

West Chester University

Physics 100-04: Elements of Physical Science Spring 2013

Course Overview: We interact with the physical world all the time—when we walk, when we drive, as we work, even when we rest. Our body is a physical object too, which we use to go where we want and operate the machines that we want. But what of things like cars, TVs, skateboards, and cell phones: do they operate and move according to the same “rules” that make our bodies move as they do? What are those rules, anyway? And how could we use knowledge of such rules to make better predictions about what will happen when we interact with the physical world around us? We will attempt to answer these questions during the course of our studies in PHY 100.

In PHY 100, we will examine the application of modern physics to various aspects of our everyday lives. Our ultimate goal is to understand how quantitative models of the physical world are constructed, tested, and modified as we attempt to explain every day processes and interactions. We will begin by considering what a model of the physical world consists of, and learn the mathematical language by which we can ask questions of and receive quantitative answers from the natural world. From there, we will study the modern theories of motion and rotation which allow us to make sense of how and why things in the world around us move. Lastly, we will turn our attention to electricity and electric circuits to get a feel for how the many electronic devices we use in our modern lives work. Throughout the course, we will develop and build analytical reasoning and problem solving skills which are widely applicable to our modern life.

Course Credit: This is a 3 credit course.

Course Requirements: This course has no prerequisites. However, we will be using some basic algebra at the high school math level; I will assume that you have done this sort of math before, though it may be a few years since you've seen it or used it. We will also be drawing and interpreting diagrams, creating and using problem solving strategies, engaging in proportional reasoning, and reasoning about the possible outcomes of simplified experiments. I will assume that you have a little experience doing these things, but haven't practiced with them in a while.

Meeting Times: Monday, Wednesday, Friday from 11:00 AM to 11:50 AM
Merion Science Center, room 109

Required Course Materials:

- Physics: A Conceptual World View, 7th Ed., by Kirkpatrick & Francis (Thompson, Text: Brookes/Cole, 2009 or 2010)
- A **non-graphing** calculator that is **not** part of an iPod/iPad/iPhone, cell phone, tablet PC, Kindle, etc.
- A Turning Technologies ResponseCard RF LCD clicker

Instructor Information:

Dr. Michelle A. Caler

office: Merion Science Center room 135

office hours: Mondays, Wednesdays, and Fridays from 2:00PM—4:00PM
... and by appointment

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webpage: This course has a D2L webpage. The syllabus, homeworks, and all other related course materials will be posted to this webpage. Please let me know if you are unable to access it. Being able to access the D2L webpage will be critical to student success in this course.

Course Goals: The ultimate goal of PHY 100 is for you to gain an understanding of and appreciation for the methods of science, and how ideas from the science of physics influence our day-to-day lives. One of the ways we will accomplish this goal is by building up an understanding of how and why various physical phenomena occur. The emphasis will be on the sorts of processes and interactions that we encounter on a regular basis. In particular, we will examine linear motion, rotational motion, momentum, energy, and electricity. While I hope that you will gain a greater understanding of these topics and how they explain physical behaviours that we see every day, our larger goal in studying them is to illustrate how the methods and ideas of science inform our understanding of the natural world. Over the course of our studies, we will develop a qualitative understanding of our modern physical model of the natural world; additionally, we will learn how to make quantitative predictions using the mathematical laws which form its foundation. As we work toward meeting these goals, I will be emphasizing the ability to reason with and work with concepts and equations rather than strict fact memorization or complicated mathematics. (We will need to memorize some terms, though.) In doing so, we will learn analytical reasoning skills, how to make connections between concepts, and how to communicate your reasoning to others. We will also be making quantitative predictions about phenomena, which does require some basic mathematical ideas. These ideas include, but are not limited to, simple algebra, proportionality, scaling, and working with powers of 10. **DO NOT PANIC** if it's been awhile since you've seen these mathematical terms! We will develop them as we go through the course.

