PHYS-274 SYLLABUS SPRING 2020

Course Instructor: Prof. Jelena Maricic (jelena@phys.hawaii.edu, WAT-311)
Office hours: Wed: 11-12 am and per appointment

Textbooks: UNIVERSITY PHYSICS Volume 2 & 3 (Chaps. 35-44),
15th Edition, by Young and Freedman, Pearson

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) Mastering interference and diffraction concepts
c) Understand the basic principles of modern physics: Einstein theory of Relativity, Quantum theory of light, Particle nature of matter, Quantum mechanics in one dimension, basics of Solid State Physics, Nuclear and Particle Physics and their applications.
d) Develop a comprehension of the current basis of broad knowledge in Modern physics.

NOTES:
The course week starts with the Tuesday lecture. (1:30 – 2:45 pm, BIL 150).
Lectures will be held every Tuesday and Thursday.

Preparation prior to EACH course session:
a) Read the relevant sections in the textbook.

b) Review problems (by doing them by yourself independently) discussed in the previous lecture session.

c) Review examples in the textbook, for the material covered in previous lecture.

Homework:
Homework will be assigned from the Mastering Physics website (required) for each chapter.
Written homework will be assigned for each chapter.
Deadline extended under special circumstances upon request.

Mastering Physics course code: maricic01651
Access code: **DSCKUO-GIBLI-RISEN-SWEET-IBIZA-JUTES**

iClickers (required): iClickers are available at the UH Bookstore . They will be used for

in - class quizzes and questions. iClickers should be brought to EVERY course session. Answers on paper will NOT be accepted.

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

Week - 1 (01/13/20)
Lectures: Chapter 35
Interference

Week – 2 (01/20/20)
Lectures: Chapter 36
Diffraction

Week – 3 (01/27/20)
Lectures: Chapter 37
Special Relativity

Week – 4 (02/03/20)
Lectures: Chapter 37 continued
Relativity

Week – 5 (02/10/20)
Lectures: Chapter 38
Photons: Light Waves Behaving as Particles

Week – 6 (02/17/20)
Lectures: Chapter 39
Particles Behaving as Waves
MIDTERM I: Chapters 35, 36, 37, 38;
Date: 02/20/20

Week – 7 (02/24/20)
Lectures: Chapter 39 continued
Particles Behaving as Waves

Week – 8 (03/02/20)
Lectures: Chapter 40
Quantum Mechanics I: Wave Functions

Week – 9 (03/09/20)
Lectures: Chapter 40 continued
Quantum Mechanics I: Wave Functions

Week – 10 (03/16/20)
SPRING BREAK
No classes

Week – 11 (03/23/20)
Lectures: Chapter 41
Quantum Mechanics II: Atomic Structure

Week – 12 (03/30/20)
Lectures: Chapter 41 continued

Quantum Mechanics II: Atomic Structure

Week – 13 (04/06/20)
Lectures: Chapter 42
Molecules and Condensed Matter
MIDTERM II: Chapters 39, 40, 41;
Date: 04/09/20

Week – 14 (04/13/20)
Lectures: Chapter 42
Molecules and Condensed Matter

Week – 15 (04/20/20)
Lectures: Chapter 43
Nuclear Physics

Week – 16 (04/27/20)
Lectures: Chapter 44
Particle Physics and Cosmology

QUIZZES: Students use ONLY iClickers for the **closed book** in-class quizzes (responses written on paper will not be accepted). These quizzes last approximately 15 minutes and consist of 3-6 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 lectures from time to time, 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 35 - 41 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. (may change) 02/20/20	In-class
13	Thur. (may change) 04/09/20	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 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.

Quizzes/Midterm 1/Midterm 2	10%/25%/25%
Mastering Physics Homework	5% EXTRA CREDIT
Written Homework	5%
Final Exam	35%
In-class 2-minute problems	5% 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, but no big changes are anticipated.

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:

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:_____