Syllabus: Winter 2013 PHY 2140 Section 901, CRN 24143

This Syllabus covers algebra-based General Physics 2140 Section 001, CRN 24143 and the associated Discussion/Quiz sections. 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 at Oakland Center.

Schedule of regular classes

Class and Time	Section	CRN	Instructor	Room
Mondays and Wednesdays 6:00 PM	901	24143	Jagdish Thakur	0718

LABORATORY: PHY 2141 is the laboratory portion of PHY 2140. It is a co-requisite so you must be enrolled in both courses concurrently. The laboratory is a separate course with its own grades and procedures, which will be explained by your laboratory instructor. The experiments in PHY 2141 are designed to complement the material covered in PHY2140. Your Laboratory Manual is to be purchased separately at the University Bookstore. *Lab sections of PHY 2141* begin week of 10-18 January 2013.

PHY 2140 Instructor for this section: Jagdish Thakur/ jagdish@wayne.edu
Office : 214 Physics Building at the main WSU campus
666 West Hancock
Detroit, MI, 48202
313-577- 4580
Office Hours: By appointment

Quiz sections are for problem discussion and quizzing, and meet as follows, starting the first week of classes:

Quiz Sections and Time	Sections	CRNs	Instructor	Room
Mondays ; 7:35 PM	902	24145	Jagdish Thakur	0718
Wednesday; 7:35 PM	903	24146	Jagdish Thakur	0718

QUIZ SECTIONS: Quiz sections meet once per week to provide you with an opportunity to ask questions, discuss lecture material, and work through assigned practice problems. Homework assigned practice problems will be posted chapter by chapter on Blackboard as the course progresses. These practice problems are intended to test your understanding of the course material and help prepare you for quizzes and exams. In the same way you practice at a sport or music to become good at it, you must work out problems to master basic physics. *It is imperative for you to solve these problems - and even more important to clearly understand the method of solution. It will be difficult to obtain a good grade in this course without making a conscientious effort to do all of the homework assignments*. The quiz instructors will solve some of the sample problems each week, but there may not be enough time to cover each and every assigned problem in quiz sections. It is the student responsibility to work on all the practice problems. In the quiz sections, particularly during (but not limited to) the weeks indicated by asterisks, you will be given short quizzes which will have conceptual and/or other question and problems similar to your homework assignments. There will be seven quizzes given during the semester. **The scores on your six best quizzes will be used to calculate your quiz section grade**, which contributes 60 points to the overall grade for the course. **There will be no individual make-up quizzes**.

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.

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, and quiz questions will include such questions.

ONLINE HOMEWORK: The WebAssign online testing system (http://webassign.net) provides online homework submission and grading. The weekly homework assignments completed through WebAssign will contribute 20 points to your final grade in the course. If you buy the textbook in the campus store, it should include a WebAssign access card valid for two semesters. Access codes can also be purchased separately. More information is available on the WebAssign website. You should already be enrolled for the course in WebAssign with your username and initial password set to your six characters WSU ID (e.g. "ab1234") unless you already had a WebAssign account. You should change your password after you first login. Additional information is available in your WebAssign Student Guide.

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 6 tries for each problem, to get the answer right. If you solve within the first three tries, you get 100% points of the problem. If you get correct answer on the 4th try, you get 75% of the points and on 5th try, you get 50 % and on 6th try, you get 25%.

Below is a Class Key for each section of your
Section : **wayne 7185 1841**

NOTE ON HOMEWORK AND EXAM PROBLEMS: The Exams will be mostly problems. 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 55 minute in class exams during the semester, as indicated on the course schedule. These exams will consist of multiple choice questions, including both conceptual and computational problems. Each exam will contribute 100 points towards your final grade in the course. You will be provided with a formula sheet prior to these exams. **There will be no make-up exams offered**. The lowest exam score will be replaced by half of your total score on the Final Exam if this improves your overall grade in the course. You must bring your Wayne State ID to the exam and be prepared to present it to a proctor if 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 at any time during the exams. **The use of any electronic device other than a calculator, including, but not limited to, cellular telephones, music players, or tablet computers, during the exam will be considered as academic misconduct resulting in immediate sanctions**. More information on academic integrity can be found in a document prepared by the Office of Teaching and Learning, which can be downloaded from:
http://www.otl.wayne.edu/pdf/AIB07Print.pdf.

