

Physics 121: Fundamentals of Physics I - Spring 2018

Sections 030X, 040X and SES1- Dr. Li

Contact Information

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Office hours will be held in my office on Fridays from 10:30am to 12:30pm and by appointment. If you have a question or issue that can't be handled during offices hours, please email or call me.

Overview

The purpose of this class is to give you a deep understanding of the fundamental principles that govern physical systems, how they may be used to accurately predict the behavior of objects when they interact with their environment, and how these simple principles lead to more complex phenomena. Topics will include acceleration, force, Newton's laws of motion, drag, friction, gravity, momentum, energy, torque, elasticity, fluids, gases, and thermodynamics. Besides the physics concepts themselves, this course is also designed to develop your general ability to think analytically and converse about physical systems; exactly what that means will become clearer as the class goes along.

Lectures will be given on Mondays, Wednesdays, and Fridays from 3:00pm–3:50pm for Sections 030x in room 1412 and on Mondays from 7:00pm–8:50pm, Wednesdays from 7:00pm–7:50pm for Sections 040x and SES1 in room 1410 in the Physics lecture halls wing. These sessions will actually be fairly interactive - please come ready to think and respond, not just to take notes!

You will also have a one-hour **discussion session** and a two-hour **lab session** each week, with some exceptions at the beginning of the semester and in the week of spring break. The discussion session is structured as a sequence of **tutorials** designed to help you explore and solidify the physics principles and their consequences, collaborating with your classmates and TA. The lab sessions present you with rather open-ended investigations that you must plan, carry out, evaluate and explain in teams—there is no “cookbook” for them! You must attend the specific tutorial and lab sessions for the course section you registered for. If you miss your normal day for a valid reason (such as illness), contact me (not just your TA) right away. At the end of the semester there will be an opportunity to make up *one* lab session if you missed one for a valid reason during the semester.

Required and Optional Course Materials

The **textbook** for this course is “College Physics: A Strategic Approach” by Knight, Jones and Field, published by Addison-Wesley / Pearson. It is available either as a single hardcover volume or as two paperback volumes. I recommend the paperback option because it is easier to carry around one of those than the big hardcover, but either is OK. PHYS 121 will cover material corresponding to the first 13 chapters, which is all in volume 1 of the paperback edition. The current edition of the book is the **third edition**.

New copies of the textbook are available in a number of packages, bundled with various add-ons, with different ISBN numbers. The most important add-on for this course is MasteringPhysics, a web-based homework system that is a *required* part of this course. When MasteringPhysics access is purchased with a book, it is valid for two years and includes an “eText” version of the book that you can read online if you don't have your book with you. MasteringPhysics access can also be purchased separately at

masteringphysics.com for about \$60 for a two-year subscription, though that does *not* include the eText. So that \$60 would be an additional cost if you buy a used copy of Knight/Jones/Field (unless it happens to include an unused third-edition MasteringPhysics access code). *Note:* if you do purchase MasteringPhysics access separately, be sure to specify that the textbook you are using is Knight/Jones/Field **third edition** to match the way the online course was set up. If you make a mistake and specify the wrong edition, contact MasteringPhysics customer support.

The bookstore is selling a bundle which includes the volume 1 paperback, MasteringPhysics (with the eText), a workbook, and a study guide book called “Get Ready for Physics”. In this bundle, MasteringPhysics added less than \$10 to the cost, and the publisher threw in the workbook and study guide at no extra cost. The workbook and study guide are *not* required for this course, but some students may find them helpful.

The minimal bundle for PHYS 121, consisting of just the volume 1 paperback plus MasteringPhysics access (including the eText). Other bundles (with different ISBNs) may be available which include just the workbook or just the study guide. Note that if you buy the bundle with the volume 1 printed book, the eText contains the *entire* book, not just volume 1.

You may be tempted to consider buying an electronic version of the book *instead of* a printed copy, either through MasteringPhysics (for an extra charge) or through coursesmart.com. However, I recommend buying a printed book instead of just an eBook subscription! First of all, the higher-quality type in a printed book is easier to read than pixels on a screen, and a physical book is easier to flip through. Second, the eBook subscriptions expire after 18 or 24 months, and then you have nothing to show for the money you spent. A printed book can, at least, be sold if you don’t want to keep it.

In addition to the textbook, laboratory work will be carried out with the assistance of the Expert TA software, whose website is (theexpertta.com). This website is how you will access your lab manual and additional assignments. The list below displays the class codes that you will use to purchase access to your section of the lab. These URLs should take you directly to the payment step.

