West Chester University, Department of Physics

Physics 130: General Physics I Fall 2017

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Lecture: Section 04: MWF 1:00 -1:50 **Recitation:** Section 94: M 2:00 – 2:50

Office Hours: My office hours for Fall 2017 are:

M 3:30 – 4:30 W 11:30 – 12:30 Th: 2:00 – 3:30 F: 2:00 – 2:30

Occasionally I may be able to meet outside of regular office hours, please email me.

Textbook: Physics 5e by Walker (2016), Pearson. We will be using "Mastering Physics" in this course, so be sure to register for a copy within the first week of classes.

Course Web Page: D2L

Course information can be found here throughout the semester. The syllabus, lecture notes, quizzes and practice exams can be found here. Check it regularly!!

Lecture Notes: The lecture notes are a critical tool for your learning experience and are required for class. They contain a summary of the relevant theories and related problems, which will be attempted in class. **They will be provided via D2L**, so be sure to download them. *You are required to bring the lecture notes to class.* The lecture notes will be uploaded no later than 5PM two days before you need them, or else a hard copy will be provided.

Content: We will study kinematics, force and motion, work and energy, momentum and collisions, rotational motion, oscillations, fluid dynamics, basic wave properties, states of matter and heat.

You should try to read the relevant sections in the text before coming to lecture.

West Chester University General Education Goals: PHY 130 is an approved course in the WCU General Education program. As such, it is designed to help students meet the following general education goals:

General Education Goal #2: Employ quantitative concepts and mathematical methods
General Education Goal #3: Think critically and analytically

More specifically, after successfully completing this course a student will be able to:

- Mathematically describe mechanical systems using the language of kinematics.
- Recognize concepts of physics in action in mechanical systems, including force, energy, momentum, angular momentum, harmonic motion, and wave phenomena.
- Analyze mechanical systems through visualization, modeling, algebra, as well as diagrammatic and graphical techniques.
- Combine the above elements in order to solve multi-part problems as well as formulate quantitative predictions for physical experiments.

These General Education Goals will be accomplished through in-class exercises, lab work, suggested homework problems, review exercises, a test, and several exams. These items will involve qualitative and semi-quantitative aspects as well as fully quantitative aspects.

My Goals: I hope to expand your knowledge of physics and how it relates to the world, further develop your analytical, conceptual and critical thinking skills and enable you to apply physics to real life and qualitative situations. I also hope you find at least one concept or application that excites or intrigues you.

Expectations: I expect you to engage the material, your peers and me both in and out of class and lab in physics related conversations. I do not expect you to love math in all of its intricacies, but do expect you to have a basic understanding of algebra, trigonometry and geometry. When problems with math arise, I expect you to seek assistance from your peers, the tutoring center or myself. I am happy to assist/review with you. You may find this course challenging and fast paced, but as long as you work diligently, you will succeed.

Guidelines for Office Hours: You set the agenda for office hours. Come with questions about the lecture, laboratory, reading, homework, exams, grading, or anything else of concern or interest. Attend in groups or as an individual. If you would like to discuss something in private, please make a separate appointment. When multiple people are present, people will alternate asking questions. Note: You must demonstrate some effort/thought process towards an answer on homework problems before coming to see me. "I have no idea where to begin" is not an acceptable opening statement.

Attendance: Students will be held responsible for all course materials missed due to class absences. All efforts will be made on my behalf to ensure that class time is productive and beneficial for your learning. We will go through several examples with problem solving strategies. You are expected to attend all labs, see laboratory section for more details. The **discussion sections** will be used to do two homework problems, as well as extra examples and to answer questions from the lecture material.

Phone Policy: For the lecture portion of this course, I will not be overly picky with cell phones as long as they are silent and do not become a distraction for your fellow classmates or myself. **However,** during practice questions and examples, **no cell phones are allowed to be used.** This is your time to practice the material in class….use it.

Homework: You will have one homework assignment per week, which can be found on Mastering Physics. The homework assignments will contain 14 problems, **typically** 6 CQ questions and 8 regular problems. The homework will be assigned on Wednesday at 5:00pm and due the following Wednesday by 11:45pm. You will have three attempts at each problem. Note: I will drop your two lowest homework grades.

