Physics 130-01 - General Physics I

Meeting Place:	Merion 112
Meeting Time:	M,W,F 12 pm
Instructor:	Shawn Pfeil, Ph.D.
Office Hours:	M,W,F: 2-3 pm
	Th: 11 am-1 pm
Office Location:	Schmucker Science South 229
e-mail:	SPFEIL@wcupa.edu*

* Please include "PHY130" in the subject line.

Course Description

PHY130 covers kinematics (the description of motion), dynamics (how forces lead to motion), heat and temperature (consequences of molecular motions), thermodynamics, and kinetic theory (molecular motions). Together with PHY140 the material covered spans over two hundred years of progress in understanding the physical world. This course has two components. A lecture portion of the class will cover the concepts listed above. A laboratory portion will use experiments to explore how measurements can be used to support or reject scientific hypothesis.

Algebra is a prerequisite 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 know that your mathematical skills are weak find me in office hours or by appointment to discuss strategies to catch up.**

Specific Learning Outcomes

Our goals are:

- An ability to communicate effectively in a technical setting.
- An ability to use reductionist problem solving techniques.
- An ability to employ quantitative concepts and mathematical methods.
- An ability to think critically.

Required Course Materials

- *Physics* by Cutnell and Johnson, the 9th edition†
- Physics 140 lab handouts (provided on D2L)
- Wiley-Plus access code for *Physics* by Cutnell and Johnson, the 9th edition†
- Laboratory notebook (see lab syllabus for details).

† An online copy of the textbook is available with the Wiley-Plus code.

Contact Policy

Please include PHY130 and our meeting time in the subject line of any e-mail. I try to respond to e-mail within 24hrs. Although I will try to answer all questions directed to me by e-mail, most problems related to course content are best discussed in office hours.

Assessment

Labs	20%
Homework	20%
Regular Exams	40%
Final Exam	20%

Laboratory Please see lab syllabus for details..

Homework Homework will be assigned online via Wiley-Plus on a biweekly basis. Typically, assignments will be due Tuesday and Thursday night at 11:00 pm. It is my intention to post homework at least a week in advance. I reserve the right to modify homework frequency and due dates to reflect unforeseen circumstances. **Late homework will recieve a 60% reduction in point value.**

Exams We will have three regular in-class exams during the course of the year, and one cumulative final. I will drop your lowest in-class exam score. This means every student has one in-class exam that they can for whatever reason, sickness, family emergency, etc., not be counted.

No makeup exams (almost). My policy of dropping an exam score is meant to alleviate the need for makeup exams. No makeup exams will be given, with the exception of those related to University Sponsored Events (see below). Appropriate documentation must be provided in advanced.

I assign grades using the following scale:

93-100%	A
90-92%	A-
87-89%	B+
83-85%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
67-69%	D+
64-66%	D
60-63%	D-
0-59%	F

I do not "curve" grades. I reserve the right to adjust assessment weighting to account for unforeseen circumstances.

Attendance

I highly recommend attending lecture and coming to office hours. This is your chance to ask questions, and see examples. I am here to guide you through the material. Attendance will benefit your understanding and therefore grade. However, I do not count lecture attendance towards homework, or exam scores. **Please see lab syllabus for lab attendance policy.**

Disability Statement

If you have a disability which will require special accommodation, please meet with me as soon as possible to discuss your needs. Also, contact the Office of Students with Disabilities at (610) 436-2564. Both the WCU and I desire to comply with the ADA of 1990.

Electronic Devices Policy

In order to create a conductive learning environment, please arrange for all electronic devices to be set in their silent mode and put away. If you need to use a device to accommodate a disability, please see above.

D2L

This course has a D2L web page. Laboratory assignments, announcements, and supplementary materials will be posted here. Please check D2L periodically.

Academic Integrity & Conduct

I have a zero tolerance policy for breaches of academic integrity. Breaches of academic integrity will be investigated and sanctions imposed to the full extent available under University policy. For questions regarding the university Academic Dishonesty, the No-Grade Policy, Sexual Harassment, or the Student Code of Conduct, students are encouraged to refer to their major departments 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.

University Sanctioned Events

If you will be participating in a University sanctioned event during one of our scheduled exams **you must notify me in advance.** You must provide some form of documentation. We can then arrange for you to take the exam in a manner consistent with exam integrity. For details please see the discussion of University Sanctioned Events in the general catalog.