As we strive to achieve the above course goals, we will achieve a number of the more basic goals of the general education curriculum at West Chester University, including the:

1. Ability to communicate effectively;
2. Ability to employ quantitative concepts and mathematical methods;
3. Ability to think critically and analytically.

Grading: Class participation: 15%
Homework: 20%
Exams: 45%
Cumulative Final Exam: 20%

Class Participation and Attendance: Class participation will be recorded using the Turning Technologies ResponseCard RF LCD clicker system. I am **requiring** that you buy a ResponseCard RF LCD and register it. Please register your ResponseCard as soon as possible after you purchase it. Make sure that you bring it to every class, and that you check its battery life periodically. I will have **ONE** ResponseCard RF LCD that you can borrow in case you forget yours: first come, first served. You get **two** borrows per semester, and you must return my ResponseCard when class is over. If my spare ResponseCard walks away, there will be **NO** emergency borrowing opportunities for *anyone* for the rest of the semester.

Each day of class for which a test is not scheduled will be worth 3 points of class participation credit. I will award partial class participation credit under special circumstances. You will earn class participation points by responding with your ResponseCard to questions that I ask during my PowerPoint presentations. These questions will consist of (but are not necessarily limited to) "Voting Opportunities," "YouPredict Opportunities," and "Rank my x" slides. I reserve the right to introduce ways in addition to those listed above to earn class participation with your ResponseCard; they will be explained in class as appropriate. To earn full class participation credit for a class period, you need to respond using your ResponseCard to **ALL** response questions asked in class, even times when I ask you to respond again after talking to a neighbour. Note carefully that you **DO NOT** have to answer response questions *correctly* in order to get full credit: you just have to attempt them. In other words, I record only that you *did* answer, not *what* you answered. It is in your best interest to do your best to get the correct answer, though, so don't just randomly hit buttons when the questions come up. Give them your best go.

You **MUST** be present in class voting with your ResponseCard in order to receive class participation credit. This means that I will be expecting you to attend all scheduled classes for the entire scheduled time. I do understand that on occasion something unforeseen will pop up and prevent you from attending class; therefore, at the end of the term I will drop five (5) days of class participation points. Any additional

unexcused absences will result in ZERO class participation points for those dates. If you miss class due to an excused absence, it is **IT IS YOUR RESPONSIBILITY** to contact me to arrange a way to make up the class participation points that you missed. Excused absences are limited to University-Sanctioned Events (which follow the Excused Absence Policy for University-Sanctioned Events as described in the West Chester University Undergraduate Catalog), and absences due to serious illness or injury, or the death of family members (each of which is to be verified in writing by a practicing, non-related physician). In cases of extreme illness or emergency that will require prolonged absence, *you are responsible* for contacting Dean Bricketto (Student Affairs). His office will contact your professors and make appropriate recommendations. Please note that if you are absent, whether excused or unexcused, **IT IS YOUR RESPONSIBILITY** to get the notes you missed from a classmate, **including** notes on any mathematical problems we worked on in class, and to learn of any important announcements that were made.

Note that in order to earn class participation points with your ResponseCard, **YOU** must be the one entering responses with it. I will have a zero tolerance policy for ANYONE who hands their ResponseCard to a classmate and tells that classmate to use it in class for them. You will earn **ZERO** class participation points for days when your ResponseCard was present but you were not. I reserve the right to introduce alternate forms of attendance taking to enforce this. If I catch you with more than one ResponseCard because you have someone else's to respond with, **you** will earn **ZERO** class participation points for that day.

The ResponseCard clicker system is a new technology for me, so there are bound to be some bumps while the system is smoothed out. And as with any technology, problems can pop up unexpectedly. For this reason, I reserve the right to change details about how class participation credit is awarded on a particular day as circumstances warrant it. You will be notified of any such changes both in class and in writing (through D2L and email). I also reserve the right to increase the number of dropped days of class participation due to unforeseen circumstances.

