Syllabus: PHY 2140 Section 010, Winter 2014

This Syllabus covers algebra-based General Physics 2140 Section 010 and the associated Discussion/Quiz sections. The website for this course is on the WSU Blackboard, *PHY 2140 Winter 2014 Sec 010.* The course covers Electricity and Magnetism, Electromagnetic Radiation and Interference, Optics and aspects of Modern Physics. The prerequisite is PHY 2130 and High School algebra and trigonometry. This section meets Tuesdays and Thursdays 6:00 PM -7.20 PM for class, in 2009 Science Hall. Quiz sections are for problem discussion and quizzing, and meet as follows, starting the first week of classes:

Quiz Sections	**Section**	**CRN**	**Instructor**	**Room**
Tuesday 7.30 -8:25 PM	011		Prof.Padmanabhan	2009 Science
Thursday 7.30-8.25 PM	012		Prof. Padmanabhan	2009 Science

NOTE: The Lab course, PHY 2141, is a separate course, with a separate Syllabus, schedule, Instructor and grades. The content of the labs is consistent with PHY 2140, but the sequence is different. Labs will *probably* begin during the second full week of classes. Please see notice on main door of Physics Bldg or announcement on BB
NOTE: The WSU last day to withdraw from a class is Friday Jan 17, 2014

PHY 2140 Instructor for this section:

Karur R. Padmanabhan ad2639@wayne.edu
364 Physics Building
666 West Hancock
Detroit, MI 48202
313-577-3005

Office Hours: T 3-5 PM , Th 2 -3.30 PM in 364 Physics.
Or call, email or text, or set up an appointment.

Course Materials:

- Text – Physics, 2nd Edition by Giambattista, Richardson and Richardson, published by McGraw Hill, available in the Barnes and Noble campus bookstore. This is also the textbook for Physics 2130. Other editions and used textbooks may also be available.
- WebAssign access card. WebAssign is an online homework system, at *www.webassign.net*. A two-semester WebAssign access card is included in the price of a new textbook purchased at the BN campus bookstore, or, if you are not getting a new textbook from this bookstore, available separately from the Barnes and Noble campus bookstore. Or, pay online at *www.webassign.net*. If you pay online, make sure to select the above Giambattista, Richardson and Richardson textbook, 2nd edition. There is a link to WebAssign on the Blackboard website for this course.
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Notes: PowerPoint notes for each class will normally be available on the Blackboard website for this course after the class for you to review and print.

Goal: The goal of this course, which is the traditional goal in Physics, is that you be able to apply basic physical laws to analyze real-life or unstructured situations ("word problems"), both descriptively and numerically, at least for the aspects covered in this course. You should be able to analyze both existing situations and situations that you or someone else may want to construct. Research and experience indicate that, to get to this point, you also need to be able to:

- State and paraphrase definitions and laws, and apply them in simple cases
- Have opportunity to practice, with feedback (e.g. homework) before exams.

Consequently, homework, quiz and conceptual questions will include such questions.

Homework

Graded credit problems

Each week (except for Exam weeks), five to seven WebAssign problems will be assigned for credit. Ten non-credit WebAssign problems and up to three conceptual non-credit questions will also be posted on WebAssign. The credit problems for each week are due that Sunday. For example, the homework covering parts of Chapter 16 during first week is due Sunday Jan 11, 2014, 11.59 PM. The credit problems can be discussed in a general way in the Quiz Sections, but not worked out to a final numerical answer, while the non-credit problems can be worked out in Quiz Sections including a final numerical answer. You "do" a WebAssign problem by logging in to the WebAssign site (*www.WebAssign.net*), reading the problem, working it out on the side, and entering the answer in the website. I allow you 5 tries for each problem, to get the answer right. You will lose 5% for each attempt after the first. For additional attempts beyond 5, send me an email explaining what you would do on the next attempt. After we have agreed on how to do the problem I will give you additional attempts, with 5% less credit each attempt. What I will require in the email is described in the Blackboard document "WebAssign: Requesting an extra submission." You can request extra submissions for the same problem, with a separate request each time.

