

General Physics I, PHY 130-01/130-91

Spring 2020

COURSE MEETING TIME AND PLACE:

Course Section	Meeting Time	Location
130-01 (lecture)	MoWeFri 9:00-9:50 am	Merion 109
130-91 (discussion)	Tues. 3:20-4:20 pm	Schmucker Science North 191

INSTRUCTOR INFORMATION:

Dr. Shawn H. Pfeil

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phone: (610) 430-4084

office: Schmucker Science South 229

COURSE DESCRIPTION:

Physics 130 (General Physics 1) is the first semester of an introductory, algebra based, physics sequence. Topics covered include kinematics, dynamics, the mechanics of solids and fluids, wave motion, heat, temperature, and kinetic theory. In less technical language, we will cover the mathematical description and modeling of motion (kinematics), how forces give rise to changes in motion (dynamics), and a number of applications on the macroscopic and microscopic scale. *Physics 130 is primarily a service course for students in biological and health science fields, so we will emphasize applications to these fields.*

A laboratory portion of this course will provide hands-on experience with these phenomena and give a glimpse into how scientists discovered the physical laws covered in the lecture.

Prerequisite: A good working knowledge of algebra and trigonometry are pre-requisites for this course. Mathematical language provides the precision required to state physical laws and the tools to manipulate them. We will be using algebra and trigonometry on a daily basis. ***If you feel you have any deficiencies in your mathematical preparation please see me.***

OFFICE HOURS:

My scheduled office hours as of the first day of class are listed below. I reserve the right to adjust this schedule to reflect unforeseen circumstances. **Please note homework assignments are due Tuesday evenings at 11:59 pm.**

Monday	Tuesday	Wednesday
11 am – 1 pm	1 pm – 3 pm	11 am – 12 pm

Office hours are available by appointment for students with an ongoing conflict with my scheduled hours.

REQUIRED COURSE MATERIALS & INCLUSIVE ACCESS:

Textbook and Homework System: Physics 5/e by Walker with Modified Mastering Physics.

The textbook, in an e-book form, and homework for this system are provided through WCU's inclusive access program. This means you should see a \$112.93 charge for Mastering Physics for Physics 5/e by Walker appear on

your Bursar's account. This is a discounted from the online purchase price of \$146.65. Both are for 24 month access which is typically long enough to complete PHY 130 and PHY 140.

Gaining Access: You will be able to register for Modified Mastering Physics with the e-book included directly from the courses D2L (course management) website.

If You Already Have Access or Drop the Course: You can opt-out of inclusive access until the drop/add deadline of January 28th. You should have received an e-mail with a link to do this. If you opt-out you receive a refund. *If you are retaking and already have a Modified Mastering Physics account opt out and use your old login to access the resources through D2L.*

If You Want a Paper Copy: You can order a loose-leaf copy of the book directly from the publisher while logged into Modified Mastering Physics. There is a "Purchase Option" link on this website. The cost from Pearson is \$44.99.

Calculator: You will want a basic scientific calculator for this course. Something at the level of a Ti-30 or nicer is recommended. These cost as little as \$15. You do not need a graphing calculator.

Please note you will never be able to use your cell-phone as a calculator in class. It may however be worth finding a nice calculator application for your phone for doing homework. If you do this, try to get an emulator for the same model as you purchase.

Lab Supplies: Please see the lab syllabus for a list of supplies required for the lab.

WEST CHESTER UNIVERSITY GENERAL EDUCATION LEARNING OUTCOMES:

This course (PHY130) is an approved general education course in the Sciences (see pg. 39 of the undergraduate catalog) and as such meets the following general education goals:

General Education Goal #2: Ability to employ quantitative concepts and mathematical methods. (Secondary Goal of Science General Education Courses)

Students will apply quantitative and mathematical methods to solve problems from introductory mechanics and thermodynamics.

Virtually every topic discussed in the class will have a quantitative aspect that will require algebraic reasoning. These methods will be employed during class examples, midterm exams, and laboratory sessions.

General Education Goal #3: Ability to think critically and analytically. (Primary Goal of Science General Education Courses)

Students will analyze physical situations and identify what aspects are fundamental to physical modeling.

Mechanics and thermodynamics, the primary subject matter of this course, involve the complex interplay of such concepts as force, momentum, and potential energy. Critical and analytical thinking are essential for applying these concepts to efficiently solve homework and exam problems. One of the many examples might be making assumptions and inferences necessary to analyze the collision of a projectile with a hanging block.

TIME COMMITMENT AND WORK FLOW:

The life of a college student is not easy. A full time student can expect to spend about 50 hrs per week on coursework, or about 12.5 hrs per week per course. Here is how I recommend you spend your 12.5 hours for Physics 130. (Please note some students may need more than 12.5 hrs/week to master the material.)

