Fall 9-1-2000

PHYS 221N.01: General Physics I

James P. Jacobs
The University Of Montana

General Physics 221 Section 01 Fall 2000

Instructor:	James Jacobs
Office:	Science Complex. Room 119.
Phone:	243-4986 or 243–4950
Text:	*Fundamentals of Physics* by Halliday, Resnick and Walker. Sixth Edition. Chapters 1 through 17.
Optional Text:	*Quick Calculus* by Ramsey and Kleppner. Second Edition.
Lectures:	Mo,Tu,We,Th,Fr, 1:10-2:00 PM. SC Room 131.
Office Hours:	Right after class (short questions). And by Appointment. Regular hours TBA.
Course Web site:	`http://www.physics.umt.edu/~jacobs/Course_Materials/phys221_00.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 available 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. Solutions for these problems will be posted outside my office. Late homework assignments will not be accepted except under extreme circumstances. If you miss a class, be sure to find out if there was an assignment.

Exams There will be 4 mid-term 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 prior to the exam. Solutions to the exams will be posted outside my office and available on the course 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 Thursday Dec. 21st, from 1:10pm to 3:10pm. Note cards from mid-term exams 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 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. Labs are held Mon 3-5 pm, Tues 3-5 pm or Wed 3-5 pm in room SC 229. Lab Reports are normally due at the next lab meeting.

General Remarks This will be an intensive course; we will cover 17 chapters in 15 weeks (see schedule on the following page). Be sure to keep up on reading assignments and problem assignments. Add/Drop deadline is Sept. 25st (for $$ back), or Oct. 16th (for no $$ back). Prerequisite to this course is a *working* knowledge of college algebra, trigonometry, and pre-calculus. Co-requisite to this course is Math 150 (applied Calculus), or Math 152 (Calculus) or equivalent.

Grading

In class mid-term exams:	44%	(4 @ 11% each)
Homework:	14%	(≈ 15 @ 0.8% each)
Lab reports:	12%	(9 @ 1.3% each)
Final exam:	30%	

Tentative Schedule – Topics

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

Week:	Chapters	Topics	Labs	Exams:
Week 1 9/5-9/8	Ch.1,Ch.2	Introduction. 1-D Kinematics	No Lab	
Week 2 9/11-9/15	Ch.2,Ch.3	Vectors 2-D Kinematics	No Lab	
Week 3 9/18-9/22	Ch.3,Ch.4	Projectiles	Lab 1	
Week 4 9/25-9/29	Ch.5	Force and Motion	Lab 2	Exam 1 Fri, Sept. 29
Week 5 10/2-10/6	Ch.6,Ch.7	Work Energy	Lab 3	
Week 6 10/9-10/13	Ch.7,Ch.8	Conservation of Energy	Lab 4	
Week 7 10/16-10/20	Ch.9	Collisions. Angular Motion	Lab 5	
Week 8 10/23-10/27	Ch.10,Ch11	Torque Angular Momentum	No Lab	Exam 2 Tues, Oct. 24
Week 9 10/30-11/3	Ch.12,Ch.13	Statics Gravitation.	Lab 6	
Week 10 11/6-11/10	Ch.13	Kepler's Laws	No Lab (no class Tues.)	
Week 11 11/13-11/17	Ch.14	Fluids	Lab 7	Exam 3 Fri, Nov. 17
Week 12 11/20-11/21	Ch.15	Oscillations	No Lab (No class Wed.→Fri.)	
Week 13 11/27-12/1	Ch.16	Waves	Lab 8	
Week 14 12/4-12/8	Ch.16,Ch.17	Sound	Lab 9	
Week 15 12/11-12/15	Ch.17	Review	No Lab	Exam 4 Tues, Dec. 12
Week 16 12/18-12/22		Final's Week	No Lab	Final Exam Thurs, Dec. 21 1:10 PM - 3:10 PM

General Physics 221 Lab Schedule Section 01 Fall 2000

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. These documents will prove very valuable for writing up lab reports and should be kept near you at all times. Each week, a few days before your lab, you should check the course web site to download a copy of the current lab. You should print out this lab, read it carefully and bring it with you to your lab meeting. Students who fail to bring a copy of the lab to their lab meeting will be scorned by the T.A.'s for the remainder of the semester. Each student is expected to complete nine two-hour laboratorys during the semester. *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.* Lab Reports are normally due at the next lab meeting (except for the last lab which will be due on Friday Dec. 15th).

Laboratory Schedule Fall 2000

Week:		Lab Title
Week 1 9/5-9/8	No Lab	
Week 2 9/1-9/15	No Lab	
Week 3 9/18-9/22	Lab 1	Measurement of the acceleration due to gravity.
Week 4 9/25-9/29	Lab 2	Measurement of the acceleration due to gravity on an incline.
Week 5 10/2-10/6	Lab 3	Uniform Circular Motion.
Week 6 10/9-10/13	Lab 4	Conditions for equilibrium.
Week 7 10/16-10/20	Lab 5	Hooke's Law
Week 8 10/23-10/27	No Lab	
Week 9 10/30-11/3	Lab 6	Energy and Momentum
Week 10 11/6-11/10	No Lab	(Election day)
Week 11 11/13-11/17	Lab 7	Collisions
Week 12 11/20-11/21	No Lab	(Thanksgiving)
Week 13 11/27-12/1	Lab 8	Moment of Inertia
Week 14 12/4-12/8	Lab 9	The Simple Pendulum
Week 15 12/11-12/15	No Lab	Lab 9 due 12/15 at 5 PM
Week 16 12/18-12/22	No Lab	Finals week

Lab materials can be found at:
`http://www.physics.umt.edu/~jacobs/Course_Materials/phys221_00.html`