Pre-lecture Videos: Pre-lecture videos will be assigned and due before Wednesday's Lecture. These can be found on Mastering Physics. These are typically 7-9 minutes long and have 2-3 short questions to answer after watching the video.

Quizzes: There will be 3 quizzes throughout the semester. These quizzes will be given as a way to identify and correct misunderstandings and common errors. Some quizzes will be in-class and other will be take-home. You will be given notice of a quiz at least one week before it is given. Note: I will drop the two lowest quiz grades.

Exams: There will be 3 in-class exams during the semester as well as a comprehensive final exam. All exams will be closed book. In the event a student is unable to take an exam as scheduled, discussion of the exam with those that have taken the exam is forbidden. If you will be unable to make it to an exam, you must contact me before the exam, and we will discuss how to proceed. I will provide the class average to give a gauge as to where you fall relative to your peers. However, NO curved grade will be put into my gradebook. IN GENERAL, THERE WILL NOT BE TEST CORRECTIONS, HOWEVER, IMPROVEMENT POINTS WILL BE GIVEN IF YOU PERFORM BETTER ON THE MATERIAL FROM AN IN-CLASS EXAM ON THE FINAL. In addition, there will be **two opportunities** for you to earn back points via review assignments on Mastering Physics.

Laboratory: The laboratory aspect of this course of integral to your understanding of this material. It your chance to connect to the material covered in lecture to the real world, which let's face it, is what Physics is all about. Laboratory attendance is mandatory and unexcused absences are not acceptable and will result in failure of the course. If an emergency or catastrophe will prevent you from attending class or lab, or turning in an assignment, please notify me of your situation **PRIOR** to the event in question when possible. 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 (verified by a practicing MD, you must provide me with a phone number), or the death of family members (also to be verified.)

Grading: Your course grade is based on your homework (25%), pre-lecture assignments (5%), exams (50%), quizzes (5%), and lab (15%).
Your total homework grade will be the average grade (minus the lowest two grades) for all assignments.
Your total exam grade will be 10% for the first three examinations, and 20% for the final examination.

A NOTE ON "CURVING" AND THINGS TO KEEP IN MIND: THERE IS NO CURVE ON THE EXAMS OR ANY OTHER ASSESSMENT ALONE. THE TOTAL GRADES IN THE END WILL BE "CURVED" AS DEEMED NECESSARY. **The homework and lab TOGETHER are weighted more heavily than the three in-class exams. You must do well on all components of this course to do well in the course as a whole.**

A letter grade will be assigned based on performance in the course according to the following scale:

Grade	Quality Points	Percentage Equivalents	Interpretation
A	4.00	93-100	Excellent
A-	3.67	90-92	
B+	3.33	87-89	Superior
B	3.00	83-86	
B-	2.67	80-82	
C+	2.33	77-79	Average
C	2.00	73-76	
C-	1.67	70-72	
D+	1.33	67-69	Below Average
D	1.00	63-66	
D-	0.67	60-62	
F	0	< 60%	Failure

Refer to the Undergraduate Catalog for description of NG (No Grade), W, Z, and other grades.

Straight percentages will be given for all work, with the mid-semester and final grade based on overall class performance. Other considerations will influence your final grade including, class participation, class and laboratory attendance, and seeking timely guidance during office hours. Any student achieving at a level of 'C-' or below will be given an estimated grade on their mid-term deficiency grade report.

Tutoring: Tutoring for PHY 100 is offered by the Learning Assistance Center (LARC), 223 Lawrence Center, x2535. More information is available at: http://www.wcupa.edu/ussss/larc/. LARC tutoring is free of charge, but you must sign up at the beginning of the semester.

Peer tutoring may also be offered by physics majors during the semester. Check the Physics Department webpage, under "Students / Current Students / Physics Tutoring", a few weeks into the semester (http://www.wcupa.edu/_academics/sch_cas.phy/current.asp), or stop by the Physics Library, Merion 125, where the physics major hang out. ***If you realize you need tutorial help, arrange it as soon as possible, and keep up with it. Delaying or missing tutoring appointments will lead to greater difficulty later.***

E-Mail and Communication: The best way to contact me is via e-mail. But, be aware that I will only read and respond to e-mails written in proper English, with correct grammar, spelling, and etiquette. Do not send me any e-mails addressed to "hey" or "yo," like you would text a buddy or close friend.