Your Webassign account will be set up by the start of classes. Your login information is:

- UserID: First initial and full last name, up to a maximum of seven characters, excluding any special characters such as periods or dashes. For example, my name is Karur Padmanabhan, so my UserID would be kpadman
- Institution: wayne (just that, not Wayne State University or anything else)
- Password: Access ID, for example ad2639 for me, since my WSU email address is ad2639@wayne.edu.

For additional help with WebAssign, see "Using WebAssign" under "Content" on Blackboard, the non-credit assignment on WebAssign, "Intro to WebAssign 2011-2012," and the online WebAssign help.

Non credit problems: Each chapter will also have assigned non credit problems. These Problems are for practice. They will not be collected or graded. Your quiz instructor may help you solve some of the problems in your quiz sections.

NOTE 1 ON HOMEWORK AND EXAM PROBLEMS: The Exams will be mostly problems (plus a few definitions, formula statements and so forth). There is NO WAY that you will be able to do the problems on the Exams without practicing doing problems ON YOUR OWN, first. You might try to memorize how to do each assigned homework problem but at least some of the Exam problems will be of types that you have not exactly seen before. Your goal should be to understand how to apply the basic theories to solve problems. If you can apply the basic theories, on your own, then you should be able to do all of the Exam problems.

NOTE 2 ON HOMEWORK PROBLEMS AND EXAMS: Normally, you must complete the homework assignments covered on an exam with a minimum average of 75 by the time of the review session, in order to qualify for taking the exam. If you miss this requirement, take the exam anyway and your grade will be counted when you bring the homework average up to 75. Note that you will have to ask to have the homework assignments opened up for you.

EXAMS: There will be three 60-minute exams in class, consisting of multiple choice questions (no partial credit). The lowest exam score **may be** replaced by half of your earned score on the Final Exam at the discretion of the instructor. Do not assume this and calculate your grade in the middle of the semester. Therefore, no makeup exams will be given. You MUST bring your Wayne State ID to the exam and present it to a proctor when asked during the exam. **A group photograph of the class may be taken during each exam.** No electronic devices (other than a calculator) are allowed in the room during the exam (**no iPods, headphones, cell-phones, Blackberries, etc**.). You will need a stand-alone calculator ("standalone" excludes calculators on cell phones, for example). Graphing calculators or other calculators with communications capacity will not be allowed.

GRADING: Your course grad will be determined by your performance on the three hour Exams, Online Homework, Quiz Section results and the Final Exam. The Final Exam will cover the material presented during the entire semester. The overall course grade will be determined on the basis of the following distribution:

Three In-class 60 Minute Exams (100 points each)	300 points
Quizzes (best 5), attendance in quiz sections	50 points
Final Exam	200 points
Webassign homework	50 points
Extra credit for attending a WSU Planetarium session	3 points
Total	**600 points**

Points accumulated	Percent	Grade
540-600	91-100	A
510-539	85-90	A-
480-509	80-84	B+
450-479	75-79	B

420-449	70-74	B-
390-419	65-69	C+
360-389	60-64	C
330-359	55-59	C-
300-329	50-54	D+
270-299	45-49	D
240-269	40-44	D-
0-239	0-39	F

ADDITIONAL STUDY HELP: If you have difficulty doing homework or lab work, or understanding some of the course material, you can get help from the *Physics Resource Center*, in room 172 Physics Building The center will open a couple of weeks after the beginning of the semester.

Honors Credit: If you are requiring Honors Credit, please contact the instructor by the end of first week of classes.

Accommodation: If you feel that you may need an accommodation based on the impact of a disability, please feel free to contact me privately to discuss your specific needs. Additionally, Student Disability Services (SDS, formerly the Office of Educational Accessibility Services), coordinates reasonable accommodations for students with documented disabilities. The office is located in 1600 UGL, phone: 313-577-1851 (Voice) / 577-3365(TTY), web site http://studentdisability.wayne.edu/.
Responsibility for Work: Whether on homework or an exam, I will never take seriously a statement such as, "but that's how (another student or someone in the Resource Center or anyone else) told me to do it." Your work is your own, and you should always try to tie the solution back to the fundamental laws. You can always check with me.
Plagiarism: In general, plagiarism is presenting someone else's work as your own, whether on purpose or through negligence. For a more detailed discussion, see http://www.clas.wayne.edu/unit-inner.asp?UnitID=24&WebPageID=924 . In this course, for the first instance of plagiarism, the work will be graded down 40%. For the second instance, the assignment will be failed with a zero, and for the third, the course will be failed. In each case, including the first, a memo will be sent to the Physics Department describing the circumstances.

