Physics 2210 - Physics for Scientists and Engineers I
Spring 2018

Instructor

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Office Hours: M W F / 1:30 – 2:30 pm.

Course Coordinator

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Discussion Sections

WebAssign: Doug Baird (doug.baird@utah.edu)
Marshal/TA:
TA:
TA:
TA:

TA	SECTION	TIME	ROOM
	2210-022	M W / 4:35 PM-5:25 PM	JFB B-1
	2210-023	T H / 3:05 PM-3:55 PM	WBB 617
	2210-024	T H / 3:05 PM-3:55 PM	BU C 304

Additional help: Help Lab. The help lab is specialized to the course with the course TAs and is located in the JFB Rotunda.

Course Introduction

Textbooks and Online Access

1. "*FlipItPhysics, Classical Mechanics*" (or an older version called "*smartPhysics, Classical Mechanics*") by Gladding, Selen and Seltzer**.** The lectures will follow this textbook, which is **optional** as most of the material in the textbook is included in the online video pre-lectures. The video pre-lectures and checkpoint questions are in the on-line access to *FlipItPhysics* www.flipitphysics.com, which is **required**.

2. "*Physics for Scientists and Engineers*", 6th edition, by Serway and Jewett. The homework assignments will be from this textbook (as well as most of the examples we will do in class) but will be handled online through WebAssign. It is **very strongly recommended** that students rent or purchase either an electronic version of Serway and Jewett's "*Physics for Scientists and Engineers*" or a hard copy. Inexpensive used copies of the 6th, 7th, or even 8th edition can be bought from Amazon.com or eBay. The assignments are accessed by each student when they enter the WebAssign website (https://www.webassign.net/utah/login.html) at a cost of $29.95 for the semester which is **required**. Students are responsible for their own WebAssign access on-line.

Introduction

This is an introductory course **in Classical Mechanics**. It introduces the basic concepts and theory of kinematics (motion), energy, momentum, rotational motion, gravitation, rotation of rigid objects and oscillatory motion. **You are expected to learn to solve physics problems using calculus. Most students will find this to be a very demanding course that requires a significant amount of work and study time. For some, this will be the most challenging course they will encounter at the college level.**

Prerequisites

MATH 1210, *Calculus I*, is a prerequisite for this course.

Course Objectives

Many of you are in programs in engineering and other disciplines. You may question whether physics will be helpful to you. The answer is "yes!" The course will help you to understand and solve problems that occur in a broad range of disciplines. The primary subject is Mechanics. **Mechanics includes motion in multiple dimensions, forces and the laws of motion, energy, momentum, rotational motion, motion of rigid objects, gravitation, oscillations, and waves**. Elements of this subject material are found in all parts of nature.

The three most important objectives of this course are to: **(1) learn the fundamental principles of physics; (2) learn how to describe real world phenomena quantitatively; (3) learn problem-solving skills that can be applied to other areas of science, engineering and life.** The achievement of these goals will require a **conceptual understanding of the physical principles, an ability to use equations** to describe a particular phenomenon, and **a methodical approach to problem solving**.

This understanding is achieved by a combination of reading the texts, doing the prelectures and checkpoint exercises before class, listening to lectures, working through examples, discussing questions with your TAs and other students, and doing problems. **The assigned homework problems are <u>ABSOLUTELY NECESSARY</u> to develop this understanding.** They are your practice "**sessions**."

On-line Access

Most of the course materials can be accessed on-line.

1. Your homework assignments will be accessed, turned in and graded electronically. They can be found on the Web through WebAssign (https://www.webassign.net/utah/login.html).

2. You can purchase online FlipItPhysics access directly from the FlipItPhysics website (https://www.flipitphysics.com) or purchase from the Campus Bookstore. However, in either case you **must** enter the **FlipItPhysics access key** for our course, which is UU_M_SP18 . Make sure your **unique ID** is set to be your **UNID**, that is u followed by your seven digits.

3. You should familiarize yourself with the websites of **FlipItPhysics** and **WebAssign**, and learn how to turn in your homework on-line and find your homework assignments. Exam solutions, old exams**, important notices, and other information will also be posted on the 2210 course website**. http://www.physics.utah.edu/~woolf/2210_tony.html . It is **important that you check the course website and the FlipItPhysics and WebAssign sites regularly**, because essential course information will be posted and updated there from time to time.

