Physics 180: Physics II
Fall 2016

Course description: In this course, you will learn about (1) physical phenomena (like electric charge, diffraction, and magnetism); (2) the mathematical framework to analyze physical phenomena (like dot products, cross products, the right-hand-rule, area integrals, and line integrals); (3) central concepts used to analyze physical situations (like electric and magnetic fields, electric potential, magnetic flux, and Gauss' Law); and finally (4) the procedures devised to attack physics problems in a methodical fashion.

This course moves at fairly fast pace. If you note the schedule at the end of this document, you will see that we cover approximately one chapter per week. The curriculum for this course is determined in such a manner that you should leave this course with a broad knowledge of a variety of physical phenomena, and a better understanding of how to view and approach physical problems. This is the reason most of you have been required by your majors to take this class. It is expected by the directors of your majors that we cover <u>all</u> of these topics and that you are exposed to <u>all</u> of these topics by the time you finish this course. Thus, the fast pace is necessary in order to cover the required course material and topics within the space of one semester. It is in your best interest to keep up to speed by **reading the sections in the text indicated in the schedule before you get to class**.

Instructor: Dr. Robert Thornton
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Office hours: M 8:30-9:30, Tu 3:00-4:00, W 3:00-4:00, F 1:00-3:00

Class Meeting: MWF 10:00-10:50 a.m.; Tue 2:00-2:55 p.m. (Recitation)

Textbook (required): <u>Fundamentals of Physics Vol II (or Extended)</u> (10th Ed.) by Halliday, Resnick & Walker, (John Wiley & Sons, Hoboken, NJ, 2013), with WileyPLUS at http://edugen.wileyplus.com/edugen/class/cls527019/
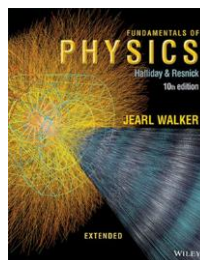
Grading:
3 Exams (4 and drop lowest): 50% total
Attendance: 5%
Homework/Recitation Quizzes: 10%
Final Exam (cumulative): 20%
Lab: 15%
Total: 100%

West Chester University General Education Goals:
This course is an approved general education course and as such strives to have students meet the following general education goals:
1. *Primary Goal*: *Ability to think critically and analytically (Goal #3)*: New concepts will be presented each week which build upon previously discussed material. The relationships and connections between the concepts will require students to think critically and analytically about the reason the physical phenomena occur and how they occur. Critical and analytical thinking are essential for applying these interconnected yet seemingly diverse concepts to efficiently solve homework and exam problems.
2. *Secondary Goal: Ability to employ quantitative concepts and mathematical methods (Goal #2):* Virtually every topic discussed in the class will have a quantitative aspect that will require advanced mathematics (calculus). These methods will be employed during class examples, recitation quizzes, midterm exams, and laboratory sessions.

Attendance: Attendance is an important part of the class. Attendance will be taken using a combination of a sign-in sheet, in-class "concept" questions, recitations quizzes, etc. After you miss more than three classes with no excuse, the instructor reserves the right to have each additional unexcused absence result in your course average being lowered by 2%. Excused absences are limited to those due to participation in University sanctioned events (see policy in the WCU undergraduate catalog) or those accompanied by written confirmation from a doctor, the Dean of Students, etc. Finally,

whether your absence is excused or unexcused (or if you are late to class), you will be responsible for any material covered and any announcements that were made in class that day.

Cell phones and texting are NOT ALLOWED during class. Cell phone use is disruptive to your classmates and to your instructors. Please put turn your phones **OFF** or on **silent**, put them away, and forget about them until after class. Each time I see anyone texting or using their cell phones during class, I will take 1 percentage point off of the nearest exam grade.

In-class exam/quiz policy: There will be four tests over the course of the semester. I will drop your lowest (percentage) test score. This is intended primarily to deal with excused absences. Meaning, if you are absent on the day of a test, even if that absence is an excused one, you will receive a zero for that test and that zero will act as you your dropped exam. I do not give make ups. There may also be occasional quizzes during recitation or lecture to encourage you to attend class and keep up with the material. Any such quizzes would be very similar to homework problems. You should bring a calculator to both recitation (in case of a quiz) as well as the exams, but the calculator cannot be a part of a cell phone, iPod, etc. (i.e., it must be ONLY a calculator).

Final Exam Policy: The final exam is cumulative and mandatory. Missing the final exam will result in a zero for the exam unless EXTREME circumstances apply. Even in that case, extra questions will be added to the make-up final.

Homework: There will be multiple assignments per week and are to be completed using the online WileyPLUS course supplement at http://edugen.wileyplus.com/edugen/class/cls527019/. Homework assignments are due by 8:00 PM on the due dates, which are in the schedule at the end of this document. At 8:00 PM, the site will no longer accept homework submissions. I will not change this, so PLEASE DO NOT ask for an extension. I will, however, drop the lowest (by percentage) three homework grades. So, if you miss one assignment, or even two, it's not going to affect your grade drastically. Please do not dismiss the importance of homework assignments simply because they comprise a minor part of your total grade. (Part of the reason for the homework being worth only a minor part of your grade is due to student cheating on homework in previous semesters.) By doing the homework assignments you will be much better prepared for the exams, which all total comprise 75% of your grade!

