Physics 140-01 Spring 2014-Dr. Pfeil

Course Meeting Time and Place

Meeting Time: MoWeFri 12:00 pm - 12:50 pm
Meeting Place: Merion 112

Contact Information:

- email: spfeil@wcupa.edu (please include lecture section e.g. PHY140-01 in the subject line.)
- office: Schmucker Science South 229 (please note this is not in Merion)
- phone: (610) 430-4084

Course Description:

Physics 140 is a continuation of Physics 130, which covers electricity, magnetism, electrical circuits, optics and quantum physics. This material underpins such diverse applications as the iridescent display feathers of the ostrich, gel-electrophoresis, neuron function, the generation of rainbows, and how electrical power is generated.

Specific Learning Outcomes:

Our goals are:

- An ability to think critically and analytically.
- An ability to use words, equations, and graphs to communicate effectively in a technical setting.
- An ability to apply reductionist problem solving techniques.
- An ability to employ quantitative concepts and mathematical models.
- Mastery of course material.

Required Course Materials:

- *Physics* by Cutnell and Johnson, 9th ed. Wiley.
- WileyPlus access code for *Physics* 9th ed.
- Physics 140 lab manual handouts (provided on D2L).
- Ruler
- Laboratory Notebook

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. Please note homework assignments are due Fridays.

Thursday	Friday
10:00 am – 1:00 pm	10:00 am – 11:00 am 1:00 pm – 2:00 pm

If you cannot make these times I am also available for office hours by appointment.

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. Here is how I recommend you spend your 12.5 hours for Physics 130.

Activity	Time Commitment
Reading Prior to Class	1.5 hrs/week
Class	2.5 hrs/week
Post Lecture Study	1.5 hrs/week
Homework After Lecture	3.75 hrs/week
Reading Prior to Lab	0.25 hrs/ week
In Lab Time	2 hrs/week
Post Lab Write-Up	1 hrs/week
Total Time Spent	12.5 hrs/week

Course Schedule (next page):

Below is a tentative schedule for the course. Although I will endeavor to stick closely to the schedule as posted below, I reserve the right to modify it as needed over the course of the semester.

Date		#	Topic	Reading	Lab
1/22/2014	W	1	Introduction and Charge Model	18.1-18.3	
1/24/2014	F	2	Coulomb's Law	18.4-18.5	**No Lab**
1/27/2014	M	3	The Electric Field I	18.6-18.7	
1/29/2014	W	4	The Electric Field II	18.7-18.8	
1/31/2014	F	5	Electric Potential Energy, Voltage	19.1-19.2	Intro
2/3/2014	M	6	Potential of a Point Charge	19.3-19.4	
2/5/2014	W	7	Equipotential and Capacitance	19.4-19.5	
2/7/2014	F	8	Energy Stored In Electric Fields	19.5-19.6	Charge
2/10/2014	M	9	EMF, Current, and Resistance	20.1-20.3	
2/12/2014	W	10	Electical Power and Alternating Current	20.4-20.5	
2/14/2014	F	11	Resistors in Series and Parallel	20.6-20.10	Electric Field
2/17/2014	M	12	Capacitors and RC circuits	20.12-20.13	
2/19/2014	W	13	Magnetic Fields, Forces on a Moving Charges	21.1-21.2	
2/21/2014	F	14	Applications of Magnetic Force	21.3-21.4	Ohm's Law
2/24/2014	M		**EXAM I**	NONE	
2/26/2014	W	15	Magnetic Force ona Wire	21.5-21.6	Resistors in
2/28/2014	F	16	Production of Magnetic Fields	21.7, 21.9	Series
3/3/2014	M	17	Induced EMF and Magnetic Flux	22.1, 22.3	
3/5/2014	W	18	Faraday's Law and Lenz's Law	22.4,22.5	Resistors in
3/7/2014	F	19	Energy Stored in The Magnetic Field	22.8	Parallel
3/10/2014	M	20	Transformers (any catch-up needed)	22.9	
3/12/2014	W	21	Electromagnetic Waves	24.1-24.3	
3/14/2014	F		**EXAM 2**		RC Circuits
3/17/2014	M		**BREAK**		
3/19/2014	W		**BREAK**		
3/21/2014	F		**BREAK**		**No Lab**
3/24/2014	M	22	Energy in Electromagnetic Waves	24.4-24.5	
3/26/2014	W	23	Light Rays, and Plane Mirrors	25.1-25.3	
3/28/2014	F	24	Spherical Mirrors and The Mirror Equation	25.4-25.6	Induction
3/31/2014	M	25	Index of Refraction and Snell's Law	26.1-26.2	
4/2/2014	W	27	Total internal reflection, Dispersion	26.3,26.5	
4/4/2014	F	28	Ray Tracing Workshop	Handout	Snell's Law
4/7/2014	M	29	Lenses and the Thin Lens Equation	26.6-26.8	
4/9/2014	W	30	Lenses in Combination and the Eye	26.9-26.10	
4/11/2014	F		**EXAM 3**		Thin Lenses
4/14/2014	M	31	Superposition and Young's Double Slit	27.1-27.2	
4/16/2014	W	32	Diffraction and Resolving Power	27.5-27.6	
4/18/2014	F	33	The Diffraction Grating	27.7-27.9	Interference
4/21/2014	M	34	Photons, the Photoelectric Effect (Sunburn)	29.1, 29.3	
4/23/2014	W	35	Light Momentum, DeBroglie Relations	29.4-29.5	
4/25/2014	F	36	Matter Waves and The Uncertainty Principle	29.5-29.6	Diffraction
4/28/2014	M	37	The Bohr Model of the Atom	30.3-30.4	
4/30/2014	W		**EXAM 4**		
5/2/2014	F	38	Nuclear Physics	31.1-31.4	**No Lab**
5/5/2014	M	38	Review Day (Time Permitting)		

Assessment:

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

- **Laboratory** (15%): Please see laboratory syllabus for details.
- **Homework** (15%):
    - Homework assignments are due once a week on WileyPlus at 11 pm Friday nights.
    - It is your responsibility to check WileyPlus for homework assignments. Assignments are typically posted immediately after their corresponding lecture.
    - Each weekly homework assignment of 9-15 problems has been broken up into three mini-assignments, one for each lecture. On a typical Friday you should expect the homework corresponding to the previous Friday, Monday and Wednesday.
    - I strongly suggest attempting each mini assignment as the material is covered, rather than waiting until Friday night.
    - Solutions to all homework are available on WileyPlus after the due date.
    - Because solutions will be available no late homework will be accepted.
    - **In addition to graded assignments, additional practice problems will be made available on WileyPlus**
- **Regular Exams** (45%, best 3 of 4 @ 15% per exam.): Four regular exams will be given during the semester. I will keep your highest three scores.
    - **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 other cases a missed exam will be treated as your dropped exam.
    - **If you have an OSD letter pertaining to exams:** You are responsible for making the appropriate arrangements **prior** to the exam date and time.
- **Final Exam** (25%): The final is cumulative and will require synthesis of concepts from different parts of the course.
    - The final for PHY140-01 is scheduled for 5/9/14 from 1-3 pm in Merion 112.

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

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. Both you and your neighbors will be able to concentrate on the material at hand.

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.

Attendance Policy:

It is a bad idea to miss lecture. Lecture attendance for PHY140 is strongly correlated with performance on homework assignments and exams. I will be taking attendance, and want to know why you are absent. I do not give any credit for attendance.

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 (OSD) at (610) 436-2564. Both WCU and I desire to comply with the ADA of 1990.

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.

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.