Homework: All homework will be posted and submitted online through the course's D2L webpage; more specifically, they will be posted to the "homework" section of that page. There will be ten (10) homeworks—one for each chapter we will cover—assigned over the course of this semester. **YOU ARE RESPONSIBLE FOR CHECKING D2L AND KEEPING UP WITH HOMEWORKS**; this means checking to see that an assignment has been posted, knowing when it is due, and ensuring that it is completed before the deadline. To help you with this, I have included a column in the class schedule at the end of this syllabus that tells you **WEEK BY WEEK** what homeworks will be posted, when they will be posted (date/time), and when they will be due (date/time). If the course schedule is adjusted from what appears at the end of this document, it will be posted to D2L and there will be an announcement made in class. Life can get very busy during a semester, so it can be hard to remember to log in to do homeworks even when you know when they are being posted. Thus, you may wish to set up pre-timed reminders to check in on our course's D2L site. Writing homework posting dates/times as well as due dates/times in a daily or weekly planner may also help. **I will not always remind you in class about homeworks!** It is **YOUR RESPONSIBILITY** to remember to do them.

You may re-do a homework as often as you like before it is due; I will keep only your highest score for my gradebook. But regardless of how many times you attempt one, **homeworks are due on the due date indicated on the class schedule and D2L, at the time listed on the class schedule and D2L**. No late homeworks will be accepted, **no exceptions**. This is because homework solutions will be posted shortly after the homework's due time. At the end of the semester, I will drop your lowest homework grade. This way, it's not a big deal if you miss one assignment. But if not doing homework becomes a habit, your grade **will** suffer quite a bit come the end of the semester.

If you have a question or a computer problem, you must notify me at least 48 hours before the homework due date. Plan on your internet access and/or computer failing at the *worst possible time*, so **have a go at the homework at some point before the day it is due**. Report any problems with D2L ASAP by calling 1-877-730-6235 or visiting the ACC help desk in Anderson 20 (610-436-3350).

I encourage you to discuss the homework problems with each other, but **the work you do on homeworks must be your own**. (See the Academic Integrity statement on page 6 of this syllabus.) I also encourage you to discuss and review course material with your classmates. But be sure to study and think about the material on your own, because your classmates cannot help you on exams.

Please note that problems with technology can be unexpected, and for this reason I reserve the right to change details about how online assessments are conducted. I also reserve the right to modify homework due dates and times due to unforeseen circumstances. You will be notified of any such changes both in class and in writing (through D2L and email).

Exams: There will be four in-class exams given over the course of the semester. The dates of these exams are:

February 22
March 27
April 17
May 8

The range of chapters each exam covers is given in the class schedule, which can be found at the end of this syllabus. If the class schedule is adjusted from what appears at the end of this document, it will be posted to D2L and there will be an announcement made in class. Make sure to check D2L regularly to ensure that you have an up-to-date class schedule. **You** will be responsible for knowing what chapters will be covered on an exam, and when it is.

YOUR LOWEST EXAM GRADE WILL BE DROPPED. Thus only your three (3) highest test grades will be counted. **THERE WILL BE NO MAKE-UP EXAMS GIVEN.** If you miss an exam, you will receive a zero for it, and it will be used as your dropped exam. Only under very special circumstances will there be any change to this policy—and in those cases, exceptions will be made **ONLY** when I am notified at least 24 hours prior to the scheduled exam time of a conflict. If you have ANY questions or concerns about this particular point, please come talk to me and get clarification **BEFORE** it is too late!

Tests will consist of approximately 10–20 multiple choice questions and 1 open-ended problem, which I will design to be similar to example and practice problems done in class. A constant curve will be applied to an exam if the class average drops below 75% to increase it to this value. The scope of each test (with the exception of the final) is limited to the chapters listed in the class schedule below; however, even though earlier material is not explicitly tested it may still appear on an exam. You have been warned!

Tests will be closed book and closed notebook. However, I will give you one sheet of equations to use during the exam. This equations sheet will be **the only aid** allowed to you during exams, with the exception of a stand-alone calculator (as described below). All other written and electronic aids are **strictly forbidden**. I will post to D2L the equations sheet that I will give you for an exam at least 24 hours before the exam time, so that you can see what will be on the sheet.

