West Chester University

Physics 100-03: Elements of Physical Science
Fall 2012

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 manipulate the objects we want. But what of things like cars, TVs, laptop computers, 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 problem solving strategies, and reasoning about possible outcomes of simplified experiments. I will assume that you have a little experience doing these things, but haven't had much practice with them.

Meeting Times: Monday, Wednesday, Friday from 2:00 PM to 2:50 PM
Merion Science Center, room 109

Required Course Materials:

- Physics: A Conceptual World View, 7th Ed., by Kirkpatrick & Francis (Thompson, Text: Brookes/Cole, 2010)
- A calculator that is ***not*** part of an iPod/iPad/iPhone, cell phone, tablet PC, Kindle, Nook, etc.
- An i>clicker2 personal response device

Instructor Information:

Dr. Michelle A. Caler
office: 135 Merion Science Center
office hours: Mondays, Wednesdays, and Fridays from 11:00AM—12:00PM
Mondays, Wednesdays, and Fridays from 3:00PM—4:00PM
… and by appointment
email: mcaler@wcupa.edu
office phone: 610-436-2320
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 an appreciation for these topics and how they explain physical behaviours that we encounter 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: Attendance: 5%
Class participation: 10%
Homework: 20%
Exams: 45%
Cumulative Final Exam: 20%

Attendance: You are expected to attend all scheduled classes for the entire scheduled time. Half-credit will be awarded for late attendance, or for leaving class early. I do understand that on occasion something unforeseen will pop up and prevent you from attending class; therefore, I will grant you up to five (5) unexcused absences (no questions asked, no note needed) this term. Any additional unexcused absences will result in **zero** attendance credit for that date. 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 carefully 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 in class.

Class Participation: Class participation will be recorded using the i>clicker2 classroom response system. I am **requiring** that you buy an i>clicker2 and register it. Please register your i>clicker2 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 i>clicker2 that you can borrow in case you forget yours: but you only get to borrow it two (2) times per semester, and you must give it back when class is over. If my spare i>clicker2 walks away, there will be no emergency borrowing opportunities *for anyone* for the rest of the semester.
You will earn class participation credit by responding with your i>clicker2 to questions that I ask during my

in-class PowerPoint presentations. These questions will consist of "voting opportunities" and certain practice problems. To earn class participation credit, you need to "vote" on the question at hand: that means entering your response using your i>clicker2. You need to answer **ALL "voting opportunities" AND ALL "practice problem" questions** asked during class in order to get full class participation credit. (I will award partial class participation credit under special circumstances.) Please note carefully that you ***DO NOT*** have to answer voting opportunities and practice problems *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 or type in random numbers when the questions come up. Give them your best go.

The i>clicker2 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 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).

Homework: All homework will be posted and submitted online through the course's D2L page. There will be nine (9) homeworks 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). 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 a periodic reminder to check in on our course's D2L site. Writing it 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 the highest score of your attempts 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 homework will be accepted late, ***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 5 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. 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:

September 24
October 12
November 12
December 10

The range of chapters each exam covers is given in the course schedule, which can be found at the end of this syllabus. 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. Make sure to check D2L regularly to ensure that you have an up-to-date course 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. Each of these three exams will count 15% toward your final grade, so a total of 45% of your final grade depends on your performance on exams. ***THERE WILL BE NO MAKE-UP EXAMS GIVEN***. If you miss an exam, it will count as your dropped one. 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.

Tests will consist of approximately 15 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*, but you will be allowed one 8.5" x 11" sheet of paper (front only!) with your own handwritten notes. I reserve the right to refuse the use of typed sheets, or sheets which contain information on the front and back, during an exam. On your sheet of notes, you are permitted to write any definitions, equations, charts, diagrams, flow-charts, or in-class example/practice problem solutions that you think will be helpful. Writing solutions to the homework problems on your sheet is **strictly forbidden**, as is writing problem solutions from the text and writing problems and their solutions from outside sources. You will sign your sheets and hand them in with the exam. Use of any sheets which contain forbidden material, as well as sheets that do not meet the specifications listed above, will result in a grade of zero for that exam.

You are permitted to use a 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 on Wednesday, December 12 from 3:30 PM—5:30 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 30 multiple choice questions and 1 open-ended question**.**

Missing the final exam will result in a zero for the exam unless EXTREME circumstances apply.