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 55 Minute Exams (100 points each)	300 points
Quizzes (best 6) out of 7 total quizzes	60 points
Final Exam	200 points
WebAssign homework	20 points
Attendance plus in-class questions	20 points
Total:	600 points

Extra credit

- 3 points extra credit for Planetarium visit
- 3 points for Vaden Miles attendance (provided Outreach handles attendance)
- 4 points for extra problems (if you want to earn these points, let me know)

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.

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.

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TENTATIVE CLASS SCHEDULE (Subject to change, * indicates weeks in which quizzes will be given in quiz section)

Week	Date	Day	Topics	Sections
1	1/7	Mon	Electric charge, Coulomb's Law	16.1 – 16.3
2	1/9	Wed	Electric Field, Motion of charges, Electrostatics	16.4 – 16.6
2	1/14	Mon	Gauss's Law, potential energy, Electric potential,	16.7 – 17.3
3	*1/16	Wed	Charge motion, Capacitors and dielectrics, Energy storage,	17.4 – 17.7
3	1/23	Wed	Electric current & EMF, Resistance and resistivity, Kirchhoff's Rules	18.1-18.2, 18.4-18.5
4	1/28	Mon	Series and parallel circuits, circuit analysis using Kirchhoff's rules	18.6-18.7
4	1/30	Wed	Review Exam1	
5	2/4	Mon	Exam1	Ch (16-18.7)
5	*2/6	Wed	Power and energy in circuits, measuring currents and voltages	18.8-18.9
6	2/11	Mon	RC circuits, Magnetic field, magnetic force, charged particle in magnetic field	18.11-19.3
6	2/13	Wed	Charged particle in crossed E and B fields ,magnetic force on a conductor,	19.4-19.6
7	2/18	Mon	torque on current loop, magnetic field due to current	19.7-19.8
7	*2/20	Wed	Motional EMF, electric generators, Faraday's law	20.1-20.4
8	2/25	Mon	Lenz's law, Inductance, RL circuits	20.4,20.9-20.10
8	2/27	Wed	AC currents and voltages, capacitor and inductor in ac circuits	21.1-21.4
9	3 /4	Mon	Exam2 Review	Ch(18.8-21)
9	3/6	Wed	Exam2	Ch(18.8-21)
10	*3/18	Mon	Electromagnetic radiation, Maxwell's equations, antenna, EM spectrum, traveling EM waves,	22.1-22.5
10	3/20	Wed	Energy transported by EM waves, polarization, Doppler effect for EM waves	22.6-22.8
11	3/25	Mon	Reflection and refraction, Total internal reflection, polarization, formation of the images by mirrors	23.1-23.8
11	*3/27	Wed	Thin lenses, Interference , Michelson interferometer, thin films , Young's double slit experiment, gratings	23.9, 25.1-25.5
12	4/1	Mon	diffraction by single slit, diffraction and resolution	25.6-25.8
12	4/3	Wed	Exam3	Ch (22-25)
13	*4/8	Mon	Quantization, Photoelectric effect, x-rays, Compton scattering , spectroscopy	27.1-27.6
13	4/10	Wed	Bohr model of hydrogen atom, wave-particle duality Matter waves, Electron microscope	27.7, 28.1-28.3
14	4/15	Mon	Uncertainty Principle, wave function of a confined particle, Hydrogen atom, Exclusion principle, lasers , Nuclear structure, Binding energy,	28.4-28.7,9 29.1-29.2

14	*4/17	Wed	Radioactivity, Radioactive decay, biological effects of radiation	29.3-29.5
15	4/22	Mon	Review for Final	
16	4/24	Wed	Study day , no classes	

The common Final exam is Tuesday April 30 in 100/150 General Lectures

Planetarium visit

Seeing one of our planetarium shows is an enjoyable and enlightening experience. The planetarium staff will have each of the visiting students fill out a simple form (name, instructor, comments, etc.) at the end of the show, so that we know which students are attending. At the end of the semester, the names of attending students to their respective instructors are sent by a planetarium staff, so the students can receive an extra credit. Interested students can click on "planetarium" at the physics web site or go directly to
http://physics.wayne.edu/~planetarium

Honors option

Honors students with a 3.30 or better cumulative grade point average may discuss the addition of an assignment/project to earn Honors credit for the course. The form for the Honors Option is available at www.honors.wayne.edu <http://www.honors.wayne.edu>. Students will be expected to submit the completed form, a copy of the course syllabus, and an outline of the proposed project with the appropriate signatures to the Honors office in 2100 Undergraduate Library no later than the end of the third week of classes. Students must complete the class and the additional assignment with a 'B' (3.00) or better in order to receive Honors credit and the Honors Option notation on the transcript.

