GENERAL PHYSICS II (PHY 140)

COURSE AND INSTRUCTOR INFORMATION

Course: PHY 140 (General Physics II), **Section:** 04
Lecture Time and Location: MWF: 11:00 am –11:50 am in **Merion 109**
Discussion Time and Location: Tuesday, 12:30 pm – 1:30 pm in **Schmucker Science North 190**

Instructor: Anil K. Kandalam (Dr. Kandalam or Dr. K)
Office Location: Schmucker Science South, SS 403A
Email: akandalam@wcupa.edu
Office Hours: Monday, Wednesday: 2:00 pm – 3:00 pm
Tuesday: 10:00 am – 12:00 noon
Friday: 9:00 am – 10:00 am or by appointment

COURSE DESCRIPTION

PHY140 is the second semester of a year-long introductory physics sequence. In PHY130 we discussed the properties of motion arising from mass. PHY140 covers electricity, magnetism, circuits, optics, quantum mechanics, and nuclear physics. A passing grade in PHY130 is the prerequisite for this course. **We will be using concepts from PHY130 on a daily basis as well as a good deal of algebra.** If you feel that your skills are weak in either of these two areas, please feel free to come and see me during office hours or by appointment. I am willing to work with you and help you catch up.

EXPECTATIONS

This is a fast pace course. For a successful completion of this course, you are not only expected to come to the class regularly, but also take notes in the class regularly, solve the problems assigned in the class, and read the example problems from the text book. **In order to keep up with the pace of the course, I strongly suggest you to read the sections in the text indicated in the schedule before you get to class**.

REQUIRED COURSE MATERIALS

Textbook: Physics, by James S. Walker, 5th edition*

Other Required Materials: Modified Mastering Physics access code for the text book*
Laboratory Notebook (see lab syllabus for details)
Physics 140 lab manual

**An electronic copy of the textbook is available with the Mastering Physics code.*

GENERAL EDUCATION LEARTNING OUTCOMES

This course (PHY 140) is an approved General Education course in the Sciences (see page 39 of the Undergraduate catalog). The activities in which we engage during this course, such as (a) numerical problem solving during lectures and midterm exams by employing quantitative and mathematical methods, (b) answering conceptual questions both during the in-class discussions, clicker-based-quiz questions, and in the free response portion of the mid-term exams, (c) writing lab reports and efficiently solving homework problems (d) Homework and exam problems, that require application of critical and analytical thinking to understand the interconnected yet seemingly diverse concepts, such as the

connection between electric and magnetic fields, are designed to help students achieve the following General Education goals:

1. *General Education Goal #2:* Ability to employ quantitative concepts and mathematical methods
2. *General Education Goal #3*: Ability to think critically and analytically

SPECIFIC COURSE OUTCOMES

Students completing this course will be able to

- Develop a fundamental understanding of principles of electrostatics, electric current, magnetostatics, electromagnetic induction, geometrical and physical optics, and modern physics.
- Apply these concepts in solving numerical problems
- Exercise and develop reasoning skills
- Develop problem solving skills

D2L

This course has a D2L page. I will post lecture slides, problems etc. to D2L. I will make a good faith effort to post draft versions prior to the lecture, *but these may have few revisions*.

GRADING

Student learning will be assessed through regular in-class quizzes, weekly homework assignments, midterm examinations, laboratory, and the final exam.

The final grade for this course will be based on the following:

- Labs ……15%
- Homework ……..15%
- Quiz ……..5%
- Exams (3 @ 15% each)……45%
- Final exam…..……...20%

Letter grades will be assigned on the following scale. However, I reserve the right to adjust the weights of individual components, or the scale to account for unforeseen circumstances.

93 – 100 %	A	73 – 76 %	C
90 – 92 %	A–	70 – 72 %	C–
87 – 89 %	B+	67 – 69 %	D+
83 – 86 %	B	63 – 66 %	D
80 – 82 %	B–	60 – 62%	D–
77 – 79 %	C+	59% or lower	F

HOMEWORK POLICIES

This course will utilize an online homework system via **Modified Mastering Physics**. Homework will be assigned every week, starting from the first week of classes. Typically, the assignments are due by **11:00 PM (EST) on the due date**. Solutions to all homework problems will be available on Mastering Physics immediately after the assignment is due. So, no late submissions are allowed. I reserve the right to modify homework frequency and due-dates to reflect unforeseen circumstances. I will not drop any homework grades.

Please remember that you are responsible for completing homework assignments in a timely manner and informing me of problems, if any, in accessing the homework. Failure to complete an assignment because you could not access the homework an hour before it is due is not an excuse.

The assigned homework is the minimum amount of practice a highly gifted student would need. I highly suggest doing more, as many as possible, practice problems. Please note the textbook has answers for all of the odd problems.