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 keeping track of observations of physics in action during the course of your daily routine 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 **September 7 at 5PM**. I will NOT accept extra credit projects which were not announced to me by email by September 7. Projects will be due on December 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. If you want notes on those, you'll need to take them as I solve the problem on the board 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," 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, 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. Terms of laptop use in 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 **September 1st 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 **October 26th 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!
- Don't blow off the homework! It's a good way to accumulate points, and good practice for exams.
- When reading, pay attention to the "Are You on the Bus?" questions. Don't skip them over! They provide a gauge of whether or not you've understood what you just read. If you have trouble with the "Are You on the Bus?" questions, you may have difficulties with problems on the test. Don't hesitate to get help from me, a classmate, or a tutor if this is the case!
- Also pay attention to the Flawed Reasoning problems. They point out common problems in conceptual understanding and reasoning, and can provide a good model for how to go about answering conceptual questions.
- Check on D2L to see if I've posted any practice problems before tests or to go with the readings. They will be **ENTIRELY VOLUNTARY**, so you won't be graded on them or have your grade depend on them, but they may help you gauge how well you understand the material. I will ***try*** to post practice problems to go with every reading, but I can't promise that I will always be able to do this.
- Work along with the "Working it out" problems.
- Practice makes perfect! Before an exam, pick some of the problems from the end of the chapter questions and do them. Play "what-if" games with the concepts presented in class: If a flower pot bounced off one guy's head, but fell and shattered off another's, who feels the bigger force? What if a bug splats on a car window: does the bug or the car feel the bigger force? If you've played a little bit with concepts ahead of time, you're less likely to freeze up and panic if you see them on a test.
- Play "what-if" games with equations, too: What if I gave you two quantities and asked for a third? What's your plan for that? How about if one of those quantities gets bigger? 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.
- Please make use of my office hours, and don't hesitate to email me questions about the homework or to schedule a time to meet outside office hours.

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 8PM on 8/27	August 27	Welcome, Course Intro, Building a World View	--
		August 29	Building a World View / What is Physics / What "Counts" as Physics	Ch. 1: "First Grade," "On Building a World View," "Bode's Law," AND Ch. 11: "Building Models"
		August 31	Measurement / Scales / Math Review	Ch. 1: "Bode's Law," "Measurements;" "Sizes: Large and Small," and "Summary"
2	Practice HW "due" at 8PM on September 3	September 3	LABOR DAY	Have a day off!
	HW #1 posted at 8PM on September 3	September 5	Speed / Velocity / Acceleration	Ch. 2: "Average Speed," "Images of Speed," "Instantaneous Speed," and "Speed with Direction"
		September 7	Acceleration / the Kinematic Equations of Motion / Falling Objects	Ch. 2: "Acceleration" and "A First Look at Falling Objects"
3	HW #1 DUE at 8PM on September 10	September 10	Free-Fall	Ch. 2:" A First Look at Falling Objects," "Free Fall: Making a Rule of Nature," "A Subtle Point," and "Summary"
	HW #2 posted at 8PM on September 10	September 12	Adding Vectors / Tour de Force / Forces and Vectors	Ch. 3: "Adding Vectors," "An Early Explanation," "The Beginnings of Our Modern Explanation," "Weight," and "Friction"
		September 14	Forces / Newton's Laws / Mass vs. Weight	Ch. 3: "Friction," "Newton's First Law," "Newton's Second Law," and "Mass and Weight"
4	HW #2 DUE at 8PM on September 17	September 17	Newton's Laws / Mass vs. Weight	Ch. 3: "Mass and Weight," "Newton's Third Law," and "Free-Body Diagrams"
	HW #3 posted at 8PM on September 17	September 19	Free-Body Diagrams (FBDs) / Applications of Newton's Laws	Ch. 3: "Free-Body Diagrams"
	HW #3 DUE at 8PM on September 23	September 21	Review for Exam	Readings from August 27 thru September 19
5		***September 24***	***TEST #1***	***Chapters 1—3***