Section Class Registration URLs:

0301 <http://goeta.link/USH22MD-B7EC99-1MO>
 0302 <http://goeta.link/USH22MD-8A7C4B-1MN>
 0303 <http://goeta.link/USH22MD-69F437-1MM>
 0304 <http://goeta.link/USH22MD-656206-1ML>
 0305 <http://goeta.link/USH22MD-3A6C08-1MK>
 0306 <http://goeta.link/USH22MD-F59AA5-1N9>
 0307 <http://goeta.link/USH22MD-07A05C-1MJ>
 0308 <http://goeta.link/USH22MD-567655-1MI>
 0401 <http://goeta.link/USH22MD-BEFA9F-1MH>
 0402 <http://goeta.link/USH22MD-114B5B-1MG>
 0403 <http://goeta.link/USH22MD-3CF4DF-1MF>
 0404 <http://goeta.link/USH22MD-F45ECE-1ME>
 0405 <http://goeta.link/USH22MD-74D709-1N8>
 SES1 <http://goeta.link/USH22MD-B48223-1MD>

To summarize: the *required* materials for PHYS 121 are the textbook, MasteringPhysics access and the access to Expert TA.

MasteringPhysics registration and enrollment

The regular textbook bundle includes a slim cardboard “Student Access Kit” with an activation code for MasteringPhysics. Alternatively, you can purchase a MasteringPhysics subscription separately at www.masteringphysics.com. *Important:* If you purchase a subscription online, be sure to specify the standard textbook for the course: Knight/Jones/Field, College Physics, **3rd edition** (even if you are using a printed copy of the 1st or 2nd edition book); otherwise the MasteringPhysics registration system will not let you enroll in our course. Once you have registered, you can log in and “join” our specific course. Enter your Student ID (the 9-digit number on the front of your University ID card, beginning with either “10” or “11”) and the **Course ID: LI2018PHYS121MWF for sections 030X and LI2018PHYS121MW for sections 040X and SES1.**

Graded work

Homework will be assigned each week. Most assignments will have a combination of “warm-up” MasteringPhysics items plus a handful of multi-part questions to be answered on paper and turned in.

Lab work will be graded partly on your team’s lab reports and partly on your individual efforts.

You will also earn points for **participation** in class and tutorials, plus completing a few surveys.

Three **midterm exams** will be given in class, plus a **final exam** at the end of the semester.

Course grade break-down:

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| 5% | Participation (2% class participation and surveys, 3% tutorial attendance) |
| 25% | Homework (including MasteringPhysics and tutorial-related homework) |
| 20% | Labs |
| 30% | Midterm exams (10% each) |
| 20% | Final exam |

How written homework will be graded:

A typical homework assignment will include about 4 multi-part questions to be answered on paper and upload to your ELMS account. Answer questions on separate pieces of paper, write down your name, your session and UID on each page, scan your pages and upload them to ELMS. Clarity of presentation and neatness do count; points may be deducted for sloppy writing and illegible pages.

How MasteringPhysics items will be graded:

MasteringPhysics automatically calculates decimal scores based on your answers (except for free response answers), but the rules for giving partial credit can be confusing. Here is how I will set up the grading:

- You get a maximum of six attempts to answer each part. For symbolic or numeric questions, each wrong answer before the correct one reduces your score on that part by 10%. For multiple-choice questions, each wrong answer before the correct one reduces your score by 25%.
- There is no penalty for opening a hint; you can get full credit even if you use all the hints. However, if you answer the part correctly *without* opening a hint, you get a token *bonus* of 2% per unopened hint. (You can even look at the list of hint topics without actually opening any of them.)
- If you open a hint that contains a question, and you answer that question incorrectly, then your score for that hint is reduced by 10%. On the other hand, if you answer a question in a hint correctly, then you *gain* some credit even if you are unable to answer the original question in that part correctly. You’ll gain even more if consulting the hint allows you to answer the original question correctly! There is no penalty for leaving a hint question unanswered.

You can always click on the “Grading Policy” link at the top of an assignment to check the settings that apply to the assignment. If you think you have lost points unfairly for some technical reason, let me know what happened and I will look at the log of your answers and make an adjustment if appropriate.

In addition to online items the MasteringPhysics grades automatically, there may be some items that ask you to type in explanations. Those will be read and graded by the TAs.

