West Chester University

Physics 100-09: Elements of Physical Science
Fall 2016

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 itself a physical object that we use to go where we want and operate the machines and tools that we want. But what of things like cars, cell phones, skateboards, and guitars: do they operate and move according to the same set of "rules" which describe the motion of our bodies? 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 study the application of physics to various aspects of our everyday lives. Our ultimate goal is to understand how scientific models of the physical world can enrich our understanding of everyday processes. 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 fundamental 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 vibrations and waves, the study of which will allow us to understand how sounds are produced and how we hear them with our ears. 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 3 credit course is an approved course in the WCU General Education program.

Course Requirements: This course has no prerequisites. However, we will be doing 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, which I will assume you have some experience doing (but may not have practiced in a while). A good deal of time in this class will be spent extending our existing body of knowledge to new situations in order to understand them; I will assume that you have experience doing this.

Meeting Times: Monday, Wednesday, Friday from 11:00 AM to 11:50 AM
Schmucker Science Center North (SSN), room 192

Required Course Materials:

- Physics: A Conceptual World View, 7th Ed., by Kirkpatrick & Francis (Thompson, Text: Brookes/Cole, 2009 or 2010)
- A stand-alone calculator which is ***not*** part of an internet-accessible personal electronic device

Instructor Information:

Dr. Tianran Chen
office: Merion Science Center room 128
office hours: Monday 3:00PM—5:00PM Wednesday 1:00PM—3:00PM Friday 1:00PM—2:00PM
… and by appointment
email: tchen@wcupa.edu
office phone: 610-436-3563
webpage: This course has a D2L webpage. Homeworks, this syllabus, and all other related course materials will be posted to this webpage. Being able to access the D2L website will be critical to student success in this course.

Course Goals: The ultimate goal of PHY 100 is for you to gain a basic understanding of the process of science as well as an appreciation for how ideas from the science of physics influence our everyday lives. One of the ways we

will accomplish this goal is by building up an understanding of how and why various physical phenomena occur, emphasizing those processes which we encounter regularly. During the course of our studies, we will develop a qualitative understanding of our current physical model of the natural world; additionally, we will learn how to make quantitative predictions using the mathematical laws which form its foundation. In particular, we will examine physical theories of linear motion, rotational motion, momentum, energy, vibrations, waves, and sound. While I hope that you will gain a good understanding of these topics and how they explain physical phenomena 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. More specific course goals for PHY 100 include:

- develop insight into how physical laws can explain various processes and phenomena which are observed on a daily basis;
- extend an existing body of knowledge to previously unencountered situations (i.e., simple experiments or simplified "real-life" scenarios) in order to predict a qualitative outcome
- develop the information organization skills needed to solve complex quantitative problems
- develop strategies which permit the solution of complex quantitative problems

Cooperative in-class activities such as questions, practice problems, as well as assigned homework problems, will contribute to students' achievement of the above Course Goals.

As we work toward meeting our course 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 our 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.

Course General Education Goals: PHY 100 is an approved General Education course in the Sciences. As such, it is designed to help students meet the following general education goals:

Goal #2: Employ quantitative concepts and mathematical methods

This goal will be accomplished through in-class activities such as questions, example and practice problems, and assigned homework problems.

Goal #3 Think critically and analytically

This goal will be accomplished through in-class activities such as questions and practice problems, as well as assigned homework problems.

Grading: Attendance: 10%
Homework: 20%
Exams: 16% × 3 = 48%
Cumulative Final Exam: 22%

Attendance: Attendance will be checked periodically throughout the semester. Each check is worth one point and may occur on any class day of any week. Thus, I am 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 may drop one or two attendance points. Any additional unexcused absences will result in ZERO attendance points for those dates.

If you miss class due to an excused absence, **it is your responsibility to notify me in advance**. 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). 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 quantitative problems worked in class—and to learn of any important announcements that were made. I reserve the right to introduce ways in addition to attendance check to earn attendance credit.