Physics Tutoring

In addition to my own office hours, the Learning Assistance & Resource Center (LARC), (610) 436-2535, offers physics tutoring.

Intellectual Property Statement

The instructor utilizes copyrighted materials under the "Freedom and Innovation Revitalizing United States Entrepreneurship Act of 2007" (Fair Use Act). Apart from such copyright protected 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 and supplementary materials posted or provided or provided to students authored by the instructor, assessment instruments such as exams, and presentation slides. 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 the 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 in any way for the content of those sites. The instructor makes no warranty or responsibility for the copyright status of such material. However, should problems with copyright status be brought to the attention of the instructor, reference to offending materials will be removed.

Public Safety

The Emergency Communications Committee recommends that the number of WCU's Department of public safety be available on every course syllabi.

WCU Department of Public Safety: (610) 436-3311

Date (Day)	Material	Ch.	Lab
08/27 (M)	Introduction, Units		
08/29 (W)	Math & Vectors	1	Lab Intro.
08/31 (F)	Vectors & 1D Kinematics	1, 2	
09/03 (M)	Off - Labor Day		
09/05 (W)	Kinematics 1D ,	2	No Lab
09/07 (F)	Kinematics in 1D	2	
09/10 (M)	Free Fall, Kinematics in 2D	2,3	
09/12 (W)	Projectile Motion, Relative Velocity	3	Error Analysis
09/14 (F)	Mass, Force, Newton's Laws	4	
09/17 (M)	Applications of Newtons's Laws	4	
09/19 (W)	Newton's Laws Catch Up, Review	4	Using Data Studio
09/21 (F)	**Exam I: Ch 1-4**		
09/24 (M)	Uniform Circular Motion, Centripetal Acceleration	5	
09/26 (W)	Banked Curves, Verical Circular Motion	5	Free Fall & Acceleration
09/28 (F)	Work, Energy, Work-Energy Thm., GPE	6	
10/01 (M)	Conservation of Mechanical Energy, Power	6	
10/03 (W)	Linear Momentum, Collisions in 1D & 2D	7	Inclined Plane
10/05 (F)	Center of Mass & Rotational Kinematics	7,8	
10/8-10/9	Off - Fall Break		
10/10 (W)	Rolling Motion	8	Work & Energy
10/12 (F)	Torque, Work and Energy for Rotation	9	
10/15 (M)	Angular Momentum	9	
10/17 (W)	Catch Up, Review & Connections		Conservation of Momentum
10/19 (F)	**Exam II: Ch 5-9**		
10/22 (M)	Simple Harmonic Motion, the Pendulum	10	
10/24 (W)	Damped and Driven Harmonic Motion	10	Pendulum Lab
10/26 (F)	Hooke's Law & Fluids	10,11	
10/29 (M)	Pascal's and Archimedes' Principle, Fluids in Motion	11	
10/31 (W)	Temperature, The Kelvin Scale	12	Torque
11/02 (F)	Thermometers, Thermal Expansion	12	
11/05 (M)	Heat, Internal Energy, Specific Heat, Phase Change	12	
11/07 (W)	Heat Transfer	13	Biomechanics
11/09 (F)	Ideal Gas Law, Kinetic Theory of Gasses	14	
11/12 (M)	0th and 1st Law of Thermodynamics	15	
11/14 (W)	Specific Heat Capacities, 2nd law of Thermo.	15	Archimede's Principle
11/16 (F)	Catch Up, Review & Connections		
11/19 (M)	**Exam III Ch 10-14**		
11/21-11/23	Off - Thanksgiving		No Lab
11/26 (M)	Heat Engines, Carnot Cycle	15	
11/28 (W)	Entropy & the 3rd law of Thermo.	15	Spring-Mass Oscillator
11/30 (F)	Waves, Sound Waves	16	
12/03 (M)	Doppler Effect, Superposition of Waves	17	
12/05 (W)	Interference, Standing Waves	17	Standing Waves
12/07 (F)	Catch Up, Review & Connections		
12/10 (M)	Catch Up, Review & Connections		
	Final		

† =If time permits.

Schedule is tentative. We may at times get ahead or behind this schedule.