

## Physics 321 – Spring 2009 Course Outline

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Office hours: MWF 10:00–10:50 a.m. Feel free to drop in any time. I'll be happy to help you if my schedule permits.

### Overview

If you haven't discovered it yet, you will soon find that upper division physics is mostly a revisiting of Physics 121/123/220/222. But since you have more mathematical tools now at your disposal, you will learn how to do some really impressive problems. Physics 321 is the advanced version of physics 121.

### Prerequisites

Mostly, you need to know Physics 121. We will review some basic ideas from Physics 121 as we go, but this will only be a quick review. If you find that some of these concepts are hazy, you might want to look over an introductory text. Mathematically, you need to have completed or be concurrently enrolled in Math 334. You should also have completed Physics 230 and have a basic understanding of computational methods, as we will use them extensively in class. If you don't feel too competent at computation, don't worry about it; you'll learn what you need to now as we go. We also recommend that you concurrently enroll in Physics 330. Our content will be somewhat correlated with Physics 330, as 330 uses examples from nonlinear dynamics to teach computational physics.

### Course Website

Most of the information for the course is available on the course website:  
<http://www.physics.byu.edu/faculty/rees/321>.

### Text

The textbook is *Classical Mechanics*, by John R. Taylor. If you do not read the material in advance, you will find that class will be difficult. To provide extra incentive, you will receive points for doing the reading on time. You will need to submit an online form once you have completed the reading for each lecture. Late reading will receive a 30% penalty. Reading is considered late if it is completed after the beginning bell, so it doesn't help to come to class late. You will know that you have successfully submitted the online form if you see a confirmation page.

### Homework

Almost all homework will be turned in using either Maple or Mathematica. Each assignment will include hints, helps, and solutions. You are given credit for understanding the problem, rather than for getting the right answer. To get credit for the homework, you will need to send an email to the course TA

([p321hw@byu.edu](mailto:p321hw@byu.edu)) with the Maple or Mathematica file attached.

Homework for Hour 12 is called Homework 12, and so forth. Homework 12 is due at midnight on

the day of Hour 13, unless I give you an extension. Homework will be accepted up to one week late, but with a late penalty of 30%.

You can find the homework assignments on the course website. Not all lectures have homework assignments.

### **Take-home Tests**

A take-home Test will be due every Thursday at midnight. The test will consist of Maple-based (or Mathematic-based) questions much like the homework problems. Each test will cover the material from the lectures indicated on the course web page. You may use the textbook, your own class notes, your own homework solutions, and any other materials from the course website to aid you in doing the problems. You may not use any other sources of information and you may not discuss the test with anyone except the instructor or the TA. These tests should be submitted by sending an email with the Maple or Mathematica file attached to [p321test@byu.edu](mailto:p321test@byu.edu).

If you turn in a weekly test late, it is penalized 10% per day late.

### **Midterm Tests**

The course material is divided into three units. We will have midterm tests for the first two units during the semester. These tests will be closed book and administered in the Testing Center. They will consist primarily of essay questions that will require you to explain concepts, problem-solving strategies, etc. There will be relatively few problems on the tests; these will be given when it is easier to ask you to solve a problem than to explain how you would solve the problem.

### **Final Exam**

The final exam will have two parts. The first part will consist of selected questions from the first two exams and sample tests. The second part will be similar to the midterm exams, but cover only Unit 3 material. The Final Exam will be held in the classroom on Thursday, June 19 from 8:00 a.m to 10:50 a.m.. The University policy is that exams are to be given at the scheduled time. If there is an *important* reason you need to take the exam at a different time, please talk to me as soon as possible.

### **Can't Keep Up?**

It is very important to stay on top of things. If you feel that you are getting left behind, please come see me quickly. I am happy to help, but please recognize that it will probably take extra time and effort on your part to catch up.

### **Grading**

I will do my best to give you a fair grade based on your performance. Your scores will be available online and will be updated from time to time throughout the semester. I will try to give you an indication of your approximate letter grade as well.

The components of your total score are as follows:

Reading:	5%
Homework:	10%
Take-home Tests:	40%
Midterms:	25%
Final:	20%

## **LEGAL NOTICES:**

The University suggests that the following statements be included in all course outlines. Please note that I fully endorse these policies.

### **Honor Code Standards**

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact **be** your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university.

Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and my own expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

### **Preventing Sexual Discrimination or Harassment**

Sexual discrimination or harassment (including student-to-student harassment) is prohibited both by the law and by Brigham Young University policy. If you feel you are being subjected to sexual discrimination or harassment, please bring your concerns to the professor. Alternatively, you may lodge a complaint with the Equal Employment Office (D-240C ASB) or with the Honor Code Office (4440).

### **Students with Disabilities**

If you have a disability that may affect your performance in this course, you should get in touch with the office of Services for Students with Disabilities (1520 WSC). This office can evaluate your disability and assist the professor in arranging for reasonable accommodations.