

Physics 71: Introductory Classical Mechanics

Pomona College — Spring 2009
MW 1:15 PM — Andrew 157

Professor Steuard Jensen

Office: 116 Keck Science Center (Joint Science) 607-0921 sjensen@jsd.claremont.edu
Office Hours: M 2:30–3:30 (Pom. ML109); T 3–5; W 10:30–11:30, 3–4; or by appointment.

Course description

This is a half-course on basic classical mechanics intended for students who have taken Physics 70. The central goal is for you to strengthen your understanding of the basic principles of physics that relate forces and interactions to motion. We will build on the foundation established last semester by first exploring problem solving via conservation laws and then studying forces and Newton's laws of motion.

Textbook: Moore, *Six Ideas That Shaped Physics*, Units C and N (2nd edition)

ISBN: 0-07-229152-4, 0-07-239712-8

Required materials: scientific calculator; a pen in some color other than red, blue or black; ruler and protractor (sometimes handy); sleep

Discussion and handouts on **Sakai:** <https://sakai.claremont.edu:8443/portal>

Website: <http://faculty.jsd.claremont.edu/sjensen/teaching/classes/phys71/>

Quizzes: Tentative dates **Feb. 11** and **Feb. 25**.

Cumulative Final Exam: Monday, March 9: 1:15-2:30

I have not made a final decision on quiz/exam formats, but I expect them to include “essay” questions (like homework) and possibly conceptual questions (like Two-Minute problems).

Grading: Your work will contribute to your final grade with the following weights:

Homework: 50% 2 Quizzes: 10% each Final exam: 30%

Grades may be scaled up, but never down. You are welcome to ask me for your overall grade at any time. The correspondence between percentages and letter grades is (at worst) as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	F
92–100	88–92	84–88	80–84	76–80	72–76	68–72	64–68	60–64	52–60	< 52

Grading philosophy

In this class, the focus in grading is on your methods, explanation, and understanding, not simply on whether you got the right answer in the end. You can expect substantial partial credit if you make an effort. The details are on a separate handout. Pay special attention to the fact that part of your grade depends on the *clarity* of your work: full credit will typically require the use of at least some English explanation in your solutions.

Homework policies

Unless I announce otherwise, homework will be due on Tuesdays. Submit new solutions to the homework mailbox in Millikan before 3:45 pm on the due date. Please staple your solutions with the problems in order. I will make solutions available online, typically within an hour or so of the deadline. You can use the solutions to correct any problems you got wrong to increase your scores on those problems; see the “Homework Information” page for more details. Corrections should be submitted to me in Millikan 109 before 3:45 pm on the Monday after your graded homework is returned.

I encourage you to discuss the assignments with others in the class, but all work that you turn in must be your own (do not simply copy someone else’s work). If you do get significant help on a problem from another person or a book besides our textbook, briefly give them credit at the beginning or end of your solution. Late homework will not be accepted, but turning in a “correction” to any missing problems will allow you to recover up to half of the credit. Since we will have only seven homework sets, I will not drop any grades.

I don’t expect any issues of academic honesty to arise, but I will follow campus policy in cases of suspected cheating. That certainly means zero credit for that assignment and may also include reporting the issue to the Dean of Students.

Reading assignments and class time

Our class time together is best spent discussing concepts and practicing problem solving, but we won’t have time for that if I have to explain everything from scratch. Thus, you are expected to read the material before class. (Come prepared with questions!) To encourage this, some homework questions may be assigned on upcoming material and I may ask you for feedback on the reading prior to class. Class time will typically involve a mix of Two-Minute problems and corresponding discussion, short lectures highlighting the essential ideas in the assigned reading, and group activities to practice applying those ideas.

Schedule: (*Tentative*) Updated reading assignments may be announced in class. Homework for each week will announced on Wednesdays in class and online.

Date	Topic	Chapters	Evaluation
Jan. 21	Review kinetic and potential energy	(C6–C7)	} Quiz 1
Jan. 26	Systems, center of mass, work	C4, C8	
Jan. 28	Work examples, rotational energy	C9	
Feb. 2	Thermal energy, power, collisions	C10, C12	
Feb. 4	Unit C wrap-up, begin Newton’s laws	(C12), N1	} Quiz 2
Feb. 9	Describing motion, Forces from motion	N2–N3	
Feb. 11	QUIZ. Motion from forces	N4	
Feb. 16	Statics, linear motion	N5–N6	
Feb. 18	Interacting objects	N7	
Feb. 23	Circular motion, noninertial frames	N8–N9	} (incl. on final)
Feb. 25	QUIZ. Projectile motion	N10	
Mar. 2	Oscillatory motion, orbits	N11–N12	
Mar. 4	Planetary motion	N13	
Mar. 9	Final exam (in class)		