



PHYS 1401 – College Physics I COURSE SYLLABUS: Fall 2013

WHO I AM

Instructor: Dr. Kurtis A. Williams, Assistant Professor

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Office Hours: M 3:00–4:00, T 11:00am–noon, F 2:30–3:30, or by appointment

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University Email Address: Kurtis.Williams@tamuc.edu

Please include “Phys 1401” in the subject line.

Course Location and Time:

Lectures: MWF 10:00 a.m. – 10:50 a.m. in the Science 122

Labs: M 1:00 p.m. – 2:50 p.m., T 11:00 a.m. – 12:50 p.m., or Th 11:00 a.m. – 12:50 p.m. in Science 107

WHAT THIS COURSE IS ABOUT

Course Description:

Ask most people what they know about physics, and you’ll probably get an answer like, “it’s hard with lots of math.” That answer, although it has some truth to it, misses the big picture. Physics is the science that uses observation and reasoning to explain why things happen in the real world and how to predict what will happen next.

In this class we will be studying “mechanics”, which explains how and why things move. Mechanics explains why a quarterback who throws a tight spiral has better accuracy than a QB who can’t. It explains why the top rung of a ladder has a warning sticker not to sit or stand there. Mechanics is how your insurance company knows that you were going at least 90 mph when your car hit that tree, even though nobody was there to see it but you and you *swear* you were only doing 45.

In this course we will be emphasizing how use reason and similarities to make tough problems simpler before we even do any math. I don’t expect you to memorize a load of equations, but I will require you to use your noggin.

Student Learning Outcomes:

1. You will be able to develop a simple model that can be used to explain a complex situation.
2. You will be able to formulate an approach to solving real-world problems.
3. You will be able to define vocabulary used in mechanics.
4. You will be able to employ the physics of mechanics to solve real-world physics problems.

WHAT YOU ABSOLUTELY NEED

Materials – Textbooks, Software and Additional Reading:

Required on or before Friday, September 6:

- College Physics: A Strategic Approach Vol. 1 by Knight, Jones, and Field, 2nd edition, Technology Update, ISBN: 978-0-321-84155-1
- A scientific calculator that is not on your smart phone. Graphing capabilities are not needed but are acceptable. Wal-Mart has a TI-30Xa Calculator for \$8.44 that will do, plus other models for slightly more that are also fine.

How to Save Money:

I am not a textbook policeman. You may share textbooks. You may use any legally-obtained version of the textbook you want (eText, used, loose-leaf, rental, audiobook, granite tablet, etc). The campus bookstores sell the texts, but if you want to buy from Amazon, eBay, or directly from the publisher (mypearsonstore.com) you may save money. Just be sure that you have the right title, author and the 2nd edition. The book above only contains the chapters we will be using (1-16), so be sure that whatever you buy has at least those chapters. Finally, please don't use any other college physics text. The chapter order and topics covered will be different, which will hurt you in class.

Suggested Materials:

- Mathematics for College Physics, Biman Das, ISBN: 978-0-13-141427-3

Course Prerequisites: Officially none, but you will need working knowledge of high-school level algebra, geometry, and trigonometry.

HOW THE COURSE WILL WORK

Instructional Methods / Activities / Assessments

Participation

Research into how people learn shows that traditional physics lectures just don't work. The best learning comes when you are actively participating in the class. Therefore, I require you to take part in the class (and note that it is a big part of your grade!!)

The lectures in this course may be significantly different than those in other college courses you have taken. A typical class day will start with a short, graded quiz over the assigned reading, followed by me asking you a few thought-provoking questions over the material. Then I'll spend a little time reviewing the material I know people struggle the most with, followed by some group work. If you do not actively participate in these activities, you will not earn the full participation credit for that day.

Participation grading policy: You automatically get three excused absences, no documentation required. Everybody gets sick, has a bad day, has to take care of a friend or family member, or similar stuff now and then. But, after these excused absences, all absences count against your participation grade. Note that a few non-excused absences won't affect your grade too much, but excessive absences will. For example, there will be approximately 41 lectures during the semester.

If you earn full participation credit in 38 of them, you will receive 100% for your participation grade. If you earn full credit in 33 lectures, your participation grade will be 33 out of 38, or 86%.

Reading Quizzes

Our classes will work best for you if you read your textbook before class. I'll be making reading assignments often. You should focus on learning vocabulary, definitions, and notation. To ensure that you do the reading, I'll give short quizzes focusing on these three things at the start of a If you are tardy, you don't get to take the quiz late.