Activity	Time Commitment
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Reading Prior to Class	1.5 hrs/week
Class	2.5 hrs/week
Post Lecture Study	1.5 hrs/week
Homework After Lecture	3.75 hrs/week
Reading Prior to Lab	0.25 hrs/ week
In Lab Time	2 hrs/week
Post Lab Write-Up	1 hrs/week
Total Time Spent	12.5 hrs/week

HOW YOUR GRADE WILL BE CALCULATED (ASSESSMENT):

I will be using the D2L grade-book feature to post course grades. Please check it periodically.

- **Laboratory** (15%): Please see laboratory syllabus for details.
- **Homework** (15%): Homework assignments are due at 11:59 pm on Tuesdays. **All assignments have a clearly labeled due date on Modified Mastering Physics. It is your responsibility to check Modified Mastering Physics periodically for assignment updates.**

Solutions to all homework problems are available on the online system immediately after the assignment is due.

Because solutions are available immediately late homework will not be considered.

- **Exams:** This course has four in-class exams and a cumulative final. I will drop your lowest regular exam score.

Regular Exams: (50%): We will have four (4) regular exams of which I will drop your lowest score. Each of the kept exams is worth 16.67%.

Cumulative Final: (20%) The final exam will not be dropped. All students are required to take the final.

If you miss a regular exam : If you miss an exam for a **University Sanctioned Event** 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.) If you miss an exam due to sickness, a death in the family, or another reasonable reason, talk to me.

If you have an OSD letter pertaining to exams: You are responsible for making the appropriate arrangements **prior** to the exam date and time. Please note the proctoring center requires that you schedule at least a week in advance.

I will be using the official WCU scale for grades. However, I reserve the right to adjust the weights of individual components, or the scale to account for unforeseen circumstances.

I use the standard WCU grade scale (see below). I round grade percentages. For example, 92.5% is an A not an A-.

Letter	Grade Points	Percentage
A	4.000	93 - 100
A-	3.670	90 - 92
B+	3.330	87 - 89
B	3.000	83 - 86
B-	2.670	80 - 82
C+	2.330	77 - 79
C	2.000	73 - 76
C-	1.670	70 - 72
D+	1.330	67 - 69
D	1.000	63 - 66
D-	0.670	60 - 62
F	0.000	59 or lower

ELECTRONIC DEVICE POLICY:

Electronic devices may be used only in a way that is conducive to the classroom environment. Improper use of devices is a distraction to all students in the area. Here are the rules for some specific devices. Ask about any other device.

Cell Phones: Cell phones should be put away so as to not be visible to you or other students. You may not use your cell phone as a calculator in class. Your phone should certainly be set to “vibrate mode.” *If your ringer goes off in class I will stop and dance badly to whatever tune you are using. This will most likely be embarrassing for both of us. Please silence your phone.*

Tablets/Laptops: If you want to use a tablet to annotate the lecture slides posted on D2L or take notes that is fine. If you want to have a copy of the slides up on your laptop that is also fine. However, looking at anything unrelated to our course in class, will result in me asking you to put the device away for the rest of the semester.

Headphones: All headphones including wireless earphones and Bluetooth headsets are strictly prohibited in class. They must be put away.

If you plan on recording any lecture please see the intellectual property statement.

D2L/MASTERING PHYSICS:

We will be using two online platforms for this course Modified Mastering Physics, the publisher’s homework system, and D2L. Homework assignments are to be performed on Modified Mastering Physics. To allow for *structured note taking* I will post my lecture slides prior to class. These slides intentionally leave some information, such as example solutions out, and provide space to fill that material in during lecture. **It is your responsibility to check these resources periodically for any updates and announcements. You may want to set D2L to notify you when new content is posted.**

ATTENDANCE POLICY:

Attendance is taken for this course. Attending lecture, while highly correlated with success in this course is not graded.

PHYSICS TUTORING:

Physics tutoring is available through LARC (610) 436-2535. In the past peer tutoring has also been available from SPS (the Society of Physics Students). If SPS tutoring becomes available this semester I will make an announcement. **These should be considered in addition to my office hours, which are the first place you should stop for additional help.**

INTELLECTUAL PROPERTY STATEMENT:

I, the instructor, utilize copyrighted materials under the “Freedom and Innovation Revitalizing the 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 copyrighted by the instructor, including, but not limited to, lectures, course discussions, course notes, slides, assessment instruments such as exams, and supplementary materials posted or provided to students authored by the instructor. No recording, copying, storage in a retrieval system, or dissemination in any form by any means of the intellectual property of the instructor, in whole or in part, is permitted without 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 of the semester in which this course is held.

ALL OTHER ACADEMIC POLICIES

For any university wide academic policy not explicitly covered in this document, such as No Grade policies. Please consult your major advising handbook, the Undergraduate Catalog, the Ram’s Eye View, or the University Website.

COURSE SCHEDULE: (next page): A tentative schedule for the course follows. Although I will endeavor to stick closely to the schedule as posted below, I reserve the right to modify it as needed over the course of the semester. This is especially true in the Spring, due to snow-days.