Course Content

We will study the material in units **1- 24 of FlipItPhysics.** Unless specifically announced, you are responsible for all material in these chapters, whether it is covered in lecture or not, as well as any supplemental material actually covered in the lectures. This is the standard curriculum for an introductory semester-long course in Mechanics. Please see the Course Schedule for details. **The due dates of the prelectures and checkpoints of FlipItPhysics can be found on the FlipItPhysics Calendar, and the due dates for the WebAssign Homework assignments will be in WebAssign.**

How you can do well in this class

1. Be sure to schedule enough study time. Typically, one should expect to spend no less than 3 hours on homework and review for every hour spent in lecture. In addition you are required to watch the **FlipItPhysics** prelectures and answer the questions and checkpoints prior to the due date: **2:30 p.m.** of the day of the lecture.

2. **Practice, practice, practice!** The only way to understand physics concepts well enough to use them is to practice on problems. Do the assigned homework problems, review problems (before exams), and other related problems in the textbook. Practice problems by mimicking the exam situation: start with a blank sheet of paper and work the problem through as far as

possible without looking for help from the text, notes, or solutions until absolutely necessary. **Doing the homework the RIGHT way is the most important factor for doing well in this course.**

Discussion Sections

To be in this course, you must register for a particular discussion section. **Discussion sections meet twice a week**, on Mondays and Wednesdays, or on Tuesdays and Thursdays. There will also be a **help lab** with posted hours that is manned by the TAs and LAs. The purpose of the discussion sections is to help you learn how to do problems, like those in the assigned homework. The "help lab" is to help you with the current homework assignment, discuss results and solutions of exams, and give you a chance to ask questions about the course material.

PLEASE NOTE: Permission codes will not be given out for discussion sections for this course. If you want to get into a particular discussion section but find that it is closed, register for some other open section that gets you into the lecture that you want. Then go to the TA for the discussion section that you would like to attend, and ask the TA for permission to attend that section. It is the TA's discretion as to whether or not you are allowed into a particular section.

Lectures

The class meets **twice a week** for lectures on M W at 3:00 – 4:20 pm. We will also discuss most of the **FlipItPhysics** checkpoint questions during the lecture. Every four weeks there is an **80-minute midterm** exam during regular class hours. All exam dates and times are set in advance, before the semester starts.

Homework

Most large classes in Physics use the web-based homework assignments and grading system provided by **WebAssign**. You will **complete all homework assignments over the web and get immediate feedback (grading). For most problems you will be given up to FIVE opportunities to enter the correct answer.** This means that **you will only be entering answers to the homework. There is a great danger in this. In contrast, on examinations, you will be required to present full solutions (showing all work) and will only have 1 try. Hence, I strongly recommend that you work out all homework problems on a clean sheet of paper (even though you will not turn these in) and compare these to the solutions provided by the TAs**, which will be available after the problem set due date through WebAssign.

Please note that in order to be marked correct for the problems that require numerical answers, **you must pay close attention to the rules for handling significant figures**, enter the correct number of significant figures (three is the typical value), and be within 3% of the answer (the actual numerical values used in each problem are randomized). You must also **pay close attention to the units** (provided in the question) in which the numerical answer must be given. **WebAssign provides hints for formatting any answers that must be expressed using variables (symbolic formatting) and for cases where you have the right answer but an insufficient number of significant figures.** (Here is a tutorial on the use of significant figures.) **Please be advised: You are likely to believe at various times that WebAssign has mistakenly marked your problem in error with "the big red X."** Look again! Check your analysis, **check units**, and check significant figures! WebAssign is by no means perfect, but experience has shown that it (and not you) will be right in **99%** of these cases.

All homework should be completed by midnight on Wednesday and Sunday nights. Each problem in the assignment is worth 2 points, whether the problem has 1 part or 7 parts. (You will notice, for example, that WebAssign will make a five-part problem worth 0.4 points per part.) **At the end of the term, your five (5) lowest homework scores will be automatically dropped**. No re-grades will be allowed, and **NO LATE HOMEWORK WILL BE ACCEPTED**. Please don't even ask. Homework is due so often and for so many students that there is no time to handle it. Solutions will be posted right away: a PDF file will be attached to the assignment on WebAssign. **Due dates and times, point values for each problem, and maximum number of submissions are clearly indicated on WebAssign for each assignment.** Barring some long-term server catastrophe at WebAssign, you are responsible for understanding and meeting these terms.

Getting Started with WebAssign

At the WebAssign Login Page, enter your UNID number (starting with "u" and followed by the rest of your ID number with the first digit removed) and password (the same login and password you use for the Campus Information System). Your first assignment HW00 is entitled "Intro to WebAssign." And has no grade value. It will help you become familiar with WebAssign and the procedure for completing online homework assignments. However, it is not an exhaustive exercise which tests you on all you need to know about WebAssign. Questions about WebAssign are best

addressed to Doug Baird (email: doug.baird@utah.edu).