QUIZZES

There will be a total of **seven** quizzes this term. Each quiz comprises of five concept-based multiple-choice questions that are based on the topics covered during the previous three lectures. A tentative list of days on which quizzes will be given can be found in the course schedule section of this syllabus. Please note that I reserve the right to modify the dates on which quizzes are given, as well as the total number of quizzes given, to reflect unforeseen circumstances. Quizzes will take approximately ten to fifteen minutes to complete, and will be given at the start of class on the days they have been scheduled. I will drop the lowest quiz grade. If you miss a quiz, you will receive a ZERO for it. **No make-up quizzes.** The only exception is for Excused Absences, as outlined in the Excused Absences Policy contained in the WCU Undergraduate Catalog. Appropriate documentation must be provided.

REGULAR EXAM POLICY

Four in-class exams (closed book) will be given during the course of the semester. Each of these exams will consist of a combination of multiple choice questions (conceptual and numerical) and open-ended numerical problems for which the students are expected to show all the work (math steps). *I will drop the lowest exam grade.*

If you miss an exam: If you miss an exam, you will receive a ZERO on that exam. The policy of dropping an exam score is meant to alleviate the need for make-up exam. This means every student has one in-class exam that they can for whatever reason, sickness, family emergency, etc., not be counted. **Therefore, I will not give a make-up exam**. The exceptions, however, are limited to the absences related to University Sanctioned Events (see below). 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.

FINAL EXAM

The final exam (closed book) will include all topics covered (cumulative) in the course and is ***MANDATORY***. Final exam will consist of mostly multiple-choice questions (conceptual and numerical) and few open-ended questions. 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. You must bring your university ID to the final exam.

The dates and times of the final exam for this course (as set by the registrar) are:

Monday, May 7, 2018 from 10:30 am – 12:30 pm

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. The final exam will be held in Merion 109.

LABORATORY

This course has a laboratory component. Your lab grade will be factored into your final grade for this course. Please see the lab syllabus for more details.

ATTENDANCE POLICY

A regular attendance to the lectures is an important part of this course and I highly recommend it. This is your chance to ask questions, see examples and get help in solving problems. I am here to guide you through the material. Attendance will benefit your understanding and therefore grade. However, **I do not give an attendance grade**. Students must understand that they are responsible for all material covered and assigned during their absences (excused and unexcused) and that they are responsible for the academic consequences of their absences. The lab component of this course, however, has a different attendance policy. **Please see lab syllabus for lab attendance policy**.

CONTACT POLICY

Please include ***PHY140*** 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 during office hours.

ELECTRONIC DEVICES POLICY

In order to create a conductive learning environment, please arrange for all electronic devices to be set in silent/vibrate mode and put away. If you need to use a device to accommodate a disability, please see below. If I see anyone **texting or using their cell phones** during the class, I will take 5 points off of the nearest exam grade, and you will be considered "absent" for that day, since you are obviously not mentally present.

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.

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.

UNIVERSITY SANCTIONED EVENTS

If you are 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. 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.

E-MAIL POLICY 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.

COURSE SCHEDULE: A tentative schedule for the course is given below. I will try to follow it as closely as possible. **I reserve the right to modify the schedule as needed over the course of the semester.** Note that if the University is closed (due to snow or for any other reason) for a regularly scheduled lab session, then we will use one of the weeks marked as "No Laboratory" to makeup the canceled lab sections.