"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."

ACADEMIC & PERSONAL 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 the automatic failure and removal from this course. For questions regarding Academic Integrity, the No-Grade Policy, Sexual Harassment, or the Student Code of Conduct, students are encouraged to refer to the Department Undergraduate Handbook, the Undergraduate Catalog, the *Ram's Eye View*, and the University website at www.wcupa.edu.

STUDENTS WITH DISABILITIES: 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

visit them at 223 Lawrence Center. The OSSD hours of Operation are Monday – Friday, 8:30 a.m. – 4:30 p.m. Their phone number is 610-436-2564, their fax number is 610-436-2600, their email address is ossd@wcupa.edu, and their website is at www.wcupa.edu/ussss/ossd.

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.

REPORTING INCIDENTS OF SEXUAL VIOLENCE: 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/.

EMERGENCY PREPAREDNESS: 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, visit www.wcupa.edu/wcualert. To report an emergency, call the Department of Public Safety at 610-436-3311.

ELECTRONIC MAIL 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.

Extra Information That Is Helpful To Know

What's This Course Really About?

Many different students are taking this course. Some of you may enjoy physics, other have to take it as a prerequisite and may not see the reason why. Some of you are truly interested in the material or understand how mastering will help you in your future careers. Others want a grade and to move on to other things.

Because of the diversity of the interests and preparation of the students, I need to cover all backgrounds. What I will try to do is help everyone no matter what their aim is: To give something to the physics "lovers" beyond what is in the text, while not leaving the rest of the students behind. To make it possible to get a decent grade in this course even if you aren't a physics fan, but are willing to work. But what will remain after the course?

Part of what is developed during this course is the ability to calculate and solve problems. This is a valuable skill set that will be useful no matter what your future holds. Such a skill is built through practice. It is the same as music or sports. Practice is how you master something. Developing problem-solving skills requires you to do many many problems. There's no secret to make this process happen faster, just your sweat, tears and the desire to excel. What I will do is assign you homework. You need to come see me if you have any questions on the assignments.

Another part of this course is acquiring some knowledge of some of things that happen in the universe and an understanding of how they work, or how one can use them to create something new. This kind of understanding is only achieved once one can see how all of the topic we discuss in this course relate to each other. Imagine that what we are learning is just a big photograph. You could go through the course and only gloss over clusters of pixels and their colors. However, true understanding will only occur once you take a step back and see how the pixels come together and produce the "big picture." To do this you must observe the whole picture, while at the same time focusing on critical details. This is very difficult to achieve by just reading the textbook in order. This is where I come in. I will stress the fundamental qualitative principles, spotlight the most import details and guide you to the complete picture. This is not a just solve problems on tests type of class....