The most important consequence of plagiarism, whether or not it is detected, is that you will not be able to do the work, and moreover you will not have the confidence that you can do that part of the work. Surely one of the primary benefits of a college-level course is the ability to step up in the outside world and say with confidence, "I can do that," and this is also the source of many of the other benefits. You may "get away" with plagiarism once or even more than once, but the main penalty, far worse than any grade punishment, is that your college education, which is one of the best things you can do for yourself, will not have the benefits you are looking for.

Course outline*

Wk	#	Date	Day	Topics	Ch, Sec
1	1	01/07	Tue	Introduction, charge, Coulomb's Law,	16.1 – 16.3
	2	01/09	Thu	vectors , Electric Field, motion of charges, electrostatics,	16.4 – 16.7
	3	01/14	Tue	Gauss's Law and problems	16.7
2	4	09/16	Thu	Electric potential and potential energy, capacitors	16.8 – 17.5
3	5	01/21	Tue	Dielectrics, energy in capacitor, current, resistance, EMF	17.6 – 18.2
	6	01/23	Thu	Kirchoff's Rules, series and parallel circuits, circuit analysis, RC circuits	18.4 – 18.7
4	7	01/28	Tue	Power and energy in circuits, circuit measurements Brief review 16-18	18.8
	8	01/30	Thu	**Hour Exam 1**	**16-18**
5	9	02/04	Tue	Magnetic forces on particles and currents, electric and magnetic fields	19.2-19.6
	10	02/06	Thu	Torque on a current loop, Ampere's law	19.7-19.9
6	11	02/11	Tue	Motional emf, Faraday's and Lenz's Law, Inductance and LR circuits	20.1-4
	12	02/13	Thu	Transformer, inductance LR circuit	20.5,7-9
7	13	02/18	Tue	AC current and circuits	21.1-4
	14	02/20	Tue	Electromagnetic radiation, properties and transport	22.1-6
8	15	02/25	Tue	Polarization and Doppler Effect, Review 19-21	22.7-9
	16	02/27	Thu	**Hour Exam-2**	**19-21**
9	17	03/04	Tue	Light rays, Reflection and Refraction, TIR Reflection, Dispersion	23.1-23.5
	18	03/06	Thu	Images formed by spherical mirrors and lenses	23.6-9
10		03/10 03/15		SPRING BREAK NO CLASSES **Last day to withdraw (March 23, 2014)**	
11	19	03/18	Tue	Lens Combination, Microscope and Telescope	24.1-5
	20	03/20	Thu	Interference, gratings	25-1,25.2 – 25.5
	21	03/25	Tue	Diffraction by a single slit	25.6-.8,
12	22	03/27	Thu	quantization of electromagnetic radiation, Photo effect,	27.1-3
13	23	04/01	Tue	Compton scattering pair production	27.4-8
	24	04/03	Thu	**Hour Exam-3**	**(22,23, 25,27.1-3)**

14	25	04/08	Tue	Early modern ideas about atom, spectroscopy Matter waves, Uncertainty Principle	27.5-7 28.1-4
	26	04/10	Thu	Electron configurations, Pauli's principle, solids	28-5-8
15	27	04/15	Tue	Nucleus, BE, Radioactivity, decay and half lives	29.1-4
	28	04/17	Thu	Nuclear reactions, fission and fusion	29.6-8
				Final Exam (Cumulative)	

Note: Cumulative Final Exam Tuesday April 29, 1:20 -3:40 in 150 General Lectures.

The date, time and location of the exam will be confirmed in class in advance and posted on blackboard.

- **Schedule subject to changes**