

Physics 105

Fall 2014

- Lectures:** Sec: 001 MW 5:00 – 6:15 pm in Moulton 208
- Lab/discussion:** Sec. 3: Mon 11:00 - 1:50 pm in MLT 203 ()
Sec. 4: Mon 2:00 - 4:50 pm in MLT 203 ()
Sec. 5: Tue 11:00 - 1:50 pm in MLT 203 ()
Sec. 6: Tue 6:00 - 8:50 pm in MLT 203 ()
Sec. 7: Wed 11:00 - 1:50 pm in MLT 203 ()
Sec. 8: Wed 2:00 - 4:50 pm in MLT 203 ()
- Text book:** W. Thomas Griffith: “The Physics of Everyday Phenomena” (any edition)
“Experiments for Fundamentals of Physics”
- Lecturer:** Prof. R. Grobe, MLT 216, [438 - 5470]
- Office hours:** M, W, Th 11:00 - 12:00 (or by appointment, or just walk in)
- Req. materials:** Scientific calculator (with EE, EEX or EXP keys), ruler and graph paper
- Format:** Attendance for the two lectures and one laboratory session per week is required.
- Homework:** Exercise problems should be completed after the initial lecture, but prior to the final chapter lecture in which some of the homework will be discussed. Homework problems (or very similar ones) can appear on quizzes and exams.
- Quizzes:** Short quizzes can be administered at the conclusion of some chapters. In order to be prepared you should have completed all readings and learned how to work all assigned exercises.
- Essay:** You will be asked to write a short essay on lecture topics or readings I will give during the semester. It will be worth 25 points.
- Exams:** Five 50-minute multiple-choice exams will be given during the semester which cover material from both class and laboratory sessions.
- Final exam:** There is a final exam (100 minutes) tba.
- General policy:** There will be five announced and unannounced quizzes, of which one with the lowest score will be dropped. There will be eight lab experiments (one dropped) and five exams (one dropped). There will be no make-ups for quizzes, labs or exams. A missed final exam can be made up only in unusual circumstances (jobs or vacations are not unusual) in form of an oral exam. It is the student’s responsibility to make arrangements with the instructor (in person).

Grades:	(i)	4 Exams (best of 5)	500
	(ii)	Final exam	200
	(iii)	4 Quizzes (best of 5)	100
	(iv)	Essay	25
	(iv)	7 Lab reports (best of 8)	175

total: 1000 points

Letter grades for the course will be assigned precisely as follows. The instructor does not negotiate for grades with students who are “borderline”.

Total points earned:	course grade
0 – 499	F
500 – 699	D
700 – 799	C
800 – 899	B
900 – 1000	A

Homework Assignments:

Chapter	Exercises
1. Physics, the fundamental science The scientific enterprise; science and pseudoscience	E1.1, E1.3, E1.5, E1.7, E1.9
2. Description of motion Velocity, acceleration, and uniformly accelerated motion; stopping distance and auto safety	E2.1, 2.3, 5, 7, 9, 11,13
3. Falling objects and projectiles Free fall, trajectories, and time of flight	1, 3, 5, 7, 9, 11,13
4. Newton’s laws: explaining motion Aristotle, Galileo, and inertia, application of the 2nd Law: friction and mechanical design	1, 3, 5, 7, 9, 11,13,15
5. Circular motion and gravity The 2nd Law and circular motion, Aristotle's universe and Kepler's laws	1, 3, 5, 7, 9, 11
6. Energy and oscillations Work, kinetic energy, and potential energy; Conservation of energy, perpetual motion, "free energy", and other dreams, mass on a spring	1, 3, 5, 7, 9, 11, 13
7. Momentum and impulse Collisions and conservation of momentum, energy in collisions	1, 3, 5, 7, 9, 11, 13, 15
10. Temperature and heat Temperature scales, heat flow, specific heat, and home insulation, greenhouse effect 1st Law of Thermodynamics	1, 3, 5, 7, 9, 11, 13
12. Electrostatics Electric charge and Coulomb's Law, electric field and potential	1, 3, 5, 7, 9, 11
13. Electric circuits Electric current and circuits; resistance and Ohm's law; series/parallel circuits Alternating current and household power; electricity and safety	1,3, 5, 7, 9, 11, 13
15. Waves Waves on a string; interference and standing waves, sound and hearing; electromagnetic waves, hearing, sight, and safety	1, 3, 5, 7, 9, 13

Tentative Lecture Schedule:

Date			Reading Assignment			Date			Reading Assignment		
Aug	18		Ch. 1, App. A and B			Oct	13		Ch. 7		
Aug	20		Ch. 2, App. C			Oct	15		Ch. 7	Exam III	
Aug	25		Ch. 2			Oct	20		Ch. 7		
Aug	27		Ch. 3			Oct	22		Ch. 7		
Sept	1		Labor Day			Oct	27		Ch. 10		
Sep	3		Ch. 3			Oct	29		Ch. 10		
Sep	8		Ch. 3			Nov	3		Ch. 12	Exam IV	
Sep	10		Ch. 4	Exam I		Nov	5		Ch. 12		
Sep	15		Ch. 4			Nov	10		Ch. 12		
Sep	17		Ch. 4			Nov	12		Ch. 13		
Sep	22		Ch. 4			Nov	17		Exam V		
Sep	24		Ch. 5			Nov	19		Ch. 15		
Sep	29		Ch. 5	Exam II		Nov	24		Thanksg.		
Oct	1		Ch. 5			Nov	26		Thanksg.		
Oct	6		Ch. 6			Dec	1		Ch. 15		
Oct	8		Ch. 6			Dec	3		Review		

Laboratory Schedule:

Week of		Experiment		Week of		Experiment	
Aug	18	-----		Oct	13	5: Simple harmonic motion	
Aug	25	1: Giant disk		Oct	20	6: Velocity of projectile	
Sep	1	-----		Oct	27	-----	
Sep	8	2: Addition of forces		Nov	3	7: Specific heat of metal	
Sep	15	3: Measuring g		Nov	10	-----	
Sep	22	4: Newton's second Law		Nov	17	8: Ohm's law	
Sep	29	-----		Nov	24	-----	
Oct	6	-----		Dec	1	-----	