PHY130:TENTATIVE SCHEDULE			
Date	**Topic**	**Chapter/Section**	**Lab**
Week 1	**Lecture 1**	**Chapter 1, 2**	
8/28	Intro => Motion =>Problem Solving => SigFigs	1.2 - 1.5	Orientation/Lab 1(a): Data Analysis
8/30	Math Review => Position => Displacement =>Velocity	2.1 - 2.3	
9/1	Acceleration => Uniform Motion	2.4 - 2.6	
Week 2	**Lecture 2, 3**	**Chapter 2**	
9/4	No Class - Labor Day		Lab 1(b): Repeated Measurements
9/6	1-D Kinematics Equations	2.6 (HW#1)	
9/8	Free Fall and Vectors	2.7	
Week 3	**Lecture 3, 4**	**Chapter 3, 4, 10**	
9/11	Vectors, Ramps => 2-D Kinematics	3.1-3.5 & 4.1-4.3	Lab 2: 1-D Kinematics
9/13	Projectile Motion	4.4-4.5 (HW#2)	
9/15	Uniform Circular Motion	10.1	
Week 4	**Lecture 4, 5**	**Chapter 10, 5**	
9/18	Circular Motion	10.2-10.3	Lab 3: Free Fall
9/20	Forces and Newton's I and II Laws	5.1 - 5.3, 5.5 (HW#3)	
9/22	Exam 1		
Week 5	**Lecture 5, 6**	**Chapter 5, 6**	
9/25	Weight => Forces @ Angles => Equilibrium	5.5, 5.6, 6.3	Lab 4: Projectile Motion
9/27	Normal Forces => Friction	5.7, 6.1 (HW#4)	
9/29	Newton's 3rd Law, Tension and Pulleys	5.4, 6.2, 6.4	
Week 6	**Lecture 7, 8(a)**	**Chapter 6, 7, 8**	
10/2	Work => Kinetic Energy	7.1,7.2	Lab 5: Newton's 2nd Law
10/4	Hooke's Law => Work by Spring => Power	6.2, 7.3, 7.4 (HW#5)	
10/6	Gravitational Potential Energy (Ug)	8.2	
Week 7	**Lecture 8(a), 8(b)**	**Chapter 8**	
10/9	FALL BREAK		No Lab - Fall Break
10/11	Energy Conservation	8.3 (HW#6)	
10/13	Elastic PE (Us) Non-Conservative Forces and Examples	8.2, 8.1, 8.4	
Week 8	**Lecture 8(b), 9**	**Chapter 9**	
10/16	Momentum/Impulse	9.1 - 9.3	No Lab
10/18	Momentum Conservation/Collisions	9.4, 9.5 (HW#7)	
10/20	Exam 2		
Week 9	**Lecture 9, 10, 11**	**Chapter 9, 10**	
10/23	More Collisions => Centripetal Forces (Horizonal)	9.5, 9.6, 6.5	Lab 6: Energy Conservation
10/25	Buffer Day	(HW#8)	
10/27	Center of Mass => Rigid Bodies => Rotational KE	9.7, 10.5	
Week 10	**Lecture 11, 12**	**Chapter 10, 11**	
10/30	Moment of Inertia => Rolling and CoE	10.1, 10.5, 10.4, 10.6	Lab 7: Momentum Conservation
11/1	Torque and Newton's 2nd Law for Rotations	11-1, 11.2 (HW#9)	
11/3	Dynamic Applications of Torque	11.5	

Week 11	**Lecture 11, 12**	**Chapter 11, 13**	
11/6	Static Torque => Total Equilibrium	11.3, 11.4	**Lab 8: Angular Dynamics**
11/8	Angular Momentum	11.6, 11.7 (HW#10)	
11/10	Simple Harmonic Motion	13.1-13.3	
Week 12	**Lecture 12, 13**	**Chapter 13, 14**	
11/13	Mass/Spring => Energy in Harmonic Motion => Pendulum	13.4, 13.5, 13.6	**Lab 9: Springs and Oscillations**
11/15	Basics of Waves, Sound	14.1 - 14.4 (HW#11)	
11/17	**Exam 3**		
Week 13	**Lecture 13**	**Chapter 14**	
11/20	Dopper Effect, Superposition and Interference	14.6, 14.7	**No Lab - Thanksgiving Break**
11/22	**Thanksgiving Break**		
11/24			
Week 14	**Lecture 13, 14**	**Chapter 14, 15**	
11/27	Standing Waves and Beats	14.8, 14.9	**Lab 11: Archimedes Principle**
11/29	Density, Pressure and Pascal	15.1, 15.2, 15.3 (HW#12)	
12/1	Depth Pressure => Archimedes Principle	15.5, 15.6	
Week 15	**Lecture 14, 15, 16**	**Chapter 15, 16**	
12/4	More Archimedes => States of Matter	15.5, 15.6, 14.1	**Lab 11: Archimedes Principle**
12/6	Temperature, Heat and Thermal Expansion	16.1 -16.3	
12/8	Specific Heat, Heat Exchange and Transfer	16.4 - 16.6 (HW#13)	
Week 16	**Lecture 16**	**Chapter 16, 17**	
12/11	Heat Transfer and Phase Changes	16.6, 17.5	
12/13			
12/15			