Prelectures and Checkpoints (using FlipItPhysics)

After registering for **FlipItPhysics** (remember to use the access key code, UU_M_SP18 and make sure your **unique ID** is set to be your **UNID**, that is u followed by your seven digits) you should look at the "Calendar" There you will see various entries, some in blue (prelectures), some in green (checkpoints). These are all due by **2:30 PM** on the date specified. Also, you should be prepared to discuss the checkpoints in the corresponding lecture. If you watch all the prelecture slides and answer the prelecture quizzes prior to the due time/date, you will receive full credit for that particular prelecture. **You must watch the whole prelecture (about 20 minutes) to receive full credit**. Similarly, if you do the checkpoint questions prior to the due date/time, you will receive full credit for that particular checkpoint assignment. Full credit will be given for attempting the quizzes and checkpoint problems, even if you do not provide the correct answer. The purpose here is not to penalize you, but rather to reward you for becoming acquainted with a lecture topic **ahead of time**.

Midterms and Final Exam

For detailed rules please refer to the **Exam Procedures page. There are three (3) midterm exams and a final exam. YOU MUST TAKE THE FINAL EXAM TO PASS THIS COURSE**. All exams are closed book. You may not bring any materials to the exams but a single 4" by 6" card, with helpful equations and relationships on it, and a calculator. The tests will not be easy. **Normal scientific and graphing calculators are allowed during exams. We do not allow laptop PCs, or other devices with significant text (alphanumeric) storage capability, or those with wireless communications devices**. If there is any doubt as to whether an item is allowed, ask your TA. The TA's decision is final.

All midterms, as well as the Final Exam are comprehensive. Before each midterm a review containing problems from previous exams will be posted on the main website. They are a good measure of what this semester's exams will be like. Other old midterm exams from previous versions of this course are available. I do not guarantee that they will be completely relevant to the present exams, as the course content and emphasis has changed over the years.

Midterm Exam Schedule

Midterm 1: Monday, February 5, S Beh Aud
Midterm 2: Monday, March 12, S Beh Aud
Midterm 3: Monday, April 16, S Beh Aud

Midterm exams last 80 minutes. If you can, **please arrive 10 minutes early on exam days** so that we may get you seated, get the exams distributed, and allow you the full 80 minutes to complete the exam. If there is a scheduling conflict that can be resolved by taking the exam at another time, this can be arranged, but you must notify Prof. Pantziris by email in advance. Legitimate academic conflicts will be recognized and accommodations made.

There will be NO make-up exams. **The only exceptions to this rule are (a) absence due to a University sponsored activity or to military duty, and (b) serious medical emergencies**. In either case the student must provide complete documentation. All requests for exam accommodations are handled exclusively by Professor Pantziris. In the case of exception (a) the request for a make-up exam must be filed with Professor Pantziris **at least one week in advance** of the anticipated absence. **Please note that all exam dates and times have already been determined; mark your calendars now! Resolve any conflicts as soon as possible**!

Final Exam Schedule

The final exam is Friday, May 4, 3:30 – 5:30 p.m. in TBA. This is a University scheduled exam time. **THERE WILL BE NO EARLY FINAL EXAMS!**

Determination of Course Grade

Your grade for the course will be based on the prelectures and checkpoints, your homework, midterm and final exam scores. The prelectures and checkpoints count 10%, homework counts 15%, the midterm exams 45%, and the final 30%. The lowest five (5) homework scores will automatically be dropped. The lowest midterm exam score will be

automatically dropped. **There will be extra credit of 5% for students who regularly attend the discussion sections (at least 80% of the sections).**

The course is graded on a standard curve: the median score will be in the C+/B- range. Roughly speaking, the third of the class that is just higher than the median is looking at some form of B. The third just lower is looking at some form of C. The extremes in the curve get A's and D/E's. I will use natural breaks in the scores to determine the actual lines between grades. Depending on these breaks, about 15% of the class will get some form of A. These grades may be improved after the extra credit is applied.

Any request for re-grading of a problem on an exam must be made before the following exam. You must fill out a re-grade form (found on the course website) and attach it to the entire problem (not just one part) to be re-graded. (Do NOT submit problems that you are not asking to be re-graded.) You must use a separate re-grade form for each problem. These sheets should be given to Professor Pantziris in class before the next exam. Problems will NOT be re-graded after the next exam occurs. **Exams MUST be done in black or blue pen (NOT red), in order to be eligible for a re-grade**. **No exam done in pencil will be re-graded**. When you submit a request for the re-grading of a problem, the entire problem will be re-graded, not just the parts that you are disputing. It is **usually** the case that you will not lose points by submitting a re-grade, but this is not guaranteed. Submitted problems for re-grade will be evaluated and returned with the following exam.