Date (mm/dd)	Day	#	Topic	Reading	Lab
01/21	T	1	Introduction, 1D Kinematics	1.1-1.5, 1.8	NO LAB
	W	2	Position, Displacement, Average Velocity	1.7, 2.1-2.2	
	F	3	Instantaneous Velocity, Acceleration	2.3-2.4	
01/27	M	4	Constant Acceleration Kinematics	2.5-2.6	1a. Introduction and Data Analysis
	T		<i>1D Kinematics Problems</i>		
			HW #1 Due		
	W	5	Free-Fall and Free-Fall Problems	2.7	
	F	6	Vectors I	3.1-3.5	
02/03	M	7	Vectors II	3.1-3.5	1b. Repeated Measurements
	T		<i>Solving Vector Problems</i>		
			HW #2 Due		
	W	8	2D Kinematics, Projectile motion w/ zero launch angle	4.1-4.3	
	F	9	Problems Projectile motion with an arbitrary angle	4.4-4.5	2. 1D Kinematics
02/10	M	10	Newton's 1st and 2nd Laws	5.1-5.3	
	T	11	Newton's Third Law		
	W		<i>Kinematics Review</i>		
	F		Exam 1: Kinematics		
02/17	M	12	Weight & Normal Force	5.6-5.7	3. Free-Fall
	T		<i>Force Problems</i>		
			HW #4 Due		
	W	13	Friction	6.1	
	F	14	Tension and Spring Forces	6.2	4. Projectile Motion
02/24	M	15	Equilibrium	6.3	
	T		<i>More Force Problems</i>		
			HW #5 Due		
	W	16	Uniform Circular Motion I	6.5	
	F	17	Uniform Circular Motion II	6.5	5. Newton's laws
03/02	M	18	Work and Kinetic Energy	7.1-7.2	
	T		<i>Circular Motion Problems</i>		
			HW #6 Due		
	W	19	Work Energy Theorem & Work by Variable Forces	7.2-7.3	
	F	20	Power and Conservative and Non-conservative Forces	7.4,8.1	NO LAB
			SPRING BREAK 03/09-03/15		NO LAB
03/16	M	21	Energy Conservation I	8.1-8.4	
	T	22	Energy Conservation II		
			HW #7 Due	8.1-8.4	
	W		<i>Force and Energy Review</i>		
	F		EXAM 2: Forces and Energy		6. Energy Conservation
03/23	M	23	Impulse and Momentum Conservation	9.1-9.4	
		24	Momentum Conservation and Collisions	9.4-9.6	

	T		HW #8 Due		
	W	25	Rotational Kinematics I	10.1-10.3	
	F	26	Rotational Kinematics II	10.4-10.5	
03/30	M	27	Moment of Inertia and Rotational Kinetic Energy	10.5-10.6	7. Momentum
	X		<i>Collisions and Rotational Problems</i>		
			HW #9 Due		
	W	28	Torque	11.1-11.2	
	F	29	Static Equilibrium	11.3	
04/06	M	30	Angular Momentum and Conservation	11.6-11.7	8. Angular Dynamics
	X		<i>Torque and Angular Momentum Problems</i>		
			HW #10 Due		
	W	31	Oscillations and SHM	13.1-13.2, 13.4	
	F		EXAM 3: Momentum, rotation, torque, and equilibrium		
04/13	M	32	Energy in Oscillations & Pendulums	13.5-13.6	9. Springs and Oscillations
	X		<i>Simple Harmonic Motion Problems</i>		
			HW #11 Due		
	W	33	Types of waves, waves on a string, & harmonic waves	14.1-14.3	
	F	34	Sound Waves and Intensity	14.4-14.5	
04/20	M	35	The Doppler Effect	14.6	10. Standing Waves
	T		<i>Waves Problem Solving</i>		
			HW #12 Due		
	W	36	Superposition and Interference	14.7	
	F	37	Standing Waves	14.8	
04/27	M	38	Density, Pressure, Gauge Pressure, Pressure and Depth	15.1-15.3	NO LAB
	T	39	Pascal and Archimedes	15.4-15.6	
			HW #12 Due		
	W		<i>Wave and SHM Review</i>		
	F		Exam 4: SHM, Waves, & Fluids		
05/04	M	40	Make-Up/Snow Day		NO LAB
					NO LAB

Statements Common to All WCU Undergraduate Syllabi



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. 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. In an effort to assist students who either receive or may believe they are entitled to receive accommodations under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, the University has appointed a student advocate to be a contact for students who have questions regarding the provision of their accommodations or their right to accommodations. The advocate will assist any student who may have questions regarding these rights. The Director for Equity and Compliance/Title IX Coordinator has been designated in this role. Students who need assistance with their rights to accommodations should contact them at 610-436-2433.

EXCUSED ABSENCES POLICY

Students are advised to carefully read and comply with the excused absences policy, including absences 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. 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 Diversity, Equity, and Inclusion at <https://www.wcupa.edu/admin/diversityEquityInclusion/aboutUs.aspx>.

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.