PHYS-274 SYLLABUS SPRING 2024

Course Instructor: Prof. Jelena Maricic (jelena@phys.hawaii.edu, WAT-311)
Tel: (808) 206-1742
Office hours: after class or 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 (10:30 – 11:45 am) at BIL150.

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: online plus written homework
Homework will be assigned from the Modified Mastering Physics website (required) for each chapter. Some of the problems on the Mastering Physics website will be assigned for practice. However, these SAME practice problems actually compose written homework. In this way you can get assistance from the online homework website, BUT you need to write them down and submit for grading, helping you prepare for the midterm.
Deadline extended under special circumstances, upon request.
Online HW due on Thursday the following week at 11:59 pm, while written HW due before class on the same day.
Mastering Physics course code – follow the registration instructions provided in the file located on Laulima in the resource section.
IDAP details available on Laulima

iClickers (required): mobile devices with iClicker app installed. They will be used for in - class quizzes and questions.

https://app.reef-education.com/#/login

Join link: https://join.iclicker.com/DLGT

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

Week - 1
Lectures: Chapter 35
Interference
Written homework questions: 35.2, 35.21, 35.28, 35.32

Week – 2
Lectures: Chapter 36
Diffraction
Written homework questions: 36.4, 36.11, 36.15, 36.29

Week – 3
Lectures: Chapter 37
Special Relativity
Written homework questions: TBD

Week – 4
Lectures: Chapter 37 continued
Relativity
Written homework questions: TBD

Week – 5
Lectures: Chapter 38
Photons: Light Waves Behaving as Particles
Written homework questions: TBD

Week – 6
Lectures: Chapter 39
Particles Behaving as Waves
Written homework questions: TBD

Week – 7
Lectures: Chapter 39 continued
Particles Behaving as Waves
MIDTERM I: Chapters 35, 36, 37, 38;
Written homework questions: TBD

Week – 8
Lectures: Chapter 40
Quantum Mechanics I: Wave Functions
Written homework questions: TBD

Week – 9
Lectures: Chapter 40 continued
Quantum Mechanics I: Wave Functions
Written homework questions: TBD

Week – 10
Lectures: Chapter 41
Quantum Mechanics II: Atomic Structure
Written homework questions: TBD

Week – 11
Lectures: Chapter 41 continued
Quantum Mechanics II: Atomic Structure
Written homework questions: TBD

Week – 12
Lectures: Chapter 42
Molecules and Condensed Matter
MIDTERM II: Chapters 39, 40, 41;
Written homework questions: TBD

Week – 13
Lectures: Chapter 42
Molecules and Condensed Matter
Written homework questions: TBD

Week – 14
Lectures: Chapter 43
Nuclear Physics
Written homework questions: TBD

Week – 15
Lectures: Chapter 44
Particle Physics and Cosmology

Week – 16
Lectures: Chapter 44 continued
Particle Physics and Cosmology

QUIZZES: Students use ONLY iClickers for the in-class quizzes. 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. 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.

The same grading scheme is used for 2-minute problems and for quizzes: 1 points for a correct answer; 0.25 point for an incorrect answer (for participation and effort).

MIDTERMS Two midterms will be given during the term. If you miss a midterm and have a documented, valid reason for doing so, please notify me by email as soon as possible. You should state in writing why you missed a midterm (the fill-out form is at the end of the syllabus) and email it to me. 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	
7	Tues. (may change) 02/20/24	During class time
12	Thur. (may change) 03/28/24	During class time

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	15%/20%/20%
Mastering Physics Homework	7.5%
Written homework	7.5%
Final Exam	30%
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:_____