You are permitted to use a calculator (that is **not** a graphing calculator) during exams, but **ONLY** a calculator that is **not** part of an iPod/iPad, cell phone, etc. If I catch you using an iPod/iPad, cell phone, tablet PC, Kindle, etc. as a calculator during an exam, I will take your exam and you will get a zero on it. No exceptions. I will NOT bring extra calculators for you to use during exams. It is **YOUR RESPONSIBILITY** to make sure you have a working stand-alone calculator for exams.

After each exam, I will return to you the sheet of paper which contains your solution to the open-ended question and your responses to the multiple choice questions. I will write your exam grade on the top of this sheet. I will hold the copies of the multiple choice exam questions in my office after you have seen them; you can make an appointment any time you like to come look at the multiple choice exam questions.

Final Exam: The final exam for this course will be given on Wednesday, May 15 from 10:30 AM–12:30 PM. This is the time scheduled by the University registrar for our final exam. The final ***will be cumulative***, and ***it is mandatory***. It will consist of approximately 35–45 multiple choice questions and 1 open-ended question. Missing the final exam will result in a zero for the exam unless **EXTREME** circumstances apply. Your final exam grade **cannot** be counted as your dropped exam score.

Extra Credit: I am offering **one** extra credit opportunity this semester. It is entirely optional; you are not required to do it. It will involve making observations of physical theories at work in your day-to-day life over the course of the semester. Details of the project will be provided during the first class period. If you want to do the extra credit project, you **MUST** tell me so **by email** by **February 11th at 5PM**. I will NOT accept extra

credit projects which were not announced to me by email by February 11. Projects will be due on May 10 at the start of class. Successful completion of this extra credit project will boost your overall course grade by one percentage point at the end of the semester.

Teaching Style: I will be using MS PowerPoint slides a great deal when going over course material in class; when example problems come up, I will use the chalk board to work through them. I will try to write big enough so that everyone can see, but if you do have trouble seeing what I write please move to the front of the room. I will post to our class's D2L page **modified copies** of the MS PowerPoint slides I use in class before each lecture. I do so to provide you with a *supplement* to the notes you are already taking in class. The slides I put up on D2L are **NOT** meant to take the place of your own personal note-taking. **YOU** will be responsible for that. The purpose of providing you with these modified slide copies is to give you the text for all in-class activities we will do, so that you do not need to worry about copying down their text and can instead concentrate on thinking about said activities. I also try to leave plenty of room for you to write down key equations, words, and other ideas so that you'll remember these things later. Please note carefully that these modified slides will NOT contain the solutions to the example problems I do in class, and they will not contain certain definitions. If you want notes on these things, you'll need to take them as we go through the material in class.

I will do my best to engage you interactively with the material during class time. Activities may include, but are not limited to, conceptual questions to be discussed with a neighbour, tutorial activities, "Voting Opportunities," "YouPredict Opportunities," "Rank my x" problems, practice problems, and interactive lecture demonstrations. As mentioned above, your responses to some of these items will count as class participation credit. I hope that these activities both enhance your learning and help make class a little more exciting for you.

Intellectual Property Statement: The instructor for this course utilizes copyrighted materials under the "Freedom and Innovation Revitalizing United States Entrepreneurship Act of 2007" (Fair Use Act). Apart from such copyrighted materials, all other intellectual property associated with this course is owned and copyright protected by the instructor, including, but not limited to, lectures, course discussions, course notes and supplementary materials posted or provided to students authored by the instructor, assessment instruments such as quizzes and exams, and Power Point presentations. No recording, copying, storage in a retrieval system, or dissemination in any form, whether electronic or other format, by any means of the intellectual property of the instructor, either in whole or in part, is permitted without the prior written permission of the instructor. When such permission is granted, it must specify the utilization of the intellectual property and all such permissions and waivers shall terminate on the last day of finals in the semester in which this course is held.