Homework: All homework will be posted and submitted online through the "homework" section of this course's D2L webpage. There will be about ten 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. **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 and time indicated on the class schedule and D2L. NO LATE HOMEWORKS WILL BE ACCEPTED, NO EXCEPTIONS. This is because homework solutions will be posted immediately after the homework's due time. At the end of the semester, I may drop your lowest homework grade.
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. Again, no late homeworks will be accepted in the event of any electronic device issues. Report any problems with D2L ASAP by calling 1-877-325-7778 or visiting the D2L help desk in Anderson Hall Room 2 (610-436-3350, option 1).
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 do be sure to study and think about the material on your own, because your classmates cannot help you on exams.
As with any technology, problems with online D2L assessments can pop up unexpectedly, and for this reason I reserve the right to change details about how they 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 in class or on D2L.

Exams: There will be four in-class exams given over the course of the semester. The dates of these exams and the range of chapters each exam covers are given in the tentative class schedule, which can be found at the end of this syllabus. You will be responsible for knowing what chapters will be covered on an exam, and when it is. If the exam schedule is adjusted from what appears at the end of this document, there will be an announcement made in class or on D2L. **Your lowest exam grade will be dropped.** Thus only your three highest test grades will be counted.

- **If you miss a regular exam :** If you miss an exam for a **University-Sanctioned Events** you must notify me in advance so that we can arrange for you to take the exam in a manner consistent with its integrity. You must also provide some form of documentation (performing arts program, competition schedule etc.) IN ALL OTHER CASES THERE WILL BE NO MAKE-UP EXAM GIVEN (YOU CANNOT TAKE IT EARLY OR LATE), AND A MISSED EXAM WILL BE TREATED AS YOUR DROPPED EXAM.

- **If you have an OSSD letter pertaining to exams:** You are responsible for making the appropriate arrangements at least one week prior to the exam date and time.

Tests will consist of approximately 10—25 multiple choice questions. Some tests MAY contain one open-ended problem; any open-ended problem appearing on an exam will be designed to be similar to example and practice problems done in class. The scope of each test (with the exception of the final) is limited to the chapters listed in the class schedule at the end of this syllabus; 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 equation 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 on D2L the equations sheet that I will give you for an exam at least 24 hours prior to the exam time, so that you can see what will be on the sheet. You are permitted to use a stand-alone calculator (i.e., one that is ***not*** part of an iPod/iPad, cell phone, tablet PC, Kindle, etc.) during exams. If I catch you using an internet-accessible personal electronic device as a calculator during an exam, I will take your exam and you will get a zero on it. No exceptions. If you will be using a graphing calculator, I must personally see you clear its memory before you receive your exam. I will NOT bring extra calculators for you to use during exams. It is ***YOUR RESPONSIBILITY*** to make sure that you have a working stand-alone calculator for exams.
After each exam, I will return to you the answer sheet which contains your responses to the multiple choice questions. If the exam asked an open-ended question, your response to that question will also be returned. I will write your overall exam grade at the top of the multiple choice answer sheet. I will hold the copies of the multiple

choice exam questions in my office after you have seen them; you can come look at the multiple choice exam questions during my office hours.

Final Exam: The final exam for this course will be given on Friday, December 16th 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.

Teaching Style: I will be using Microsoft PowerPoint slides a great deal when going over course material in class, including working through some of the example problems. Before the class I will post on D2L copies of the PowerPoint slides (subject to changes and revisions) I will use in class, in the so-called "structured note-taking" style. 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. Please note carefully that the slides I post will **NOT** contain solutions to example problems done in class, nor will they contain each and every word seen on the in-class slides. If you want notes on these things, you'll need to take them for yourself as we go through the material in class.

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.

EXCUSED ABSENCES POLICY FOR UNIVERSITY-SANCTIONED EVENTS: Students are advised to carefully read and comply with the excused absences policy for university-sanctioned events contained in the WCU Undergraduate Catalog. In particular, please note that the "responsibility for meeting academic requirements rests with the student," that this policy does not excuse students from completing required academic work, and that professors can require a "fair alternative" to attendance on those days that students must be absent from class in order to participate in a University-Sanctioned Event.

Ye Olde Technology Policy: You are permitted to use cell phones, smart phones, iPhones, iPads, and tablet PCs in class in order to make use of the Top Hat classroom response system. However, you are ***not allowed*** to use cell phones for social networking or gaming during class. If I catch you using a personal electronic device inappropriately during class, ***I will take 5 points off of the nearest exam grade***! **NO EXCEPTIONS**. Try to make it a rule that, when you are in class, the Top Hat application is the only application open on your personal device.
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 do understand that use of a laptop, or other personal electronic devices, may be required to accommodate certain disabilities. Terms of use in both of

these cases can be discussed with me on an individual basis.

