Physics I (PHY170)

COURSE MEETING TIME AND PLACE:

Course Section	Meeting Time	Location
170-01 (Lecture)	MWF 11:00-11:50 AM	SECC 112
170-91 (Discussion)	Th 2:00-2:55 PM	SECC 112

INSTRUCTOR INFORMATION:

Dr. Tianran Chen
e-mail: tchen@wcupa.edu (please include PHY170 in the subject line of any e-mail)
phone: (610) 436-3563
office: SECC 358

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. Office walk-in, or Zoom by appointment.

Monday	Wednesday	Thursday
3:00 – 5:00 PM	3:00 – 5:00 PM	4:30 – 5:30 PM

Office hours are available by appointment for students with an ongoing schedule conflict with my scheduled hours.
Zoom link: https://wcupa.zoom.us/j/95775292309?pwd=LzVaL2ttWGdFOTUwL1NoNnUvQ1FPdz09

REQUIRED COURSE MATERIALS:

- **Textbook and Homework System**: Fundamentals of Physics (11th edition) by Halliday, Resnick & Walker (John Wiley & Sons). An e-text of this book is available through the WileyPlus website. This course uses the WileyPlus online platform for readings and homework assignments.
- **Accessing WileyPlus**: You may access Wiley Plus Resources (e-text) and homework assignments via the WileyPlus module on D2L: D2L > Content > WileyPlus
- Inclusive Access: The WileyPlus platform is not free. You will be directly charged by the University under "Inclusive Access" program. This means you should see a charge appear on your Bursar's account. This is a discounted price. If you took PHY170/180 in the previous semester, you may not be charged again. You may opt-out before the deadline, using the link provided in the email sent to your WCUPA email account from the WCU campus store. Questions about Inclusive Access should be directed to inclusiveaccess@wcupa.edu
- Laboratory Notebook, PHY170 Lab Manual
- Stand-alone calculator

COURSE DESCRIPTION:

This first semester calculus based physics course, is an introduction to the mathematical modeling and analysis of phenomena from mechanics, kinetic theory, waves, heat, and thermodynamics. A laboratory component of the course provides hands-on experience of the phenomena under study, introduces basic measurement techniques, and introduces error-analysis. *Note: this is also a science general education course in the sciences (see statement below).*

Prerequisite:

MAT161 (Calculus I) is a required course.
To do well in this course you must have a mastery of:

- Solving algebraic systems of equations
- Solving quadratic equations

- Using trigonometry and trigonometric functions
- A qualitative understanding of derivatives as rates of change
- Taking derivatives of powers, exponentials, and trigonometric functions
- A qualitative understanding of integration

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.

ASSESSMENT:

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

- **Laboratory** (20%): Please see laboratory syllabus for details.
- **Homework** (15%):
  Weekly homework assignments labeled "HW#" are typically due at **11:59pm on Thursday**. Assignments labeled "Ch#-practice" are NOT for credit but for additional practice only. All assignments have a clearly labeled due date on WileyPlus. **It is your responsibility to check WileyPlus periodically for assignments.** Solutions to all homework problems are available on WileyPlus immediately after the assignment is due. **Because solutions are available immediately, late homework will NOT be considered.**

- **Regular Exams** (3×15% = 45%): Four regular exams will be given during the semester. I will keep your highest three scores. **There are NO make-up exams.**
  - **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.) **In all the other cases (any type of illness, family emergency, car accident, etc.) 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.
- Regular exam dates are subject to changes (snow days, WileyPlus maintenance, schedule adjustments, etc.). Be available for class days before & after.

- **Final Exam** (20%): The final is cumulative and will require synthesis of concepts from different parts of the course.
  The dates and times of the final exams for this course (as set by the registrar) are listed below. **You should plan to be available for the entire finals week.** We have in past semesters had to reschedule finals due to weather related events.

Course Number	Date and Location of Final	Time of Final
170-01	Friday 12/16, SECC 112	10:30 AM – 12:30 PM

I will be using the official WCU scale for grades, see p.48 in the undergraduate catalog. However, I reserve the right to adjust the weights of individual components, or the scale to account for unforeseen circumstances.

In terms of the WCU standard and the courses point system grades are as follows.

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

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. PHY 170 is a 4 unit class, so students should expect to spend at least 13+ hours on this course per week. You may need to spend more time to excel.

Activity	Time Commitment
Reading Prior to Class	1.0 hrs/week
Class	3.5 hrs/week
Post Lecture Study	2.0 hrs/week
Homework After Lecture	4.0 hrs/week
Reading Prior to Lab	0.25 hrs/ week
In Lab Time	2 hrs/week
Post Lab Write-Up	1.0 hrs/week
Total Time Spent	13.75 hrs/week

TENTATIVE COURSE SCHEDULE: I reserve the right to modify it as needed over the course of the semester. Please note that if the University is closed (due to snow etc.) for a regularly scheduled lab session we will use one of the weeks marked "No Lab" to make up the canceled lab sections.