You are allowed to ask for re-grades on the final exam. This request will only be considered in the case that you are near a course grade boundary, and there are some additional special rules. The request must be made by 5 pm on May 11, 2018. You must turn in a re-grade form for each problem, just as with the midterms. However, you must turn in the entire final exam for a re-grade. **The entire exam will be re-graded** (not just the problems you submit for a re-grade).

Students Must Check Course Grades

It is the **student's responsibility to ensure the accuracy of all recorded homework, prelecture/checkpoints, and exam grades** (which will reflect what is in our database). The homework and exam scores will be kept in your WebAssign account, and the checkpoint and pre-lecture scores will be in your FlipItPhysics account. At the end of the Semester, we will combine the appropriately weighted webAssign scores with the FlipItPhysics scores to obtain a final score to determine your course grade. These are all accessible from the webAssign website. Please check your scores regularly, keep all your returned tests (handed out during discussion sections), and contact your discussion TA in case of an error.

Important Dates

Deadline for submitting re-grades:
By next exam - Midterms 1-3
Deadline for notification of recording errors, clerical errors, or arithmetic errors on any midterms or homework – May 4, 2018
(Final Exam). Unless you point out any scoring or recording error by this date, the scores as recorded will stand.
May 4, 2018 - Final Exam
May 8, 2018 – Graded Final Exams available from Mary Ann Woolf in JFB 205
May 11, 2018– Deadline for all requests for re-grading of Final Exam

Drop/Add/Withdrawal

Last day to add without permission code is Friday, January 12
Last day to drop (delete) classes with no tuition penalty is Friday, January 19.
Last day to add classes is Friday, January 19.
Last day to elect CR/NC options is Friday, January 19.
Last day to withdraw from term length classes is Friday, March 2.

Office Hours

The instructor has posted office hours: **1:30 – 2:30 pm on Mondays, Wednesdays and Fridays**. Outside of these you can meet with Prof. Pantziris by appointment. These may be granted very promptly, but Prof. Pantziris cannot guarantee specific times to meet with you outside of the posted hours. **He is best reached by e-mail**, not by phone. He checks e-mail most days and will respond promptly. For faster response use the 2210physics@gmail.com email address.

The TAs will also be available during the **help lab hours**. This is an **important resource for students**, which is often under-utilized. If you have questions that you have not been able to get answered in the discussion sections or during the lectures be sure to attend the help lab. **Doing something about getting your questions answered is your responsibility.**

Honesty

Cheating of any kind on an exam is a very serious violation of University rules and is unethical. Students caught cheating will receive a failing grade for the course and will be sent on to the University Disciplinary Committee for further action. All teaching assistants, including the course Marshal and the administrative assistant for the course are to be considered proxies for Dr. Pantziris when you are dealing with them regarding this course. They are to be listened to and treated with respect at all times.

All students and faculty need to be aware of important changes in the Student Code that went into effect in the last couple of years. Students now have only 20 business days to appeal grades and other "academic actions" (e.g., results of comprehensive exams). The date that grades are posted on the web is considered the date of notification. A "business day" is every day the university is open for business, excluding weekends and University-recognized holidays. If the student cannot get a response from the faculty member after ten days of reasonable efforts to contact him or her, the student may appeal to the Department Chair if done within 40 days of being notified of the academic action. Students should definitely document their efforts to contact a faculty member. Similarly, faculty members who discover or receive a complaint of academic misconduct (e.g., cheating, plagiarism) have 20 business days to "make reasonable efforts" to contact the student and discuss the alleged misconduct. Within 10 more business days the faculty member must give the student written notice of the sanction, if any, and the student's right to appeal to the college Academic Appeals Committee.

All students and faculty members are urged to consult the exact text of the Student Code if a relevant situation arises. The code is on the University web site at http://www.admin.utah.edu/ppmanual/8/8-10.html.

Students with Disabilities

The University of Utah Department of Physics and Astronomy seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in this course, reasonable prior notice must be given to the instructor and to the Center for Disability Services, 162 Olpin Union Bldg, 581-5020 (V/TDD) to make arrangements for accommodations. You are strongly encouraged to come and talk to the instructor about your disability and necessary accommodations within the first two weeks of the semester.

Holidays

Monday, January 15	Martin Luther King Jr. Day
Monday, February 9	Presidents' Day
Sunday- Sunday March 18-25	Spring Break