ACADEMIC INTEGRITY: All forms of academic dishonesty are forbidden in this class. Specific examples of academic dishonesty include cheating during exams as well as changing test answers for re-grading. Continuing to write after the exam time is up will result in the grade of zero for that exam. All forms of academic dishonesty will be prosecuted to the fullest extent as outlined in the Student Due Process Policy of the University.

Selected excerpts from the Student Due Process Policy regarding disruptive behavior are presented below. These policies will be enforced during all academic activities relating to PHY 2130. Students who are disruptive during lectures, exams, or quiz sections will lose points from their final grade for the course. Repeat offenders may fail the course or be brought before the Dean of his or her College for further action.

Wayne State University – STUDENT DUE PROCESS POLICY

1.0 PREAMBLE

1. As provided by the Board of Governors in WSUCA 2.31.01, "Student Rights and Responsibilities," and as mandated by academic tradition, the students of Wayne State University possess specific rights and responsibilities. Students are expected to conduct themselves in a manner conducive to an environment, which encourages the free exchange of ideas and information. Students, as integral members of the academic community, have the right to the assurance that their rights are protected from arbitrary and capricious acts on the part of any other member of the academic community. This Student Due Process Policy is designed to assure that students who are alleged to have engaged in unacceptable conduct receive fair and impartial consideration as specified in this policy.

4.0 PROHIBITED CONDUCT

The following conduct is subject to disciplinary action when it occurs on University premises, or in connection with a University course or University documents, or at a University-sponsored activity:

4.1 All forms of academic dishonesty.

4.3 Physical abuse of another person, or conduct which threatens or endangers another, or verbal or physical threats which cause reasonable apprehension of harm.

4.6 Disorderly behavior that interferes with activities authorized, sponsored, or permitted by the University such s teaching, research, administration, and including disorderly behavior that

interferes with the freedom of expression of others.

5.0 DISCIPLINARY SANCTIONS

Students found to have committed an act, or acts of misconduct may be subject to one or more of the following sanctions, which shall take effect immediately upon imposition, unless otherwise stated in writing, except as provided in this policy.

5.1 Disciplinary Reprimand. Notification that the student has committed an act of misconduct, and warning that another offense may result in the imposition of a more serious sanction.

5.2 Disciplinary Probation. A disciplinary status which does not interfere with the student's right to enroll in and attend classes, but which includes specified requirements or restrictions (as, for example, restrictions upon the student's representing the University in any extracurricular activity, or running for or holding office in any student group or organization) for a specific period of time as determined in the particular case.

5.3 Suspension. A denial of the privilege of continuing or enrolling as a student anywhere within the University, and denial of any and all rights and privileges conferred by student status, for a specified period of time. At the termination of the suspension the student will be entitled to resume his/her education without meeting any special academic entrance requirements.

5.4 Expulsion.

5.5 Restitution.

5.6 Transcript disciplinary Record.

5.7 Other Sanction.

10.0 PRELIMINARY PROCEDURE

10.1 When a faculty member is persuaded that academic dishonesty has occurred, the faculty member may, without using the mechanism of filing a charge, adjust the grade downward (including downgrading to a failing grade) for the test, paper, or other course-related activity in question, or for the entire course.

TIPS FOR SUCCEEDING IN INTRODUCTORY PHYSICS:

There are a number of best-practices that are strongly correlated with achieving a high grade in introductory physics courses. These include:

1. **Attend lectures and quiz sections.** Regular class attendance is strongly associated with student success.

2. **Read the preface in the textbook.** In the preface, the authors have given you their best advice on how to use the text successfully.

3. **Complete the assigned reading.** This material should ideally be read both before and the class lecture. Make sure you read the "Master the Concepts" section at the end of each chapter. This provides a helpful summary of the material covered in this chapter.

4. **Put in the required time.** A typical suggestion is that students should work at least 2 hours outside of the classroom for every hour of lecture. This includes time spend before class getting familiar with the material and after class reviewing the material.

5. **Practice your problem solving skills.** Do the assigned homework, do the extra credit problems, and do supplemental problems from the textbook.

6. **Master the concepts.** It is important to understand the concepts underlying the equations covered in this course. Since a formula sheet will be provided for exams, there is no need to memorize these equations. The challenge is in understanding how to apply them to solve specific problems.

7. **Attend office hours.** This will be most effective if you have specific problems that have arisen as you work through your assigned reading and weekly problems.