Email Policy: It is expected that faculty, staff, and students activate and maintain regular access to University provided e-mail accounts. Official University communications, including those from your instructor, will be sent through your University e-mail account. You are responsible for accessing that mail to be sure to obtain official University communications. Failure to access will not exempt individuals from the responsibilities associated with this course. The subject of your emails to me should contain **"PHY100"**. I created a folder particularly for this course. Any email that does not have the correct headline format will not go into this folder, and may not get my reply in time.

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 West Chester University Undergraduate Catalog, 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: If you have a disability that requires accommodations under the Americans with Disabilities Act (ADA), please present your letter of accommodations and meet with me as soon as possible so that I can support your success in an informed manner. Accommodations cannot be granted retroactively. If you would like to know more about West Chester University's Services for Students with Disabilities (OSSD), please contact the OSSD which is located at 223 Lawrence Center. The OSSD hours of Operation are Monday – Friday 8:30 a.m. – 4:00 p.m. Their phone number is 610-436-2564, their fax number is 610-436-2600, and their email address is ossd@wcupa.edu. See the following website for more information: http://www.wcupa.edu/ussss/ossd/default.aspx.

Title IX: West Chester University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office for Civil Rights, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator, Ms. Lynn Klingensmith. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred to the person designated in the University protection of minors policy. Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at the webpage for the Office of Social Equity at http://www.wcupa.edu/_admin/social.equity/.

Tutoring: Tutoring for PHY 100 is offered by the Learning Assistance Resource Center (LARC), 224 Lawrence Center, phone number 610-436-2535. 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 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 6th 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, or 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 28th 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 know and know how to do by the end of each unit and each chapter. All in-class exams will be based on the chapter learning objectives; the final exam will be based on the unit learning objectives. Learning objectives for all units and chapters will be posted to the "course materials" section of D2L.
- Keep up with the readings and do them before class! Physics makes more sense if the exposure you get to an idea in class is your second time seeing it.
- Don't blow off the homework! It's a good way to accumulate points, and good practice for exams. Look in on D2L periodically to make sure you've made an attempt on an assigned homework!
- 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 doing them; however, they *can* help you gauge how well you understand the material.
- Play games with physics! More specifically, try playing "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 two quantities in an equation gets bigger—what happens to the other one? If you have an action plan for these things in your head, you're less likely to freeze up and panic if I ask you to do 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 of office hours.

CLASS SCHEDULE

This is the tentative schedule; I will try to follow it as closely as possible. I reserve the right to modify it as needed over the course of the semester. It is ***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	Class Meeting	Topic	Readings Due
1	M Aug 29	Welcome, Course Intro	--
	W Aug 31	Building a World View / What is Physics	Ch. 1: "First Grade," "On Building a World View," AND Ch. 11: "Building Models"
	F Sep 2	What "Counts" as Physics / Measurement	Ch. 1: "Bode's Law," "Measurements;" and "Sizes: Large and Small"
2	M Sep 5	**LABOR DAY**	--
	W Sep 7	Measurement / Scales / Speed	Ch. 1: "Sizes: Large and Small;" Ch. 2: "Average Speed," and "Images of Speed"
	F Sep 9	Speed / Velocity	Ch. 2: "Images of Speed," "Instantaneous Speed," and "Speed with Direction"
3	M Sep 12	Acceleration / the Kinematic Equations of Motion	Ch. 2: "Acceleration" and "A First Look at Falling Objects"
	W Sep 14	the Kinematic Equations of Motion / Free-fall	Ch. 2: "Free Fall: Making a Rule of Nature," "Starting with an Initial Velocity," and "A Subtle Point"
	F Sep 16	Adding Vectors / Force / Tour de Force	Ch. 3: "Adding Vectors," "An Early Explanation," "The Beginnings of Our Modern Explanation," "Weight," and "Friction"
4	M Sep 19	Newton's Laws / Mass vs. Weight	Ch. 3: "Newton's First Law," "Newton's Second Law," and "Mass and Weight"
	W Sep 21	Newton's Laws / Free-Body Diagrams	Ch. 3: "Mass and Weight," "Newton's Third Law," and "Free-Body Diagrams"
	F Sep 23	Review for Exam I	Readings from Aug. 31 thru Sep. 21
5	***M Sep 26***	***EXAM I***	***CHAPTERS 1—3***
	W Sep 28	Uniform Circular Motion	Ch. 4: "Circular Motion," "Acceleration Revisited," and "Acceleration in Circular Motion"
	F Sep 30	Uniform Circular Motion / Projectile Motion	Ch. 4: "Acceleration in Circular Motion" and "Projectile Motion"
6	M Oct 3	Projectile Motion	Ch. 4: "Projectile Motion" and "Launching an Apple into Orbit"
	W Oct 5	Projectile Motion / Newton's Gravity	Ch. 4: "Launching an Apple into Orbit" and Ch. 5: "The Concept of Gravity"

