grading scale are possible and will be applied as needed at the end of the term. Grades like A+, A-, B+, B-, C+, C-, D+, D- will also be assigned. The ranges for these grades will be determined at the end of the term, when the final grades are assigned.

PERMISSION TO TAKE THE MAKE-UP MIDTERM

Name_____

(please print)

Student ID:_____

MIDTERM missed: MIDTERM-I   MIDTERM-II
(circle one)

Reason for missing the midterm: (please be very brief)

By submitting this form, I understand that if I miss the make-up midterm for any reason whatsoever my grade in the missed midterm will be zero.

Signature:_____