

PHYS 1211: Principles of Physics I (Mechanics)

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Topics: The course introduces the basic physical concepts of classical mechanics.

References: A standard reference for this course is: **R. D. Knight, Physics for Scientists and Engineers, 4th edition (Pearson, Boston, 2015).**

Class: Monday, Wednesday and Friday, 09:05am–09:55am, Physics 221

There will be no cell phones, computers, ipads... allowed during the class. I might ask you to leave the class if you do your personal things other than physics in the class.

Office Hours: Monday, Wednesday and Friday, 1pm–2:30pm, Physics 233.

Exams: One sheet with own hand-written notes on both sides is permitted as well as a standard, non-programmable calculator, but no other material. Excused midterm exam absence with documented reason causes the grade of the final exam to be substituted for the midterm exam; unexcused absence entails grade F with a zero credit. There are three midterms but you are allowed to drop the worst one at the end of the semester. Missing the final exam without documented reason results in failing the course. If the instructor decides that final exam absence was excusable, the average grade of the midterms will be substituted. There will be no make-up exams.

Homework: There will be graded assignments on a regular basis with mandatory deadlines in the LON-CAPA system (<http://spock.physast.uga.edu>). No late homework is accepted. Teamwork is acceptable, even encouraged. There won't be homework make-ups. Homework will be graded automatically by the LON-CAPA system when the deadline is passed.

In case you can't log into LON-CAPA:

Read the "Log-in Help" link on the main login page, and/or the "Student FAQ". There are several possible causes outlined on those pages, including: Is your UGA password expired? Check to see whether you can log in to eLC or Athena. Sometimes UGA servers expire student passwords for some services and not others. Therefore, your first step should almost always be to reset your UGA password on myid.uga.edu. Have you tried quitting your browser and restarting it? Have you tried a different browser (Chrome vs. Firefox, for example)? Have you tried a different computer? Disabling browser add-ons

and extensions sometimes helps. There are some add-ons that don't always play well with login pages.

Reading Assignments and Quizzes:

You are required to read the assigned textbook sections before the class in which those topics are going to be discussed. The tentative lectures are listed in the end of this syllabus. I will sometimes assign sort quizzes based on the reading and past lectures. The quizzes will randomly happen in the first 5 to 10 minutes of the class time. There will be no make-up quizzes. I will allow you to miss one and only one quiz because of any reasons. Therefore, attendance in the lectures is necessary to get this credit.

Labs: For information about labs and schedule, consult the Lab Coordinator at the Physics Department. The lab syllabus is available online at: <http://www.physast.uga.edu/courses>.

Grade: Total Grade = 20% Labs + 15% Homework + 5% Quizzes and Attendance + 30% two Midterms + 30% Final

Notes: 1) Failing the lab (no grade assignment due to non-attendance or grade F) causes a total grade F for the entire course.
2) Your grades and course announcement will be posted on the eLC website, <https://uga.view.usg.edu/>. Please check your eLC account frequently.

Grading: [100,90]: A; (90,88]: A-; (88,85]: B+; (85,80]: B; (80,78]: B-; (78,75]: C+; (75,70]: C; (70,68]: C-; (68,60]: D; (60,0]: F

NOTE: No rounding; 89.99 = A-, etc

Academic honesty:

All members of the academic community are committed to honesty. The academic honesty policy statement of the UGA can be viewed online at www.uga.edu/honesty.

Tutors: Tutors are available either for free through the UGA Tutoring Program at Milledge Hall, <http://tutor.uga.edu>, or for pay through the Physics Department, <http://www.physast.uga.edu/tutors>.

Tentative Schedule (subject to change)

Class	Date	Reading task	Topic
1	Wed: 01/09	Chapter 1	CONCEPTS OF MOTION 3 types of basic physical quantities; Unit conversion; dimensional analysis; significant figures; Scientific notation
2	Fri: 01/11	2.1-2.7	1D KINEMATICS Structure of mechanics; reference frames Position, distance, & displacement Average speed & velocity Instantaneous velocity; Acceleration Motion with constant acceleration Applications Freely falling objects
3	Mon: 01/14		
4	Wed: 01/16		
5	Fri: 01/18		
6	Mon: 01/21		Holiday
7	Wed: 01/23		
8	Fri: 01/25	3.1-3.4	VECTORS Scalars vs. Vectors Coordinate systems & vector components Adding & subtracting vectors Unit vectors Relative motion Position, displacement, velocity, & acceleration vectors
9	Mon: 01/28		
10	Wed: 01/30	4.1-4.3	2D KINEMATICS Acceleration; 2D Kinematics Projectile motion
11	Fri: 02/01		
12	Mon: 02/04		
13	Wed: 02/06		
14	Fri: 02/08		Exam 1
15	Mon: 02/11	5.1-5.7 6.1-6.6 7.1-7.5	NEWTON'S LAWS OF MOTION Force; Catalogue of forces; Newton's Laws; Free-body diagrams; Weight; Normal Forces; Inclines; Frictional forces; Strings & springs
16	Wed: 02/13		
17	Fri: 02/15		
18	Mon: 02/18		
19	Wed: 02/20		

20	Fri: 02/22		
21	Mon: 02/25	9.1-9.6 10.1-10.7	WORK & ENERGY Work done by a constant force and by a variable force OR by a conservative force and by a non-conservative force; Work & kinetic energy; Work & potential energy; Force and potential energy; Conservation of Energy;
22	Wed: 02/27		
23	Fri: 03/01		
24	Mon: 03/04		
25	Wed: 03/06		
26	Fri: 03/08		Exam 2
27	Mon: 03/11	11.1-11.6	Spring Break
28	Wed: 03/13		Spring Break
29	Fri: 03/15		Spring Break
30	Mon: 03/18		IMPULSE & LINEAR MOMENTUM Momentum & Impulse; Conservation of linear momentum; Inelastic collisions, Recoil; Elastic collisions
31	Wed: 03/20		
32	Fri: 03/22		
33	Mon: 03/25		
34	Wed: 03/27		
35	Fri: 03/29	4.5-4.7	ROTATIONAL KINEMATICS Uniform circular motion Angular position, Velocity, and Acceleration
36	Mon: 04/01	12.1-12.11	ROTATIONAL DYNAMICS & STATIC EQUILIBRIUM Rotational kinetic energy and moment of inertia Torque Torque & Angular acceleration Zero torque & static equilibrium Center of mass & balance Dynamic applications of torque Angular momentum
37	Wed: 04/03		
38	Fri: 04/05		
39	Mon: 04/08		
40	Wed: 04/10		
41	Fri: 04/12		
42	Mon: 04/15	13.1-13.6	NEWTON'S LAW OF GRAVITY Newton's Law of Gravity Little g and big G Gravitational attraction of spherical bodies Kepler's Laws of orbital motion. Motion of satellites Gravitational potential energy Energy conservation

43	Wed: 04/17		
44	Fri: 04/19		
45	Mon: 04/22		Exam 3
46	Wed: 04/24	15.1-15.6	OSCILLATIONS Periodic motion Simple harmonic motion (SHM) Connection b/w uniform circular motion & SHM Mass on a spring Energy conservation in SHM The pendulum (simple & physical)
47	Fri: 04/26		
48	Mon: 04/29		Final day of the class
49	Wed: 05/08		Final Exam from 8 am to 11 am