Links and references to on-line resources provided by the instructor may lead to other sites. The instructor does not sponsor, endorse or otherwise approve of any information appearing in those sites, nor is responsible for the availability of, or the content located on or through, external sites. Apart from materials used in accordance with the Fair Use Act, the instructor takes no responsibility for material that is otherwise offered at web sites and makes no warranty that such material does not infringe any third party rights. However, should any of this type of material be present and this fact is brought to the attention of the instructor, they will remove references to it from course materials.

Ye Olde Technology Policy: Please turn off all cell phones, iPods/iPads/iPhones, tablet PCs, Kindles, laptops, etc. before class. If you are expecting an emergency call, change your phone to vibrate mode and answer the call outside of our classroom. You are **not allowed** to use cell phones for texting or gaming during class. Doing so is distracting to your classmates and instructor. If I catch you using an electronic device inappropriately during class, ***I will take 5 points off of the nearest exam grade!*** **NO EXCEPTIONS.** If you feel the temptation will be too great, be on the safe side and leave your cell phone stored in your bag. I do not allow the use of laptops in my class. However, I am willing to make an exception for those who bought an e-copy of the textbook, provided that I see proof of the e-copy on your computer. I also understand that use of a laptop may be required to accommodate certain disabilities. Terms of laptop use in both of these cases can be discussed with me on an individual basis.

Academic Integrity: It is the responsibility of each student to adhere to the University's standards for academic integrity. Violations of academic integrity include any act that violates the rights of another student in academic work, that involves misrepresentation of your own work, or that disrupts the instruction of the course. Other violations include (but are not limited to): cheating on assignments or examinations; plagiarizing, which means copying any part of another's work and/or using ideas of another and presenting them as one's own without giving proper credit to the source; selling, purchasing, or exchanging of term papers; falsifying of information; and using your own work from one class to fulfill the assignment for another class without significant modification. Proof of academic misconduct can result in automatic failure and removal from this course.

For questions regarding Academic Dishonesty, the No-Grade Policy, Sexual Harassment, or the Student Code of Conduct, students are encouraged to refer to their major department's handbook, the Undergraduate Course Catalogue, the Rams Eye View, or the University Web Site. Please understand that improper conduct in any of these areas will not be tolerated and may result in immediate ejection from the class.

Disability and Special Needs: We at West Chester wish to make accommodations for persons with disabilities. Please make your needs known by contacting the Office of Services for Students with Disabilities at extension 3217 as well as myself. Sufficient notice is needed in order to make the accommodations possible. The University and I desire to comply with the ADA of 1990.

Tutoring: Tutoring for PHY 100 is offered by the Learning Assistance Resource Center (LARC), 223 Lawrence Center, x2535. See the following website for more information: <http://www.wcupa.edu/ussss/larc/>. LARC tutoring is free of charge, but you must sign up at the beginning of the semester. Physics majors MAY offer additional tutoring in PHY 100 during the semester. An announcement will be made in class if this is the case.

Withdrawal Notice: A syllabus constitutes a contract between student and instructor. Your continued enrollment after the **February 2nd drop deadline** indicates that you accept all instructional practices, requirements, and policies. If you find the standards to which you will be held accountable too rigorous, if you are unable to *reliably* access the internet to log on to D2L, or if an ongoing scheduling conflict prevents you from attending class regularly and punctually, you must officially withdraw (grade "W") through the Registrar's Office by the **April 5th course withdrawal deadline**. You are responsible for checking your grades before this withdrawal deadline so you aren't surprised by your standing as the end of the course approaches. You can contact me anytime to get an estimate of your grade as it stands at the moment.

Public Safety: All students are encouraged to sign up for the University's free WCU ALERT service, which delivers official WCU emergency text messages directly to your cell phone. For more information and to sign up, visit www.wcupa.edu/wcualert. To report an emergency, call the Department of Public Safety at 610-436-3311.

