

Course Instructor: Prof. Jelena Maricic (jelena@phys.hawaii.edu, WAT-311)
Office hours: per appointment on zoom

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, Zoom).

Zoom link: <https://hawaii.zoom.us/j/9343295160>

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.

Deadline extended under special circumstances, upon request.

Mastering Physics course code: **maricic74975**

Access code: **DSCKUO-ABOHM-LADEN-SIXTE-FRONT-DENSE**

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

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

Week - 1

Lectures: Chapter 35

Interference

Week – 2

Lectures: Chapter 36

Diffraction

Week – 3

Lectures: Chapter 37

Special Relativity

Week – 4

Lectures: Chapter 37 continued

Relativity

Week – 5

Lectures: Chapter 38

Photons: Light Waves Behaving as Particles

Week – 6

Lectures: Chapter 39

Particles Behaving as Waves

MIDTERM I: Chapters 35, 36, 37, 38;

Week – 7

Lectures: Chapter 39 continued

Particles Behaving as Waves

Week – 8

Lectures: Chapter 40

Quantum Mechanics I: Wave Functions

Week – 9

Lectures: Chapter 40 continued

Quantum Mechanics I: Wave Functions

Week – 10

Lectures: Chapter 41

Quantum Mechanics II: Atomic Structure

Week – 11

Lectures: Chapter 41 continued

Quantum Mechanics II: Atomic Structure

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

Week – 13
Lectures: Chapter 42
Molecules and Condensed Matter

Week – 14
Lectures: Chapter 43
Nuclear Physics

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	
6	Thur. (may change) 10/01/20	During class time
12	Thur. (may change) 11/12/20	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	15%
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:
(circle one)

MIDTERM-I

MIDTERM-II

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:_____