Date		Lecture	Reading	Laboratory
M	Aug 29	Introduction, Vectors	1.1 – 1.3, 3.1	Introduction/Tutorial1
W	Aug 31	Vectors	3.2	
Th	Sep 1	Vectors	3.3	
F	Sep 2	Motion in 1-D	2.1 – 2.4	
M	Sep 5	**LABOR DAY**		Motion
W	Sep 7	Motion in 1-D	2.5	
F	Sep 9	Motion in 2-D	4.1 – 4.4	
M	Sep 12	Motion in 2-D	4.4	Tutorial 2
W	Sep 14	Motion in 2-D	4.5 – 4.6	
F	Sep 16	Force and Motion – I	5.1 – 5.2	
M	Sep 19	Force and Motion – I	5.3	Free Fall
W	Sep 21	Force and Motion – II	6.1 – 6.2	
F	Sep 23	**EXAM 1: Chapters 1 – 4**		
M	Sep 26	Force and Motion – II	6.3	Projectile Motion
W	Sep 28	Kinetic Energy and Work	7.1 – 7.3	
F	Sep 30	Kinetic Energy and Work	7.4 – 7.5	
M	Oct 3	Kinetic Energy and Work	7.6	Tutorial 3
W	Oct 5	Potential Energy and Conservation of Energy	8.1 – 8.2	
F	Oct 7	Potential Energy and Conservation of Energy	8.4 – 8.5	
M	Oct 10	Linear Momentum and Collisions	9.1 – 9.4	Friction
W	Oct 12	Linear Momentum and Collisions	9.5 – 9.6	
F	Oct 14	Linear Momentum and Collisions	9.7	
M	Oct 17	**FALL BREAK**		**NO LAB**
W	Oct 19	**EXAM 2: Chapters 5 – 8**		
F	Oct 21	Linear Momentum and Collisions	9.8 – 9.9	
M	Oct 24	Rotation	10.1 – 10.4	Collisions
W	Oct 26	Rotation	10.6 – 10.8	
F	Oct 28	Torque and Angular Momentum	11.1 – 11.4	
M	Oct 31	Torque and Angular Momentum	11.5 – 11.6	Biomechanics
W	Nov 2	Torque and Angular Momentum	11.7 – 11.8	
F	Nov 4	Equilibrium	12.1 – 12.3	
M	Nov 7	Gravitation	13.1 – 13.3	Uncertainty Exam
W	Nov 9	Gravitation	13.4 – 13.5	
F	Nov 11	**EXAM 3: Chapters 9 – 12**		
M	Nov 14	Oscillations	15.1 – 15.3	Springs & Oscillations
W	Nov 16	Oscillations	15.4 – 15.6	
F	Nov 18	Waves I	16.1 – 16.4	
M	Nov 21	Waves I	16.5 – 16.7	**NO LAB**
W	Nov 23	**THANKSGIVING BREAK**		
F	Nov 25			
M	Nov 28	Waves II	17.1 – 17.4	Standing Waves
W	Nov 30	Waves II	17.5 – 17.7	
F	Dec 2	Fluids	14.1 – 14.4	
M	Dec 5	Fluids	14.5 – 14.7	**Lab Final**
W	Dec 7	Temperature and Heat	18.1 – 18.5	
F	Dec 9	**EXAM 4: Chapters 13 – 16**		
M	Dec 12	Kinetic Theory, The laws of Thermodynamics	19.1 – 19.5	
F	Dec 16	**FINAL EXAM: 10:30 AM – 12:30 PM**	ALL	

ELECTRONIC DEVICE POLICY:

The pace of the course is such that your undivided attention will be required for the entire lecture and lab period. Please set all electronics to silent or "vibrate mode" and put them away, so that both you and your neighbors will be able to concentrate on the material at hand. No texting or making phone calls is allowed in the classroom.

D2L/WILEYPLUS:

We will be using two online platforms for this course WileyPlus, the publisher's homework system, and D2L. Homework assignments are to be performed on WileyPlus. 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.**

ATTENDANCE POLICY:

Attendance is not taken for this course. Attending lecture, however, is highly correlated with success in this course, and I strongly recommend it. This is your chance to ask questions, see examples and get help in solving problems, which will significantly improve your grade. The lab component of this course, however, has a different attendance policy.

DISABILITY STATEMENT:

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.–4:30 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.

ELECTRONIC COMMUNICATIONS STATEMENT:

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 **"PHY170"**. 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.

UNIVERSITY SANCTIONED EVENTS:

If you will be participating in a University sanctioned event during class or an exam **you must notify me in advance.** Please see the discussion of University Sanctioned Events in the general catalog.

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.

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 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.

TITLE IX/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/.

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.

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.