Study tips:

- **Look at the learning objectives to see what I expect you to learn each unit and each chapter.** Learning objectives for all units and chapters will be posted to the "content" section of D2L.
- Keep up with the readings and do them before class! Physics makes more sense if the expose you get to an idea in class is your second time seeing it.
- When reading, pay attention to the "Are You on the Bus?" questions and the "Flawed Reasoning" problems. Don't skip them over! They provide a gauge of whether or not you've understood what you just read.
- Practice makes perfect! Before an exam, play "what-if" games with the concepts and equations presented in class. What sorts of things might I ask you about them? If you have an action plan for these things in your head, you're less likely to freeze up and panic if you see them on a test.

CLASS SCHEDULE

This is the tentative schedule; I will try to follow it as closely as possible. I will post any changes to this schedule to D2L, and announce in class that an updated schedule has been posted. **IT IS YOUR RESPONSIBILITY** to make sure that you have an up-to-date class schedule.

It is also **YOUR RESPONSIBILITY** to read the assigned selections from the text before you arrive in class. I will not always cover in class everything that is contained in the readings.

Week	Homework	Class Meeting	Topic	Readings Due
1	Practice HW posted at 8AM on January 28	January 28	Welcome, Course Intro, Building a World View	–
	HW #1 posted at 8AM on February 01	January 30	Building a World View / What is Physics / What “Counts” as Physics	Ch. 1: “First Grade,” “On Building a World View,” AND Ch. 11: “Building Models”
	Practice HW down at 10PM on February 03	February 01	Measurement / Scales / Math Review	Ch. 1: “Bode’s Law,” “Measurements,” and “Sizes: Large and Small”
2	HW #1 DUE at 10PM on February 07	February 04	Speed / Velocity	Ch. 2: “Average Speed,” “Images of Speed,” and “Instantaneous Speed”
	HW #2 posted at 8AM on February 08	February 06	Velocity / Acceleration / the Kinematic Equations of Motion	Ch. 2: “Speed with Direction” and “Acceleration”
		February 08	the Kinematic Equations of Motion / Free-Fall	Ch. 2: “A First Look at Falling Objects,” and “Free Fall: Making a Rule of Nature”
3	HW #2 DUE at 10PM on February 15	February 11	Free-Fall / Adding Vectors / Forces and Vectors	Ch. 2: “Free Fall: Making a Rule of Nature,” “Starting with an Initial Velocity,” “A Subtle Point,” AND Ch. 3: “Adding Vectors”
	HW #3 posted at 8AM on February 15	February 13	Forces and Vectors / Tour de Force	Ch. 3: “An Early Explanation,” “The Beginnings of Our Modern Explanation,” “Weight,” and “Friction”
		February 15	Forces / Newton’s Laws / Mass vs. Weight	Ch. 3: “Newton’s First Law,” “Newton’s Second Law,” and “Mass and Weight”
4	HW #3 DUE at 8PM on February 21	February 18	Forces / Newton’s Laws / Free-Body Diagrams	Ch. 3: “Mass and Weight,” “Newton’s Third Law,” and “Free-Body Diagrams”
		February 20	Review for Exam	Readings from January 28 thru February 18
		February 22	TEST #1	Chapters 1–3

