

PHYSICS 232

FUNDAMENTALS OF PHYSICS: Wave, Optics and Modern Physics

Dr Kate Jones

Ayres 220a*

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General Information

Class Hours: 11:15 – 12:05 Mon/Wed/Fri

Office Hours: 14:00 – 16:00 Wed/Fri and by appointment

Text: Young & Freedman, *University Physics*, **11th Edition** with Modern Physics ISBN: 0-8053-9185-1 **Recommended**.

The 12th edition of the text is now available ISBN 0-8053-2187-X. If you **cannot get a copy of the 11th edition**, then you should use this new edition. Some page numbers and exercises may be different.

General Course Description

Continuation of 231. This course covers material concerning waves, sound, light, optics, relativity, quantum mechanics and other aspects of modern physics.

Prerequisites

Physics 231 is a prerequisite. The course and text presume a familiarity with calculus and calculus concepts. A background in mathematics up to the level of Math 141-142, or equivalent, is highly recommended and is probably necessary for success in the course.

Lecture Notes and Course Updates

Lecture notes and updates including definite dates for exams will be posted on Online@UT (blackboard). I **may** post lecture notes on the physics website, however, please note that lectures and blackboard are my primary modes of communication with the class.

* Ayres 220a is not on the main corridor, enter through room 218, or 220

Reading Assignments

Reading the relevant chapter or sections for each week's lectures is a compulsory and vital part of the course.

Course material

<u>Reading/Lectures</u>	<u>Subject Material</u>
Chapter 13	Intro, oscillations, SHM
Chapter 15	Mechanical waves
Chapter 16	Sound
Chapter 32	Electromagnetic Waves
Chapter 33	Light
Chapter 34	Geometric optics
Chapter 35	Inteference
Chapter 36	Diffraction
Chapter 37	Relativity
Chapter 38	Photons, electrons and atoms
Chapter 39	Wave nature of particles
Chapter 40	Quantum mechanics
Chapter 41	Atomic structure
Chapter 42	Condensed matter
Chapter 43	Nuclear physics
Chapter 44	Particle physics

**Please consult the official UT final exam schedule
for the date of the final examination**

ACADEMIC HONESTY

All work submitted by a student is expected to represent their own work. Students are expected to enter their own homework on the CAPA system without assistance from others. Students are expected to perform all work in conformance with the University policies regarding Academic Honesty.

Grading Policy

The semester Grade will be based on a Weighted Averages of hour tests grades, final exam grades, as well as laboratory scores, and homework scores.

Homework will comprise 15% of the final semester Grade

Homework sets will be assigned On-Line using the CAPA software system (<http://homework.phys.utk.edu/>). CAPA instructions are posted on the 232a web site. The problem sets will *generally* be available on-line at 12:00 noon each Monday and will be due at 8:00 am on the following Monday. Exceptions (for example at the Fall Break) will be noted in class) The first problem set will be assigned January 15 and will be due **2 weeks** later on 29 January to allow a chance for students to familiarize themselves with the CAPA software. There will be ~12 problem sets. **Due dates for problem sets are firm.** In lieu of extensions, the two lowest scores on homework sets will be dropped from the average.

NO EXTENSIONS OR MAKE-UP PROBLEM SETS WILL BE GIVEN

Laboratory Scores will comprise 25% of the final semester Grade.

While laboratory work will be graded by each Lab Instructor independently, an effort will be made to insure a uniform grading policy between different laboratory sections. Laboratory make-ups are entirely at the lab instructor's discretion and arrangements for such must be made with the lab instructor.

Hour Tests & Final Exam will comprise 60% of the final semester Grade

There will be three Short Tests and one Final Exam. The total Exam Grade will be a weighted average of the Short Tests and the Final Exam with the Final being equivalent of two Short Tests. In computing this average, a student's lowest "effective" Short Test exam score will be dropped. If the lowest Grade is a Short Test, that Grade will be dropped and the total exam Weighted Average will be the average of the other two Short Tests (each having a weight of 1/4) and the Final (with a weight of 2/4). If the lowest

Grade is on the Final Exam, the total exam Grade will be the average of all three Short Exams (each having a weight of 1/4) and the Final (with a weight of 1/4). If one Short Test is missed, it will be considered to be the low score and will be dropped in the averaging. Because one test may be missed without direct penalty:

MAKE-UP SHORT TESTS WILL NOT BE GIVEN

IMPORTANT NOTE: Questions on the Short Tests and Final will generally **NOT** require only a purely numerical answers (like the homework). Short Test and Final questions will generally be similar in character to example problems in the book and example problems given in lectures. ***Short exams will be closed book***, but a list of useful equations will be provided.

If, for any reason, there is a concern about a grade given on an exam or exam question, an appeal will be entertained if it is raised **no later than one week** after the date on which the graded exams are made available for return to the class. After this “appeal period” of one week, exam grades will be considered final and will not be altered.

MISSING THE FINAL EXAM IS VERY SERIOUS AND MAY WELL RESULT IN FAILURE OF THE COURSE

Grading Scale

Final Grades are determined from the weighted average, where the weights are:

Homework 15%
Labs 25%
Exams 60%

See discussion above for full explanation, especially regarding missed homeworks and tests.

The final grade will be assigned from the weighted average based on the following *provisional* grading scale.

A	80 and above
B+	76 and above
B	70 and above
C+	66 and above
C	60 and above
D	50 and above
F	below 50

Please note that this grading scale gives a 10% advantage over that used by most professors, hence, **YOU SHOULD NOT EXPECT FURTHER CURVING OF GRADES**