

Physics Department, California State Polytechnic University, Pomona



Physics 321
Winter 2001

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Course Description: Physics 321 is the first course of a two-quarter, junior level sequence in classical mechanics.

Conditions of enrollment: Physics 308 (the first quarter of Fundamentals of Mathematical Physics) is a prerequisite for all students enrolled in this course. Physics 309 (the second quarter of Fundamentals of Mathematical Physics) is a corequisite.

Text: *Mechanics*, 3rd Ed., by Symon.

How to get help: My office hours are Monday 10-11 AM, Wednesday 10-11 AM, and Friday 10-12 AM. In addition, I will be in the Physics Tutoring Center (3-213) on Mondays from 11-12 AM. The Tutoring Center will also be open (and “equipped” with other faculty members) Monday 1-2 PM, Wednesday 10 AM-1 PM, and Friday 10-11 AM. You can also drop by during my labs on Tuesdays from 1-3:30 PM and on Wednesdays from 3-5:30 PM as long as you recognize that I will have to give first priority to the students in those lab sections. Finally, if you can’t come during any of these hours, I will try to make an appointment with you for another time. For me, one of *the* most enjoyable aspects of teaching is working with students one-on-one and clearing up specific problems. *Please* come see me often.

Class Attendance and Participation: Class meetings are MWF 1-2:05. The class will be conducted in a participatory fashion and your attendance and participation will determine a portion of your grade. I have included a detailed schedule of topics with this syllabus. Assigned readings are to be completed before class meetings.

Homework: The purpose of assigned problems in physics is *not* primarily to see if you can get the right answer. Rather, it is for you to practice and then demonstrate that you have learned 1) how to *determine* the fundamental physical principles that are involved in each situation and 2) how to *apply* those principles in a disciplined and orderly fashion. Accordingly, I am not interested in problem “solutions” that simply consist of series of mathematical manipulations leading to a numerical answer. Instead, the problem solutions you submit are to be “presented.” By this I mean that they should be readable by someone who does not have access to the problem statement, *should* include written explanations and thoughtful comments, *should* use well-defined and consistent notation, *should* be accompanied by neatly drawn and carefully labeled diagrams, and *should* flow in a logical and orderly progression down the page. Perhaps equally important, they should *not* include long unbroken strings of purely algebraic manipulations; we are interested in the *physics*, not the math. Reduce the clutter by saying things like, “Solving Eq. (4) for v , substituting the result into Eq. (5) and finally solving for t , we obtain,” and then simply *giving* the result.

I will look over your work and assign a holistic score of 1 to 4 with 4 meaning that the problem set is *exceptional*—complete, *very* well presented, and mostly correct; 3, good – at least nearly complete, clearly presented, and pretty much correct; 2 – incomplete or not very clearly presented; 1 – not a good faith effort. Unsubmitted problem sets will receive a 0.

I encourage you to work together on homework but I want the work you finally turn in to be your own; *i.e.*, do your final write-up *by yourself*.

Homework is due at the *beginning* of class. I will accept late homework but the lateness will be noted and it will have an effect. In order to allow for extraordinary circumstances (*including* absence for *any* reason), I will throw out your two lowest problem set scores.

Examinations: There will be two equally-weighted take-home exams and a final exam. *All* exams are cumulative.

Grading: Your overall “Course Score” will be calculated using the following relative weights:

Class Attendance and Participation	10%
Homework	20%
Take-home exams	40%
Final exam	30%

Course *grades* will be assigned using the following break points:

“Course Score” 80%，“A” (meaning “some kind of A”); 65%，“B”； 50%，“C”； 40%，“D”

Academic Integrity: Please make sure that you have read and fully understand the statement on academic integrity that appears in the University catalog. My strongest desire is to act as facilitator for your studies in physics. Accordingly, I operate on the assumption that all of our interactions are based on openness, honesty, and good faith. I have no desire to act as policeman, just as *you* should not have to be concerned about being treated fairly and with respect. Because our trust in each other is absolutely *crucial* to the effectiveness of our relationship, I take an uncompromising stance on the necessity for sanctions when it is violated.

Tentative Course Schedule:

<i>Date</i>	<i>Read Before Class</i>	<i>Topics/Events/Notes</i>
1/3	—	Description of course structure and daily activities,
1/5	1.1-7	<i>Brief review of elementary mechanics</i>
1/8	2.1-4	<i>Particle motion in one dimension</i>
1/10	2.5-6	
1/12	2.7-8	
1/15	—	(Holiday)
1/17	2.9	
1/19	2.10-11	
1/22	3.1-2	<i>Particle motion in three dimensions and vector analysis</i>
1/24	3.3-4	
1/26	3.5-6	First Exam Distributed (at end of class)
1/29	3.7-10	
1/31	3.11-12	
2/2	3.13	First Exam Due (at beginning of class)
2/5	3.14-15	
2/7	3.16-17	
2/9	4.1-3	<i>Systems of particles and the conservation laws</i>
2/12	4.4-6	
2/14	4.7-9	
2/16	—	(Holiday)
2/19	4.10	Second Exam Distributed (at end of class)
2/21	5.1-3	<i>Rigid Bodies, rotation about fixed axes, and static equilibrium</i>
2/23	5.4	
2/26	5.5	Second Exam Due (at beginning of class)
2/28	5.6-7	
3/2	5.8-10	
3/5	5.11	
3/7	6.1-2	<i>Gravitation</i>
3/9	6.3	
3/12		Final Exam (Monday, 11:30 - 1:30)