Homework

Research shows that working out physics problems, especially in small groups of three or four people, helps you learn the material *better than any other activity we can do*. Therefore, I'll assign homework almost daily.

Grading policies for homework:

- Homework is due at the start of the lecture on the due date.
 - Homework turned in after the start of lecture but before the next lecture will get a 33% penalty.
 - Homework turned in after the start of the following lecture will get a 67% penalty.
- 50% of the score on each homework will be based on completion. A problem is considered complete if work is visible and an answer with appropriate units is clearly indicated.
- 50% of the score will be based on a thorough grading of a subset of the questions. Each graded question will be scored on a scale of 1 to 4. The following rubric will be used:
 - 4 pts: You show all work and clearly explain your thought process. Your answer is correct with the proper units and number of significant figures. (I.e., you nail it.)
 - 3 pts: You show most of the work and thought process for a problem. Your answer may be wrong due a few minor computational errors, the wrong number of significant figures, or improper units. (I.e., close but no cigar)
 - 2 pts: You attempt the problem and show most of your work and thought process, and that process was more or less in the right direction, but a significant conceptual or mathematical error prevents you from getting the correct answer. (I.e., you're in the ballpark)
 - 1 pt: You attempt the problem, but a major conceptual error either leads you down the wrong path or keeps you from making progress **or** you have a correct answer or nearly correct answer but do not show enough work for me to tell if you know what you are doing. (I.e., the lights are on but nobody's home).
 - 0 pts: You make no attempt to complete the problem, **or** your answer is clearly copied from another source with no personal thought put into it. (I.e., you can't be bothered to work on it, so I can't be bothered to give you points.)

Assignments will be announced in class and on eCollege with due dates will be clearly specified.

Your lowest two homework scores will be dropped. So, if you miss an assignment, run out of time, or just completely & it up, you're forgiven twice.

I know that you can probably find answers to many of the problems on the internet with a little searching, but zat is streng verboten! Ja! (Don't even think about doing it.) The internet might give you answers, and if you are lucky, it might even give you correct answers! But I consider internet searches *for the purposes of finding answers* to be cheating. It's okay to use the internet to learn more about a topic or get hints on how to do a problem, just as you might see a physics tutor for help.

The following are considered cheating and will not be tolerated: Searching for answers on the internet, obtaining copies of solutions to homework questions (whether from past students or other sources), directly copying another student's work, etc. See the section on "Academic Integrity" below for full details.

Exams:

Two midterm exams will be given during the semester; tentative dates for these exams are at the end of this syllabus. The midterms will focus on material covered since the previous exam, but as many topics in physics are interrelated, the second midterm will undoubtedly require remembering something from the first midterm. There will also be a cumulative final exam.

Makeup exams may only be taken under extenuating circumstances. I will require documentation of the reason for the absence, and I reserve the right to reject any excuse. In most cases, makeup exams will be scheduled within 2 days of the exam. Please do everything in your power to be present for an exam. Makeups for the final exam require especially extenuating circumstances.

For midterms and the non-lab final, you will need to bring a pencil and your calculator. I will provide you with a sheet containing every equation you will need (plus many you won't need), so you don't need to memorize. You may also bring a single 4x6 handwritten note card containing whatever formulae, notes, or doodles you'd like (double-sided is okay). No other books, backpacks, computers, iPods, headsets, cell phones, PDAs, tricorders, etc. will be permitted. Using any aids other than your single card will result in you being removed from the exam and a grade of a zero.

If you are certified as needing special accommodations for examinations, please see me privately well before the exam with your letter of accommodation from the Student Disability Resources and Services office.

Labs:

Labs are mandatory and are part of your grade. *By University policy, if you receive a failing grade (<60%) in the lab portion of the class, you will fail the class.* Labs will be held in room 107 of the science building.

Be sure to have a pencil, a scientific calculator, and a notebook with you in lab.

Because lab space is limited, you must go to the lab period for which you are enrolled every week unless you get prior approval from the instructor.

Your lowest lab score will be dropped.

No makeup labs are available. The final lab session will consist of an exam that will require you to do problems related to the labs.

Extra Credit:

You can earn up to 5% extra credit on your participation grade by attending a physics-related event or museum and writing a 1-page summary of what you did, what you learned, and how it related to something we did in class. In order to earn the full 5%, you need to do the following:

1. You must clear the event with me (preferably in advance so that you aren't wasting your time).
2. You must present some evidence that you were actually there (such as a ticket stub or, if a physics-department sponsored event, find me during/after the event so I see you were there).
3. You must turn in a one-page summary (font no larger than 12pt, single-spaced, margins

- 1”) describing the event, what you learned, and how it relates to something we’ve done in class. The more insightful you are, the more likely you are to earn the full 5%.
4. Turn in your summary on eCollege in the Dropbox labeled “Extra Credit”.

