

Instructor: James Jacobs
Office: Science Complex. Room 119.
Phone: 243-4986 or 243-2073
Text: *Fundamentals of Physics*
by Halliday, Resnick and Walker. Sixth Edition. Chapters 18 through 36.
Optional Text: *Quick Calculus* by Ramsey and Kleppner. Second Edition.
Lectures: Mo,Tu,We,Th,Fr, 1:10-2:00 PM. SC Room 131.
Lab: We,Th, 3:10-5:00 PM. SC Room 225 or 229.
Office Hours: M 8-9AM, Tu 10-11AM, W 11-noon, Th 2-3PM, F 8-9AM, and by appointment.
Web site: www.physics.umt.edu/~jacobs/Course_Materials/phys222_06.html

Homework: I will recommend 10-20 problems per chapter to be worked out carefully by each student which will *not* be collected. In order for students to check their work, solutions to these problems will be posted on the course web site. In addition, 1 or 2 extra problems per chapter will be assigned in class, collected, graded and returned to students. These problems will be graded not only for arriving at the correct result, but for the clarity and completeness of the solution process. Late homework assignments will not be accepted. If you miss a class, be sure to find out if there was an assignment. Solutions for these assignments will be posted outside my office.

Exams: There will be 4 in-class exams given during the semester (see schedule on page 2). Since each new topic will build on all previous concepts, a general working knowledge of previous material will be expected on all exams. The exams will be closed book except for a calculator and one 3×5 index card of notes that each student must prepare for themselves. Solutions to the exams will be available from the web site. Make-up exams will be given only in extreme situations and must be arranged IN ADVANCE. Please do not miss any exams. The final exam is comprehensive and will be held on Monday, May 8th, from 3:20 PM to 5:20 PM. Note cards from mid-term exams (or a single card with the equivalent surface area) may be used on the final.

Laboratory: Each student is expected to complete nine two-hour laboratorys during the semester (see schedule on page 2). *Failure to complete and hand in at least seven of these labs will result in the student failing the course regardless of the grades on exams or homework.* In preparation for the lab portion of the course, you should go to the course web site to download two documents. One is the *Laboratory Report Guide*, which gives instructions on what to include in the lab report and how to present your results. Secondly, you should download a copy of *Errors and the Treatment of Data*, which explains how to handle error analysis, graphing, and other key issues that come up while writing labs. *Each student must hand in their own lab report written in their own words (no duplicates!)* Each week, a few days before your lab, you should download and print a copy of the current lab to bring with you to your lab meeting. Students are expected to have read the instructions prior to arriving at the lab, and may be asked to write a brief pre-lab assignment. Lab preference forms will be handed out on the second day of classes. Lab Reports are due at the next lab meeting except for Lab 9 which will be due on Friday April 28th by 5:00 PM (No labs will be accepted after this time).

General Remarks This will be an intensive course; we will cover 19 chapters in 14 weeks (see schedule on the following page). Be sure to keep up on reading assignments and problem assignments. Drop/Add deadline is March 6th. I will sign no drops or grade option changes after this date without documentation of EXTREME circumstances. Prerequisite to this course is PHYS 221 (or equivalent) and a *working* knowledge of college algebra, trigonometry and differential calculus. Co-requisite to this course is Math 153 (integral calculus) or equivalent. *All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code.* The Code is available for review online at www.umt.edu/SA/VPSA/index.cfm/page/1321.

Grading

In class mid-term exams:	44%	(4 @ 11% each)
Homework:	12%	(\approx 15 @ 0.8% each)
Lab reports:	14%	(9 @ 1.56% each)
Final exam:	30%	(comprehensive)

Tentative Schedule – Topics

Note that the lecture schedule is tentative, but the exam dates are firm.

	Week:	Chapters	Topics	Labs	Exams:
Week 1	Jan 23–27	Ch.18,Ch.19	Temp, Heat, First law	NO LAB.	
Week 2	Jan 30–Feb 3	Ch.19,Ch.20	Thermodynamics, Entropy	Lab 1	
Week 3	Feb 6–10	Ch.21,Ch.22	Electric Charge Fields.	Lab 2	
Week 4	Feb 13–17	Ch.23,Ch.24	Gauss' Law	NO LAB	Exam 1 Wed. Feb 15
Week 5	Feb 21–24	Ch.24,Ch.25	Electric Potential	Lab 3	
Week 6	Feb 27–Mar 3	Ch.26,Ch.27	Circuits	Lab 4	
Week 7	Mar 6–10	Ch.27,Ch.28	Magnetic Fields	NO LAB	Exam 2 Fri. Mar 10
Week 8	Mar 13–17	Ch.28,Ch.29	Magnetism	Lab 5	
Week 9	Mar 20–24	Ch 29,Ch.30	Induction	Lab 6	
Week 10	Mar 27–31		Spring Break	NO LAB	
Week 11	Apr 3–7	Ch.31,Ch.32	Maxwell's Equations	Lab 7	
Week 12	Apr 10–14	Ch.33,Ch.34	EM Waves Images	NO LAB	Exam 3 Tues. Apr. 11
Week 13	Apr 17–21	Ch.34,Ch.35	Ray Optics	Lab 8	
Week 14	Apr 24–28	Ch 35,Ch.36	Physical Optics	Lab 9	
Week 15	May 1–5		Review	NO LAB	Exam 4 Tues. May. 2
Week 16	May 8–12		Final's Week	NO LAB	Final Exam Mon. May 8 3:20 PM - 5:20 PM