Syllabus: Winter 2012 PHY 2140 Section 001, CRN 22979

This Syllabus covers algebra-based General Physics 2140 Section 001, CRN 22979 and the associated Discussion/Quiz sections. The website for this course is on the WSU Blackboard, *PHY 2140 Winter 2012 Sec 001 (Bowen)*. 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 Mondays, Wednesdays and Fridays 9:35 - 10:30AM 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**
Monday 10:40 AM	003	22983	Christopher Zin	0037 Man
Tuesday 9:35 AM	002	22980	Chamath Don	0185 PHY
Wednesday 10:40 AM	004	22984	Christopher Zin	0043 Man

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 begin during the second full week of classes, on Tuesday January 16.

NOTE: The WSU last day to withdraw from a class is Saturday March 24.

PHY 2140 Instructor for this section: David Bowen / d.r.bowen@wayne.edu / cell phone: 248-217-1316

CAMPUS
216 Physics Building
666 West Hancock
Detroit, MI 48202
313-577-1498

HOME
4704 Elmhurst Avenue
Royal Oak, MI 48073
248-549-8518

Office Hours: Mondays and Wednesdays 2 – 4 PM in 216 Physics except Jan 9.
Or call, email or text, or set up an appointment

Course Materials:

- Text – Physics, 2nd Edition by Giambattista, Richardson and Richardson, ISBN13 9780077405731, published by McGraw Hill, available in the Barnes and Noble campus bookstore. This is also the textbook for Physics 2140. 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.
- i>Clicker2 remote ("clicker"). Note that it is the i>Clicker2 with numeric capacity that is required, not the i>Clicker. Follow the directions on the Blackboard website for this course to enroll your clicker in this course. Registered clicker needed by Class 4, 1/18.

Notes: PowerPoint notes for each class will normally be available on the Blackboard website for this course, before the class, for you to review and print. A good format is to print from the File menu. Under "Print what:" choose "Handouts" and print either four or six slides to the page.

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 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 clicker questions will include such questions.

Homework

Each week (except for Exam weeks), five 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 the first week is due Sunday Jan 15. 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 three tries for each problem, to get the answer right. You will lose 5% for each attempt after the first. For additional attempts beyond 3, 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 an additional attempt, 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 is already set up. 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 David Bowen, so my UserID would be dbowen
- Institution: wayne (just that, not Wayne State University or anything else)
- Password: AccessID, for example aa2012 for me, since my WSU email address is aa2012@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.

NOTE 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.

EXAMS: There will be three 50-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. 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 will 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**.) Also bring a Scantron form to each exam (including the Final).

GRADING: Your course grade will be determined by your performance on the three midterm 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 50 Minute Exams (100 points each)	300 points
Quizzes (best 6), attendance in quiz sections	70 (60+10) points
Final Exam	190 points

WebAssign homework	20 points
Clickers (attendance plus questions)	20 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: Email me (David Bowen) if you are interested in honors credit.

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.

#	Date	Day	Topics	Ch, Sec
1	1/9	Mon	WSP, charge, Coulomb's Law	16.1 – 16.3
2	1/11	Wed	Electric Field	16.4
3	1/13	Fri	Motion of charges, electrostatics	16.5 – 16.6
	1/16	Mon	MLK Day, no classes	
4	1/18	Wed	Gauss's Law, potential energy	16.7 – 17.1
5	1/20	Fri	Electric potential, charge motion	17.2 – 17.4
6	1/23	Mon	Capacitors	17.5 – 17.6
7	1/25	Wed	Energy storage, current & EMF	17.7– 18.2
8	1/27	Fri	Kirchhoff's Rules, circuits	18.4 – 18.5
9	1/30	Mon	Circuits	18.6 – 18.8
10	2/1	Wed	Electrical measurements, RC circuits	18.9 – 18.10
11	2/3	Fri	Review for Hour Exam 1	16 – 17
12	2/6	Mon	Hour Exam 1	16 - 17
13	2/8	Wed	Magnetic field, magnetic force	18.11 – 19.2
14	2/10	Fri	Motion in electric & magnetic fields	19.3 – 19.5
15	2/13	Mon	Magnetic force & torque on currents	19.6 - 19.7
16	2/15	Wed	Motional EMF & generators	19.8 – 20.2
17	2/17	Fri	Faraday's and Lenz's Laws	20.3 – 20.4
18	2/20	Mon	Inductors and resistors	20.8 – 21.1
19	2/22	Wed	AC circuits, electromagnetic radiation	21.2 – 22.1
20	2/24	Fri	Electromagnetic radiation	22.2 – 22.4
21	2/27	Mon	Electromagnetic radiation	22.5 – 22.6
22	2/29	Wed	Electromagnetic radiation, rays	22.7 – 23.1
23	3/2	Fri	Review for Hour Exam 2	18 - 22
24	3/5	Mon	Hour Exam 2	18 - 22
25	3/7	Wed	Reflection and refraction	23.2 – 23.3
26	3/9	Fri	Reflection, images	23.4 - 23.6
	3/12		MTWTFS Spring Break	
27	3/19	Mon	Mirrors forming images	23.7 – 23.8
28	3/21	Wed	Lenses and microscope	23.9, 24.4
29	3/23	Fri	Interference	25.1 – 25.2
30	3/26	Mon	Thin films, Young's double slit	25.3 – 25.4
31	3/28	Wed	Diffraction	25.5 – 25.7
32	3/30	Fri	Quantization of EM radiation	25.8, 27.1-3
33	4/2	Mon	Atomic data and models	27.4 – 27.6
34	4/4	Wed	Atomic energy levels	27.7
35	4/6	Fri	Review for Hour Exam 3	23 – 25
36	4/9	Mon	Hour Exam 3	23 - 25
37	4/11	Wed	Waves and particles	28.1 – 28.5
38	4/13	Fri	Hydrogen atom, lasers	28.6 – 28.9
39	4/16	Mon	Tunneling, nuclei	28.10 – 29.2
40	4/15	Wed	Radioactivity, biological effects	29.3 – 29.5
41	4/20	Fri	Catch-up	
42	4/23	Mon	Review for Final Exam	
	4/24		Study Day, no classes	
43	5/1	Tue	Final Exam 150 Gen Lec 1:20 – 3:50	Cumulative

Tuesday, May 1, 2012 Final Exam (1:20 PM - 3:50 PM) 150 Gen Lec Cumulative