Extra Credit Terms, Conditions, and Caveats: NO OTHER EXTRA CREDIT OPPORTUNITIES WILL BE PROVIDED. NONE. NO MATTER HOW MUCH I LIKE YOU AND HOW SAD YOUR STORY IS. You may only earn extra credit for one event, though you are welcome to attend as many as you like. All extra credit work must be turned in on or before December 6. Offer of extra credit not valid in Vermont, Wyoming, or Saskatchewan. See your professor for details.

Grading

Grading will be done on an absolute scale with no competition. If you all earn an A, you all get an A. I may “curve” grades for specific assignments at my discretion, but your percentage earned will never go down if I apply such a curve. Your current grades will be available starting September 4 through a website called “JupiterGrades” during the semester so you can track your progress. The gradebooks on eCollege are not official.

Grading is weighted by assignment using the following weights:

Classroom Participation	10%
Reading Quizzes	10%
Homework Assignments	20%
Labs	20%
Midterms	20% (10% each)
Final Exam	20%

The grading scale is:

90% to 100%	A
80% to 89.9%	B
70% to 79.9%	C
60% to 69.9%	D
Below 60%	F

TECHNOLOGY YOU WILL NEED

This course is a technology enhanced course, meaning that some materials (like lecture notes, solutions, exam reviews, etc) are only available online. You need to be comfortable with basic computing skills and web browsing, and to be able to access and learn to use the various tools on eCollege even if you are not familiar with them yet. Your textbook also has QR codes (2-D barcodes) that allow you to access video tutors for many topics; if you don’t have a smart-phone with QR code capabilities, a link to these will also be available through eCollege.

You will need the following technologies and software to be successful in this course:

- Internet access/connection – high speed recommended (not dial-up).
- Access to a computer (Windows or Mac okay)
- Software to read PDF files (such as Acroread or Preview)

Additionally, the following hardware and software are necessary to use eCollege:

- Our campus is optimized to work in a Microsoft Windows environment. This means our courses work best if you are using a Windows operating system (XP or newer) and Internet Explorer (6.0, 7.0 and 9.0).
- eCollege claims to support Mac OS X and iPads (iOS 5.1 or later with some features disabled), as well as the Safari browser (on Macs) and Firefox and Chrome on Windows machines. Be advised that there are often problems, especially after a software update.
- I strongly recommend that you check that your computer and browser are compatible with eCollege by performing a "Browser Test" prior to the start of your course. To launch a browser test, login in to eCollege, click on the 'myCourses' tab, and then select the "Browser Test" link under Support Services.

HOW TO GET STARTED AND ACCESS CLASS HANDOUTS

eCollege Access Information

This course will be facilitated using eCollege, the Learning Management System used by Texas A&M University - Commerce. To access these materials, go to:

<https://leo.tamuc.edu/Login.aspx>. You will need your CWID and password to log in. If you do not know your CWID or have forgotten your password, contact Technology Services at 903-468-6000 or helpdesk@tamuc.edu.

Class Handouts

Class materials such as copies of PowerPoint slides and electronic versions of handouts will be made available through eCollege, the Learning Management System used by Texas A&M University - Commerce. To access these materials, go to: <http://online.tamuc.org>. You will need your CWID and password to log in. If you do not know your CWID or have forgotten your password, contact Technology Services at 903-468-6000 or helpdesk@tamuc.edu.

HELP!!!!

Are you lost, confused, or worried?

First, **DON'T PANIC!**

Next, step back and try and pinpoint the source of your confusion:

- Have you read the textbook sections? If not, go read them! If you have, maybe you need to try a different reading methods. Science textbooks are not like novels; they present information in a completely different method than most reading material, and there is no plot thread unfolding as you get further into a chapter. Here are some websites with suggestions on how to read science textbooks:
 - How to Read Effectively in the Sciences: <http://academic.cuesta.edu/acasupp/AS/621.htm>
 - Reading Assignments in Science: <http://www.studygs.net/science/readingtexts.htm>
 - The SQ4R Method for Reading: <http://scs.tamu.edu/?q=node/105>
- Do you just need some time away? An entire physics chapter is too much to deal with all at once. Don't try to do all of a week's work at once; find multiple times (perhaps an hour a day) and give your brain some time to absorb and mull over the information.
- If after all of this you are still confused or uncertain, it's time to seek help. Don't wait until the exam! Here you have many options:
 - Talk to your classmates! Use the student lounge or email to solicit help.