5		September 26	Uniform Circular Motion	Ch. 4: “Circular Motion,” “Acceleration Revisited,” and “Acceleration in Circular Motion”
		September 28	Uniform Circular Motion / Projectile Motion	Ch. 4: “Projectile Motion”
6	HW #4 posted at 8PM on October 1	October 1	Projectile Motion	Ch. 4: “Projectile Motion” and “Launching an Apple into Orbit”
		October 3	Newton’s Gravity	Ch. 5: “The Concept of Gravity,” “Newton’s Gravity,” and “The Law of Universal Gravitation”
		October 5	Newton’s Gravity / Satellites / Tides	Ch. 5: “The Field Concept,” “Satellites,” and “Tides”
7	HW #4 DUE at 8PM on October 10	October 8	FALL BREAK	Have a day off!
		October 10	Review for Exam	Readings from September 26 thru October 5
		October 12	***TEST #2***	***Chapters 4—5***
8		October 15	Momentum / Impulse	Ch. 6: “Linear Momentum” and “Changing an Object’s Momentum”
		October 17	Systems / the Law of Conservation of Linear Momentum	Ch. 6: “Conservation of Linear Momentum”
		October 19	the Law of Conservation of Linear Momentum / Collisions	Ch. 6: “Conservation of Linear Momentum” and “Collisions”
9	HW #5 posted at 8PM on October 22	October 22	the Law of Conservation of Linear Momentum / Collisions	Ch. 6: “Collisions” and “Investigating Accidents”
		October 24	What is Energy / Kinetic Energy / Work	Ch. 7: “What is Energy?,” “Energy of Motion,” and “Changing Kinetic Energy”
		October 26	Gravitational Potential Energy	Ch. 7: “Forces That Do No Work” and “Gravitational Energy”
10	HW # 5 DUE at 8PM on October 29	October 29	The Law of Conservation of Mechanical Energy	Ch. 7: “Conservation of Mechanical Energy”
	HW #6 posted at 8PM on October 29	October 31	Other Forms of Energy / Power	Ch. 7: “Conservation of Mechanical Energy,” “Other Forms of Energy,” and “Power”
		November 2	Rotational Motion / Torque	Ch. 8: “Rotational Motion,” “Torque,” and “Rotational Inertia”
11	HW #6 DUE at 8PM on November 5	November 5	Rotational Inertia / Center of Mass	Ch. 8: “Rotational Inertia,” “Center of Mass,” and “Extended Free-Body Diagrams”
	HW #7 posted at 8PM on November 5	November 7	Center of Mass / Extended Free-Body Diagrams	Ch. 8: “Center of Mass” and “Extended Free-Body Diagrams”

11	HW #7 DUE at 8PM on November 11	November 9	Review for Exam	Readings from October 15 thru November 7
12		***November 12***	***TEST #3***	***Chapters 6—8***
		November 14	Electrical Properties / Electric Charge	Ch. 20: “Electrical Properties,” “Two Kinds of Charge,” “Conservation of Charge,” and “Induced Attractions”
		November 16	Electric Charge / the Electric Force	Ch. 20: “The Electroscope, “The Electric Force,” and “Electricity and Gravity”
13	HW #8 posted at 8PM	November 19	The Electric Field	Ch. 20: “The Electric Field” and “Electric Field Lines”
		November 21	THANKSGIVING BREAK	Have a day off!
		November 23	THANKSGIVING BREAK	Have a day off!
14	HW #8 Due at 8PM on November 27	November 26	The Electric Field / Electric Potential	Ch. 20: “Electric Field Lines” and “Electric Potential”
		November 28	Electric Current / Complete Circuits / Batteries	Ch. 21: “Batteries,” “A Water Model,” and “Pathways”
		November 30	Electric Current / Electric Resistance	Ch. 21: “Resistance, “A Model for Electric Current,” and “A Model for Voltage”
15	HW # 9 posted at 8PM on December 3	December 3	Electric Circuits	Ch. 21: “A Model for Electric Current” and “A Model for Voltage”
	HW #9 DUE at 8PM on December 9	December 5	Electric Power / the Electrical You	Ch. 21: “The Danger of Electricity” and “Electric Power”
		December 7	Review for Exam	Readings from November 14 thru December 5
		December 10	***TEST #4***	***Chapters 20—21***
xx		***December 12***	***FINAL EXAM***	***3:30 PM—5:30 PM***