	F Oct 7	Newton's Gravity	Ch. 5: "The Concept of Gravity," "Newton's Gravity," and "The Law of Universal Gravitation"
7	M Oct 10	**FALL BREAK**	--
	W Oct 12	Newton's Gravity / Gravitational Fields	Ch. 5: "The Law of Universal Gravitation," "The Value of G," and "The Field Concept"
	F Oct 14	Tides / Momentum / Impulse	Ch. 5: "Tides;" Ch. 6: "Linear Momentum" and "Changing an Object's Momentum"
8	M Oct 17	Momentum / Impulse	Ch. 6: "Changing an Object's Momentum" and "Conservation of Linear Momentum"
	W Oct 19	Systems / the Law of Conservation of Linear Momentum / Collisions	Ch. 6: "Conservation of Linear Momentum" and "Collisions"
	F Oct 21	Review for Exam II	Readings from Sep. 28 thru Mar. Oct 19
9	***M Oct 24***	***EXAM II***	***CHAPTERS 4—6***
	W Oct 26	What is Energy / Kinetic Energy	Ch. 7: "What is Energy?" and "Energy of Motion"
	F Oct 28	Work / Gravitational Potential Energy	Ch. 7: "Changing Kinetic Energy," "Forces That Do No Work" and "Gravitational Potential Energy"
10	M Oct 31	Gravitational Potential Energy / The Law of Conservation of Mechanical Energy	Ch. 7: "Gravitational Potential Energy" and "Conservation of Mechanical Energy"
	W Nov 2	The Law of Conservation of Mechanical Energy / Power	Ch. 7: "Conservation of Mechanical Energy" and "Power"
	F Nov 4	Power / Rotational Motion	Ch. 7: "Power" AND Ch. 8: "Rotational Motion"
11	M Nov 7	Torque / Extended Free-Body Diagrams	Ch. 8: "Torque," "Center of Mass," and "Extended Free-Body Diagrams"
	W Nov 9	Extended Free-Body Diagrams / Static Equilibrium	Ch. 8: "Extended Free-Body Diagrams"
	F Nov 11	Review for Exam	Readings from Oct. 26 thru Nov. 9
12	***M Nov 14***	***EXAM III***	***CHAPTERS 7 & 8***
	W Nov 16	Vibrations	Ch. 15: "Simple Vibrations" and "the Pendulum"
	F Nov 18	Resonance / Waves	Ch. 15: "Resonance," "Waves," and "One-Dimensional Waves"

13	M Nov 21	the Superposition of Waves	Ch. 15: “Periodic Waves” and “Superposition”
	W Nov 23	THANKSGIVING BREAK	--
	F Nov 25		--
14	M Nov 28	Superposition / Standing Waves	Ch. 15: “Superposition” and “Standing Waves”
	W Nov 30	Interference and Diffraction	Ch. 15: “Interference” and “Diffraction”
	F Dec 2	Sound / Hearing Sounds	Ch. 16: “Sound,” “Speed of Sound,” “Hearing Sounds,” and “The Recipe of Sounds”
15	M Dec 5	Musical Instruments	Ch. 16: “Stringed Instruments,” “Wind Instruments,” and “Percussion Instruments”
	W Dec 7	Beats / the Doppler Effect	Ch. 16: “Beats” and “The Doppler Effect”
	F Dec 9	*EXAM IV*	*CHAPTERS 15—16*
16	M Dec 12	Review for Final Exam	Readings from Aug. 31 through Dec. 7
	F Dec 16	*FINAL EXAM*	*10:30AM—12:30 PM*