- Attend my office hours (see next section). You can come to real or virtual hours, or make an appointment with me if none of those times work.
- Go to the JAMP room (Science 110). JAMP offers peer counselling and tutoring in many of the sciences; look for times when a physics tutor is available.
- If you are still stuck, contact the Academic Success Center to search for other options that may help you.
<http://www.tamuc.edu/studentLife/campusServices/academicSuccessCenter/>

Are you experiencing technical difficulties?

If your problems are with eCollege:

Texas A&M University-Commerce provides students technical support in the use of eCollege. The student help desk may be reached by the following means 24 hours a day, seven days a week.

- **Chat Support:** Click on 'Live Support' on the tool bar within your course to chat with an eCollege Representative.
- **Phone:** 1-866-656-5511 (Toll Free) to speak with eCollege Technical Support Representative.
- **Email:** helpdesk@online.tamuc.org to initiate a support request with eCollege Technical Support Representative.
- **Help:** Click on the 'Help' button on the toolbar for information regarding working with eCollege (i.e. How to submit to dropbox, How to post to discussions etc...)
- **Please don't contact me** for eCollege problems. I'll just tell you to take the above steps.

If your problems are with JupiterGrades:

- Contact me.

HOW TO CONTACT ME AND STAY CONNECTED

Interaction with Instructor

Email: I can be reached by email at Kurtis.Williams@tamuc.edu. Please put "Phys 1401" in your email subject header. It may take me up to 24 hours to send you a response (48 hours on the weekend or holidays). If you don't hear back from me in that time, please send another email or give me a call. I assume you check your campus email daily, so if I send out a class email, I'll assume you read it.

Texts, Automated Emails and Twitter: I have set up an SMS (text and/or email) account and a Twitter account for brief messages (like reminders of due dates, updates on class events, and things I find that are cool). Your use of these is completely optional; no critical information will be given out on Twitter without a class email and/or eCollege announcement also being made. Both texts and tweets will contain the same information..

To register for text (SMS) updates, text "@phys1401" (without quotes) to (754)333-5306. The service is free, but any standard messaging fees charged by your mobile provider will apply. To get automated email copies of any texts (like if you don't have texting or don't want to pay for it), send a blank email to: phys1401@mail.remind101.com. The service is also private: nobody (including myself) will see your phone number or email, and only I can send messages. So you will only get my reminders and any drunk texts I send (hopefully not).

The Twitter feed is @prof_kwilliams (http://twitter.com/prof_kwilliams - note the underscore between the f and k). I use this feed for multiple classes; search the feed for

#online to get updates for this class. *You do not need a Twitter account to view these updates*, but if you tweet, feel free to follow me. I do not read direct messages or replies to tweets.

Office Hours: Office hours are times that I set aside when I promise to be in my office so that you can come by and talk to me. During office hours, you can ask questions about the course material, ask about homework, see your current grade, or ask other questions about the class or astronomy in general. Office hours work best if you have your textbooks, class notes, and lecture tutorials with you.

It's important to realize that office hours are *not* just for students who are having problems in the course. If you are uncertain about anything, please visit, email, phone or drop into virtual hours before your small problems grow into big ones. If you are worried about what might be on the test, stop in. If you are curious about astronomy jobs and research opportunities, come by.

If you want to talk but cannot come during office hours, please contact me by email in order to set up an individual appointment. By setting an appointment, you both guarantee that I will be in my office (or online) and that I will have plenty of time to talk with you. You may feel free to stop by my office any time my door is open, but if you do not have an appointment and if it is not my scheduled office hours, please understand if I'm not free to talk at that instant.

Facebook: Please don't try to friend me on Facebook. I prefer not to spam you with cat videos and FarmVille 2 requests, and you won't have to worry about me trolling you.

Netiquette

I expect all students to behave to basic standards of etiquette both in real life on the web. Abusive or inappropriate comments will be removed and earn a reprimand (or more, depending on the infraction); any additional lapses could result in disciplinary action. For a simple guide to netiquette, see <http://www.albion.com/netiquette/corerules.html>

RULES, RULES, RULES (UNIVERSITY POLICIES)
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Academic integrity

A major goal of this and most every university course is for you to learn and appreciate subject material. Academic dishonesty ("cheating") actively prevents you from achieving this goal. Academic dishonesty is taken seriously by the University and by me, and **will not be tolerated**. (See the TAMU-C Code of Student Conduct and the TAMU-C Procedures A 13.04, 13.12, 13.31, and 13.32.)