Date		Lecture and Discussion	Reading	Laboratory
M	Jan. 22	**19:** Electric Charges, Forces, and Fields	19 – 1, 19 – 2	Introduction
T	Jan. 23	**19:** Electric Charges, Forces, and Fields	19 – 3, 19 – 4	
W	Jan. 24	**19:** Electric Charges, Forces, and Fields	19 – 5	
F	Jan. 26	**19:** Electric Charges, Forces, and Fields	19 – 6 to 19 – 7	
M	Jan. 29	**Chapter 19: Quiz & Problem Solving**		Electric Charge
T	Jan. 30	**20:** Electric Potential and Electric Potential Energy	20 – 1, 20 – 2	
W	Jan. 31	**20:** Electric Potential and Electric Potential Energy	20 – 3	
F	Feb. 2	**20:** Electric Potential and Electric Potential Energy	20 – 4, 20 – 5	
M	Feb. 5	**Chapter 20: Quiz & Problem Solving**		Equipotential Lines
T	Feb. 6	**20:** Electric Potential and Electric Potential Energy	20 – 5, 20 – 6	
W	Feb. 7	**21:** Electric Current and DC circuits	21 – 1, 21 – 2	
F	Feb. 9	**21:** Electric Current and DC circuits	21 – 3, 21 – 4	
M	Feb. 12	**21:** Electric Current and DC circuits	21 – 4, 21 – 5	**NO LABORATORY**
T	Feb. 13	**Exam I: Chapters 19 – 20**		
W	Feb. 14	**Chapter 21: Problem Solving**		
F	Feb. 16	**21:** Electric Current and DC circuits	21 – 5, 21 – 6	
M	Feb. 19	**21:** Electric Current and DC circuits	21 – 7, 21 – 8	Ohm's Law
T	Feb. 20	**22:** Magnetism	22 – 1, 22 – 3	
W	Feb. 21	**22:** Magnetism	22 – 3, 22 – 4	
F	Feb. 23	**22:** Magnetism	22 – 5	
M	Feb. 26	**Chapter 22: Quiz & Problem Solving**		Resistors in Series
T	Feb. 27	**22:** Magnetism	22 – 6, 22 – 7	
W	Feb. 28	**22:** Magnetism	22 – 8	
F	Mar. 2	**23:** Magnetic Flux & Faraday's Law of Induction	23 – 1, 23 – 3	
M	Mar. 5	**23:** Magnetic Flux & Faraday's Law of Induction	23 – 4	Resistors in Parallel
T	Mar. 6	**23:** Magnetic Flux & Faraday's Law of Induction	23 – 5, 23 – 6	
W	Mar. 7	**Chapter 23: Quiz & Problem Solving**		
F	Mar. 9	**Exam II: Chapters 21 – 22**		
M	Mar. 12	**SPRING BREAK**		**NO LABORATORY**
T	Mar. 13			
W	Mar. 14			
F	Mar. 16			

Date		Lecture and Discussion	Reading	Laboratory
M	Mar. 19	**23:** Magnetic Flux & Faraday's Law of Induction	23 – 7 to 23 – 10	RC Circuits
T	Mar. 20	**25:** Electromagnetic Waves	25 – 3, 25 – 4	
W	Mar. 21	**Chapter 25: Problem Solving**		
F	Mar. 23	**25:** Electromagnetic Waves	25 – 1, 25 – 2	
M	Mar. 26	**25:** Electromagnetic Waves	25 – 5	EM Induction
T	Mar. 27	**26:** Geometrical Optics	26 – 1, 26 – 2	
W	Mar. 28	**26:** Geometrical Optics	26 – 3, 26 – 4	
F	Mar. 30	**Chapter 26: Quiz & Problem Solving**		
M	Apr. 2	**26:** Geometrical Optics	26 – 5, 26 – 6	**NO LABORATORY**
T	Apr. 3	**26:** Geometrical Optics	26 – 7	
W	Apr. 4	**26:** Geometrical Optics	26 – 7, 26 – 8	
F	Apr. 6	**Exam III: Chapters 23, 25, and 26**		
M	Apr. 9	**27:** Optical Instruments	27 – 1, 27 – 2	Snell's Law
T	Apr. 10	**Chapter 27: Quiz & Problem Solving**		
W	Apr. 11	**27:** Optical Instruments	27 – 3 to 27 – 5	
F	Apr. 13	**28:** Physical Optics: Interference and Diffraction	28 – 1, 28 – 2	
M	Apr. 16	**28:** Physical Optics: Interference and Diffraction	28 – 3, 28 – 4	Thin Lenses
T	Apr. 17	**Chapter 28: Problem Solving**		
W	Apr. 18	**28:** Physical Optics: Interference and Diffraction	28 – 5, 28 – 6	
F	Apr. 20	**30:** Quantum Physics	30 – 1	
M	Apr. 23	**30:** Quantum Physics	30 – 2, 30 – 3	Interference & Diffraction
T	Apr. 24	**Chapter 30: Quiz & Problem Solving**		
W	Apr. 25	**30:** Quantum Physics	30 – 4, 30 – 5	
F	Apr. 27	**31:** Atomic Physics	31 – 1, 31 – 2	
M	Apr. 30	**Exam IV: Chapters 27, 28, & 30**		**NO LABORATORY**
T	May 1	**31:** Atomic Physics	31 – 3, 31 – 4	
W	May 2	**32:** Nuclear Physics and Nuclear Radiation	32 – 1, 32 – 2	
F	May 4	**32:** Nuclear Physics and Nuclear Radiation	32 – 3, 32 – 4	
M	May 7	**FINAL EXAM (10:30 am – 12:30 pm)**		

PHYSICS TUTORING

The Learning Assistance & Resource Center (LARC), (610) 436-2535, offers physics tutoring. **I also strongly encourage you to utilize my office hours.**

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.

ALL OTHER ACADEMIC POLICIES

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

TITLE IX STATEMENT

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.