GENERAL PHYSICS II (PHY 140)

COURSE AND INSTRUCTOR INFORMATION

Course: PHY 140 (General Physics II)
Lecture Location: Merion 112
Lecture Time: MWF: 12:00 noon – 12:50 pm

Instructor: Anil K. Kandalam (Dr. Kandalam or Dr. K)
Office Location: Schmucker Science South, SS 403A
Email: akandalam@wcupa.edu
Office Hours: Monday, Wednesday: 1:30 pm – 3:30 pm
Thursday: 12:00 noon – 1:00 pm
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 Cutnell and Johnson, 9th edition*

Other Required Materials: The Wiley-Plus access code for the text book*
A Turning Technologies Response Card RF LCD clicker
Laboratory Notebook (see lab syllabus for details)
Physics 140 lab manual (available at the Dynamic Bookstore)

**An online copy of the textbook is available with the Wiley-Plus 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

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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 clicker quizzes, weekly homework assignments, midterm examinations, laboratory, and the final exam. The final grade assessment for this course will be based on the following:

- Clicker Quizzes ……5%
- Labs ……15%
- Homework ……..15%
- 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

CLICKER QUIZZES

During lectures, a number of **questions** will be asked throughout the semester, that you will answer using a Turning Technologies Response Card RF (radio frequency) "**clicker".** To register your clicker for this course, go to D2L and follow the instructions shown in the short video that appears on the screen. It is **your responsibility** to have an operational clicker at every lecture. **Do not "loan" your clicker to another student, as that is an honor code violation. Hand-written answers will not be considered.**

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.

HOMEWORK POLICIES

This course will utilize an online homework system via Wiley-Plus. 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 Wiley-Plus 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.

It cannot be overemphasized the importance of spending time on these assignments. ***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.***

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 date and time of the final exam for this course (as set by the registrar as of 01/14/2015) is:

Friday, May 8, 2015 from 1:00 pm – 3:00 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 112.

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**.

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.

DISABILITY STATEMENT

If you have a disability that requires special accommodations under the Americans with Disabilities Act (ADA), please present your letter of accommodation and meet with me as soon as possible so that I can support your success in an informed manner. Also, contact the Office of Services for Students with Disabilities (OSSD) at (610) 436-2564, their email address is ossd@wcupa.edu, and their website is www.wcupa.edu/ussss/ossd. Sufficient notice is needed in order to make the accommodations possible. Both the WCU and I desire to comply with the ADA of 1990.

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.

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. For details please see the discussion of
University Sanctioned Events in the WCU undergraduate catalog.

PHYSICS TUTORING

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

COURSE SCHEDULE: A tentative schedule for the course is given in the next page. 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	Reading	Laboratory
W	Jan. 21	18. Electric Charges, Forces, and Fields	18.1 – 18.4	Introduction
F	Jan. 23	18. Electric Charges, Forces, and Fields	18.5	
M	Jan. 26	18. Electric Charges, Forces, and Fields	18.6	Electric Charges
W	Jan. 28	18. Electric Charges, Forces, and Fields	18.7 – 18.9	
F	Jan. 30	19. Electric Potential and EPE	19.1 – 19.2	
M	Feb. 2	19. Electric Potential and EPE	19.3	**NO LABORATORY**
W	Feb. 4	19. Electric Potential and EPE	19.4 – 19.5	
F	Feb. 6	19. Electric Potential and EPE	19.5 – 19.6	
M	Feb. 9	19. Electric Potential and EPE	Problems	Equipotential Lines
W	Feb. 11	20. Electric Current and Direct-Current Circuits	20.1 – 20.2	
F	Feb. 13	20. Electric Current and Direct-Current Circuits	20.3	
M	Feb. 16	**TEST 1: Chapters 18 – 19**		Ohm's Law
W	Feb. 18	20. Electric Current and Direct-Current Circuits	20.4, 20.6	
F	Feb. 20	20. Electric Current and Direct-Current Circuits	20.6 – 20.8	
M	Feb. 23	20. Electric Current and Direct-Current Circuits	20.12 – 20.14	Resistors in Series
W	Feb. 25	21. Magnetic Force and Magnetic Fields	21.1 – 21.3	
F	Feb. 27	21. Magnetic Force and Magnetic Fields	21.4 – 21.5	
M	Mar. 2	21. Magnetic Force and Magnetic Fields	21.6 – 2.18	Resistors in Parallel
W	Mar. 4	21. Magnetic Force and Magnetic Fields	21.9, problems	
F	Mar. 6	22. Electromagnetic Induction	22.1 – 22.3	
M	Mar. 9	**SPRING BREAK**		**SPRING BREAK**
W	Mar. 11			
F	Mar. 13			
M	Mar. 16	22. Electromagnetic Induction	22.4 – 22.5	RC Circuits
W	Mar. 18	**TEST 2: Chapters 20 – 21**		
F	Mar. 20	22. Electromagnetic Induction	22.6 – 22.7	
M	Mar. 23	22. Electromagnetic Induction	22.8 – 22.9	EM Induction
W	Mar. 25	24. Electromagnetic Waves	24.1 – 24.3	
F	Mar. 27	24. Electromagnetic Waves	24.4 – 24.5	
M	Mar. 30	24. Electromagnetic Waves	24.6, problems	**NO LABORATORY**
W	Apr. 1	25. Reflection of Light: Mirrors	25.1 – 25.3	
F	Apr. 3	25. Reflection of Light: Mirrors	25.4 – 25.5	
M	Apr. 6	**TEST 3: Chapters 22, 24**		Snell's Law
W	Apr. 8	25. Reflection of Light: Mirrors	25.6	
F	Apr. 10	26. Refraction of Light: Lenses	26.1 – 26.3	
M	Apr. 13	26. Refraction of Light: Lenses	26.4 – 26.7	Thin Lenses
W	Apr. 15	26. Refraction of Light: Optical Instruments	26.9, 26.10 – 26.14	
F	Apr. 17	27. Interference and Diffraction	27.1 – 27.2	
M	Apr. 20	27. Interference and Diffraction	27.5	Interference & Diffraction
W	Apr. 22	27. Interference and Diffraction	27.6 – 27.8	
F	Apr. 24	29. Quantum Physics	29.1 – 29.4	
M	Apr. 27	**TEST 4: Chapters 25 – 27**		**NO LABORATORY**
W	Apr. 29	29 – 30. Quantum Physics & Atomic Physics	29.5, 30.1 – 30.3	
F	May 1	30 – 31. Atomic Physics & Nuclear Physics	30.5 – 30.7, 31.1	
M	May 4	31. Nuclear Physics and Radioactivity	31.3 – 31.7	

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.

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.

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.