Grade recording:

Scores on all of your assignments will be recorded on ELMS soon after grading is complete. Since different TAs and I will be grading different parts of each homework assignment or exam, it can take a little longer to collect all the parts and add them together. I will try to control the visibility of ELMS gradebook items so that when you see a score, it is an accurate sum of all the parts. We will aim to post your total scores within a week or so. Please check your scores periodically using the “My Grades” menu link in ELMS and let me know as soon as possible if you think there is an error; I will do my best to investigate and correct mistakes.

Course Policies

Late or missed work:

Assignments must be completed and turned in when they are due unless you have a valid excuse according to university policy, *e.g.* illness, in which case an extension will be granted. Please let **me** (not just your TA) know your situation as soon as possible, and I will tell you if I need documentation for the reason for your absence. No credit will be given for work turned in late without a valid excuse. In the case of illness, we will follow the university policy posted at <http://www.president.umd.edu/policies/v100g.html>: The *first* time you miss a due date during the semester, I will accept a self-signed note from you (without a doctor’s note) explaining the dates of your illness and stating that the information is true and correct. If illness causes you to miss more than one due date during the semester, or to miss an exam, I will require a doctor’s note. If you do miss an exam, I will schedule a make-up time with you as soon as possible—it starts to cause problems if it’s more than a few days later. In any case, whatever the reason for your absence, it is important that you contact me as soon as you reasonably can.

Policy on Collaborating:

Working together with other students is part of the course; in fact, the tutorials and labs are specifically designed around teamwork. Working together to figure out the homework is also encouraged, but you must do and turn in **your own work!** This simple rule applies: **Never look at someone else’s written solution.** That applies to your classmates as well as anything you may find on the web. Talking about how to work the problem is fine if it helps you to understand it better, but copying a solution is strictly forbidden (and will not enable you to succeed on the exams). Work that appears to have been copied will receive zero credit and may lead to administrative actions (see below).

Honor Code:

The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. I will ask you to sign the Honor Pledge on exams; I won’t ask you to sign it on each homework assignment, but it should be understood that the Honor Code still applies to homework. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. Violations will be taken very seriously and may result in an XF grade for the course and possible suspension. As your teacher, I have an obligation to uphold the Honor Code and have had to submit some Academic Integrity Referrals in past years, unfortunately, which led to XF grades. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://shc.umd.edu/SHC/Default.aspx>.

Religious observances:

If you need to miss class, tutorial, lab, a homework deadline, or an exam due to a religious observance, please notify me in advance—preferably at the beginning of the semester—so that we can make appropriate arrangements.

Students with disabilities:

Accommodations will be provided to enable students with documented disabilities to participate fully in the course. Please discuss any needs with me at the beginning of the semester so that appropriate arrangements can be made.

Weather and emergency closures:

If the University is closed due to weather or some emergency situation on a day when homework is due, then that homework must be turned in at the beginning of the next class when the University is open. If the University is closed on the scheduled date of an exam, then the exam will be given during the next class period when the University is open. If the University is closed on any non-exam day, including just before an exam, then the exam will still be given according to the original schedule. If for some reason the University is closed for an extended period, I will continue the course by recording video lectures and posting them on the web, and will ask you to watch them, read, and do tutorial and homework assignments on your own. In these or other exceptional circumstances, I will attempt to send out information by email.

Course announcements by email:

I will occasionally send important announcements to the class, specifically to each student's **umd.edu** email address. If you use some other email system, please make sure that mail sent to your umd.edu address is successfully forwarded to the address you use most regularly.

Privacy:

You have a right to privacy of your educational records, including the fact that you are enrolled in this course, but I hope you won't mind if the TAs and I may call you by name in the presence of other students. If that may be an issue or if you are ever uncomfortable with the class environment, please don't hesitate to let me know. One issue in principle is that we will be returning exam papers. I ask all students to honor the privacy of your classmates by not looking at or picking up anyone else's papers, unless *explicitly* asked by a friend to pick up their homework. If you want, please feel free to write just your initials or some other code name on your papers (along with your section number) and send me a quick email the first time you do, so we'll know which is yours from then on.

Copyright Protection of Course Materials

I hope you get a lot out of this course, but not by taking and selling the course materials! ☺
Please understand that my lecture slides, handouts, homework and exam problems and solutions, and the lectures themselves (including audio and video recordings) are copyrighted by me and may not be distributed or reproduced for anything other than your personal use without my written permission.