Laboratory: Most weeks you will have a lab session. The tentative schedule of labs is listed at the end of this syllabus. You are to purchase a lab book with all the lab assignments from Dynamic Bookstore. The allotted laboratory time is only 2 hours, therefore, it is your responsibility to prepare for the lab session by reading the instructions <u>BEFORE lab each week</u>. At the end of the semester, your lab instructor will give your lab grades to me and I will record exactly what he/she provides. All lab-specific issues are to be discussed with the lab instructor.

E-Mail and Communication: 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.

Disability: West Chester University is committed to making accommodations for persons with disabilities. Please make your needs known by contacting your instructor and the Office of Students with Disabilities. Sufficient notice is needed in order to make the accommodations possible. The University desires to comply with the ADA of 1990.

Other Policy: 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 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.

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.

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.

Class	Day	Date	Lect.	Topic	Lab (Monday)	Assignments due
1	M	Aug 29	1	Electric Charge (21-1 to 21-3)	Organizational Meeting	Assignment 1
2	W	Aug 31	2	Electric Fields & Coulomb's Law (21-1, 22-1)		Assignment 2
3	F	Sep 2	3	Electric Fields (22-1 to 22-3 and 22-6 to 22-7)		Assignment 3
	M	Sep 5		**No Classes - Labor Day**	No Lab	
4	W	Sep 7	4	Electric Fields (22-4 to 22-5)		Assignment 4
5	F	Sep 9	5	Gauss' Law (23-1 to 23-3)		Assignment 5
6	M	Sep 12	6	Gauss' Law (23-4 to 23-6)	1, Electric Charge	Assignment 6
7	W	Sep 14	7	Electric Potential (24-1 to 24-2)		Assignment 7
8	F	Sep 16		**Exam #1 ... Chapters 21-23**		
9	M	Sep 19	8	Electric Potential (24-2 to 24-4)	No Lab	Assignment 8
10	W	Sep 21	9	Electric Potential (24-5 to 24-8)		Assignment 9
11	F	Sep 23	10	Capacitance (25-1 to 25-2)		Assignment 10
12	M	Sep 26	11	Capacitance (25-3 to 25-6)	2, Mapping	Assignment 11
13	W	Sep 28	12	Current (26-1 to 26-4)		Assignment 12
14	F	Sep 30	13	Circuits (26-5, 27-1)		Assignment 13
15	M	Oct 3	14	Circuits (27-1 to 27-2)	3, Resistance & Ohm's Law	Assignment 14
16	W	Oct 5	15	RC Circuits (27-3 to 27-4)		Assignment 15
17	F	Oct 7	16	Magnetic Fields (28-1 to 28-2)		Assignment 16
	M	Oct 10		No Class - Fall Break	No Lab	
18	W	Oct 12		**Exam #2...Chapters 24-27**		
19	F	Oct 14	17	Magnetic Fields (28-4)		Assignment 17
20	M	Oct 17	18	Magnetic Fields (28-6 to 28-8)	4, Kirchoff's Laws	Assignment 18
21	W	Oct 19	19	Magnetic Fields Due to Currents (29-1 to 29-2)		Assignment 19
22	F	Oct 21	20	Magnetic Fields Due to Currents (29-3 to 29-5)		Assignment 20
23	M	Oct 24	21	Induction (30-1)	5, RC Circuits	Assignment 21
24	W	Oct 26	22	Induction (30-2 to 30-3)		Assignment 22
25	F	Oct 28	23	Induction (30-4 to 30-5)		Assignment 23
26	M	Oct 31	24	Induction (30-6 to 30-8)	No Lab	Assignment 24
27	W	Nov 2	25	AC Circuits (31-1)		Assignment 25

28	F	Nov 4	26	*AC Circuits (31-2 to 31-3)*		*Assignment 26*
29	M	Nov 7	27	*AC Circuits (31-4 to 31-6)*	6, EM Induction	*Assignment 27*
30	W	Nov 9	28	*Maxwell's Equations (32-1 to 32-3)*		*Assignment 28*
31	F	Nov 11		**Exam #3...Chapters 28-31**		
32	M	Nov 14	29	*Electromagnetic Waves (33-1 and 33-2)*	7, AC	*Assignment 29*
33	W	Nov 16	30	*Electromagnetic Waves (33-4 and 33-5)*		*Assignment 30*
34	F	Nov 18	31	*Images (34-1 to 34-2)*		*Assignment 31*
35	M	Nov 21	32	*Images (34-4)*	8, Snell's Law & Lenses	*Assignment 32*
36	W	Nov 23		**No Classes - Thanksgiving**		
37	F	Nov 25		**No Classes - Thanksgiving**		
38	M	Nov 28	33	*Physical Optics (35-1 to 35-2)*	9, Interference & Diffraction	*Assignment 33*
	W	Nov 30	34	*Physical Optics (35-4)*		*Assignment 34*
	F	Dec 2	35	*Physical Optics (36-1)*		*Assignment 35*
39	M	Dec 5	36	*Physical Optics (36-3 and 36-5)*	Lab final	*Assignment 36*
40	W	Dec 7		**Exam #4...Chapters 32-35**		
41	F	Dec 9	37	*Physical Optics (36-6)*		*Assignment 37*
42	M	Dec 12	38	*Review Class*		*Assignment 38*
Final Exam – Wednesday, Dec 14 10:30 a.m. – 12:30 p.m.						