5	HW #4 posted at 8AM on March 01	February 25	Uniform Circular Motion	Ch. 4: "Circular Motion," "Acceleration Revisited," and "Acceleration in Circular Motion"
		February 27	Uniform Circular Motion / Projectile Motion	Ch. 4: "Acceleration in Circular Motion" and "Projectile Motion"
		March 01	Projectile Motion	Ch. 4: "Projectile Motion" and "Launching an Apple into Orbit"
6	HW #4 posted DUE at 10PM on March 07	March 04	Newton's Gravity	Ch. 5: "The Concept of Gravity," "Newton's Gravity," and "The Law of Universal Gravitation"
	HW #5 posted at 8AM on March 07	March 06	Newton's Gravity / Gravitational Fields / Tides	Ch. 5: "The Law of Universal Gravitation," "The Value of G," "The Field Concept," and "Tides"
		March 08	Momentum / Impulse	Ch. 6: "Linear Momentum" and "Changing an Object's Momentum"
7	HW #5 DUE at 10PM on March 13	March 11	Impulse / Systems	Ch. 6: "Changing an Object's Momentum" and "Conservation of Linear Momentum"
	HW #6 posted at 8AM on March 13	March 13	Systems / the Law of Conservation of Linear Momentum	Ch. 6: "Conservation of Linear Momentum" and "Collisions"
		March 15	the Law of Conservation of Linear Momentum / Collisions	Ch. 6: "Collisions" and "Investigating Accidents"
8		March 18	Spring Break! ☺	None! Have some fun!
		March 20	Spring Break! ☺	None! Have some fun!
		March 22	Spring Break! ☺	None! Have some fun!
9	HW #6 DUE at 10PM on March 25	March 25	Review for Exam	Readings from February 25 thru March 15
		March 27	TEST #2	Chapters 4–6
		March 29	What is Energy / Kinetic Energy	Ch. 7: "What is Energy?" and "Energy of Motion"
10	HW # 7 posted at 8AM on April 05	April 01	Work / Gravitational Potential Energy	Ch. 7: "Changing Kinetic Energy," Forces That Do No Work" and "Gravitational Potential Energy"
		April 03	Gravitational Potential Energy / The Law of Conservation of Mechanical Energy	Ch. 7: "Gravitational Potential Energy" and "Conservation of Mechanical Energy"

10		April 05	Other Forms of Energy / Power	Ch. 7: "Conservation of Mechanical Energy," "Other Forms of Energy," and "Power"
11	HW #7 DUE at 8PM on April 11	April 08	Power / Rotational Motion / Torque	Ch. 7: "Power" AND Ch. 8: "Rotational Motion," "Torque"
	HW #8 posted at 8AM on April 12	April 10	Torque / Extended Free-Body Diagrams / Stable Equilibrium	Ch. 8: "Torque," "Center of Mass," and "Extended Free-Body Diagrams"
		April 12	Extended Free-Body Diagrams / Stable Equilibrium	Ch. 8: "Extended Free-Body Diagrams"
12	HW #8 DUE at 8PM on April 16	April 15	Review for Exam	Readings from March 29 thru April 12
		April 17	TEST #3	Chapters 7–8
		April 19	Electrical Properties / Electric Charge	Ch. 20: "Electrical Properties," "Two Kinds of Charge," "Conservation of Charge," and "Induced Attractions"
13	HW #9 posted at 8AM on April 26	April 22	Electric Charge / the Electric Force	Ch. 20: "Induced Attractions," "The Electroscope," and "The Electric Force"
		April 24	Electricity and Gravity / The Electric Field	Ch. 20: "Electricity and Gravity," "The Electric Field" and "Electric Field Lines"
		April 26	The Electric Field / Electric Potential	Ch. 20: "Electric Field Lines" and "Electric Potential"
14	HW #9 DUE at 10PM on May 02	April 29	Electric Current / Complete Circuits / Batteries	Ch. 21: "Batteries," "A Water Model," and "Pathways"
	HW #10 posted at 8AM on May 03	May 01	Complete Circuits / Electric Resistance	Ch. 21: "Pathways" and "Resistance"
		May 03	Electric Power / Electric Circuits	Ch. 21: "Electric Power," "A Model for Electric Current, and "A Model for Voltage"
15	HW #10 DUE at 8PM on May 07	May 06	Electric Circuits / the Electrical You	Ch. 21: "A Model for Electric Current, "A Model for Voltage," and "The Danger of Electricity"
		May 08	TEST #4	Chapters 20–21
		May 10	Review for Final Exam	Readings from January 30 thru May 06
xx		May 15	FINAL EXAM	10:30 AM–12:30 PM