This conduct is not only considered wrong in this course and at this University, but also in the real world. Engaging in these activities will get you fired from a job and prevent you from getting another job.

Unethical student conduct includes:

- **Plagiarism**, or copying the words of others with the intent of making it look like your own. Whether you use someone else's phrase word for word, or whether you try and change a few words, or even if you just borrow someone else's original idea and don't give them credit, that's unethical. Use your own words whenever possible, give credit to wherever you got an idea, and put direct quotes inside quotation marks.

- **Cheating** involves trying to trick me or others into thinking you did work that you really didn't do, or into thinking you know what you really don't know. This can include stealing exams, changing your answers on a graded exam or assignment and claiming it was graded wrongly, putting your name on someone else's homework, etc.
 - ***Searching the Internet for homework solutions and copying what you find is considered cheating.*** Searching the Internet for help on a topic is okay. For example, suppose a question asks "Describe the life cycle of a star that has the same mass as the sun." Typing that phrase into Google and cutting and pasting the text in the answer box is considered cheating. Typing "uniform circular motion" into Google, reading a few web pages, and summarizing the information in your own words is not cheating.
 - ***Borrowing a previous student's homework, exams, or solution sets is considered cheating.*** "Borrowing" includes looking at someone's submitted homework, screen shots, stealing returned homeworks, and so on.
- **Collusion** is working with another person to cheat. This can include copying someone else's answers to an exam or assignment, doing work for another student, buying or otherwise obtaining homework/exam solutions from any source online or off-line, or any other instance of multiple people engaging in some form of cheating or dishonesty. Working with other students on an assignment is fine as long as everyone contributes and each student does their own work.
- **Any other activity that, to a reasonable person, looks wrong.** If you have any doubt whatsoever whether a certain action is considered dishonest, please ask me *before* engaging in the activity. There is no need to be embarrassed about asking, and I won't penalize you for asking! In this class, if you follow the maxim "it's easier to beg forgiveness than to ask permission", don't expect forgiveness to be forthcoming.

If you engage in academic dishonesty during any graded activity, you will receive no credit for that activity. More than one instance of dishonesty by a student will result in automatic failure of the course and referral of the student for disciplinary action.

For further information, search the Texas A&M-Commerce website for "academic integrity policy".

Administrative Withdrawal

Although I have the right to drop you for excessive absences, I won't do so. You have a right to get an F if you decide to quit working but don't withdraw.

Assignment Policy and Due Dates

All assignments will be posted at least one week before they are due. Assignments and due dates will be posted in the main page for each unit. Submission requirements for each assignment will also be given on that page.

Dropping The Course

A student may drop this course by logging into their myLEO account and clicking on the link labeled 'Drop a class' from the choices found under the myLEO section of the Web page.

Incompletes

I only offer incompletes in extraordinary circumstances. Any student interested in an incomplete should contact me as soon as possible after the situation arises, and should keep in mind that I am not required to give you an incomplete and so may not offer you the opportunity.

University Specific Procedures

ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

**Office of Student Disability Resources and Services
Texas A&M University-Commerce**

**Gee Library
Room 132**

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

StudentDisabilityServices@tamuc.edu

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See *Code of Student Conduct from Student Guide Handbook*).

WHAT WE'RE DOING AND WHEN

The course will cover many of the topics outlined below. The dates below may change (never earlier, but possibly later) so pay attention to announcements in class for precise dates.

Part 1: Force and Motion

- Unit 1: Representing Motion (Aug 28-Sep 4; No classes on Labor Day, Sep 2)
- Unit 2: Motions in One Dimension (Sep 6-Sep 11)
- Unit 3: Motion in Two Dimensions (Sep 13-Sep 20)
- Unit 4: Forces and Newton's Laws (Sep 23-Oct 2)
- **Midterm 1: September 25 (Units 1-3)**
- Unit 5: Applying Newton's Laws (Oct 4-Oct 11)
- Unit 6: Circular Motion, Orbits, and Gravity (Oct 14-21)
- Unit 7: Rotational Motion (Oct 23-Oct 30)
- Unit 8: Equilibrium and Elasticity (Nov 1-Nov 6)

Part 2: Conservation Laws

- Unit 9: Momentum (Nov 6-18)
- **Midterm 2: November 11 (Units 5-8)**
- Unit 10: Energy & Work (Nov 20-Nov 27; No class on Nov 29)
- Unit 11: Using Energy (Dec 2-Dec 6)

Final Exam: Monday, Dec 9, 10:30-12:30 in Science 122