Physics 2140 **GENERAL PHYSICS** **Winter 2012**

TIME (for lectures): M, W 06:00PM- 07:20PM Room**: 0718** Oakland Center

TEXT: PHYSICS by Giambattista, Richardson and Richardson, McGraw-Hill. 2nd Ed.

ISBN: 978-0-07-733968-5

Webassign Access Card.

LECTURER: Dr. Jagdish Thakur

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COURSE WEB PAGE: WSU Blackboard

OFFICE HOURS: M and W: 5:30PM – 6:00 PM Oakland Center.

LABORATORY: PHY 2141 is the laboratory portion of PHY 2140. It is a co-requisite and, thus, is mandatory for you to be enrolled in both courses concurrently. However, laboratory is treated as a separate part of the course with its own grades and procedures which will be explained by your laboratory instructor. The experiments provide tangible demonstration and reinforcement of the ideas presented in this course. In addition, the laboratory is meant to show the importance of experiments in science. Your Laboratory Manual is to be purchased separately at the University Bookstore. *Lab sections of PHY 2141 will not meet during the first week. Labs start the week of January 23.*

QUIZ SECTIONS: Quiz sections meet once per week and are important. They allow you to meet together in small groups to ask questions, discuss lecture material, discuss assigned practice problems, etc. In the quiz sections, you will be given short quizzes, which will have questions and problems similar to your homework assignments. *Six best quizzes will be counted toward your final quiz score.* You will have the opportunity to earn up to **80 points** towards your course grade for the performance of the quiz sections with 60 points reserved for the six best quizzes and 20 points for participation. *No individual make-up quizzes will be given.* Details will be given in the first quiz section – make sure to attend!

Quiz Sections	CRN	Section	Instructor	Room
M 07:30PM – 08:25PM	24145	**902**	Thakur	0718, Oakland center
W 07:30PM- 08:25PM	24146	**903**	Thakur	0718, Oakland center

ONLINE HOMEWORK: The WebAssign online testing system (http://webassign.net) provides online homework submission and grading. The course ID will be made available on the course webpage and on blackboard. You will be asked to solve and submit for grading some problems for a total of **30 points** toward your final score. Problem sets will be assigned by chapter each week, due on Sunday at 11:59PM. You will have **five chances** to answer the long answer questions, and **ONE chance** to answer multiple choice questions. If you buy the book in store, it will include a WebAssign access card valid for this semester. However, if you need this access card only, you can purchase it through the internet for $35. Please consult the WebAssign Student Guide for additional information. **I have been informed that the WebAssign access card has changed this semester so you might not be able to use it from last semester. Contact WebAssign help center directly for assistance if you need it.** You will need to self-enroll yourself for web-assign access. The Class Key that you require to register for my section is **wayne 5434 4781**. *I request you to set up your username and initial password as your six character WSU ID (e.g. "ab1234") and your nine digit WSU banner ID without leading zeros (the nine digit number on your One Card), respectively.* Please consult your WebAssign Student Guide for additional information.

HOMEWORK: In addition to the graded homework, assigned practice problems will be posted by chapter on WebAssign as the course progresses. The answers will be available when the graded homework is due. Unlike the graded problems, you will have unlimited chances to solve these problems. The practice problems are intended to test your understanding of the course material. In the same way you must practice to become proficient at a sport or musical instrument, you must work problems in order to master basic physics. *It is very important that you work out the solutions to each problem, and understand clearly the correct 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.* Quiz instructors, by using a few examples, are there to help students to understand the problems and to learn problem solving skills. However, **they will not do the problems for you!** It is your responsibility to work on all the practice problems.

EXAMS: There will be three one hour midterm exams in class, consisting of 13 multiple choice questions (no partial credit), and one or two long-answer questions. 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. No electronic devices (other than a calculator) are allowed in the room during the exam (no iPods, headphones, cell-phones, Blackberries, etc.)

GRADING: Your course grade will be determined by your performance on three midterm Exams, Online Homework, Quiz Section results, and a 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 6), participation in quiz sections	80 (60+20) points

Final Exam	190 points
Online Homework	30 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 in a couple of weeks after the beginning of the semester).

WITHDRAWAL DEADLINE: The deadline to withdraw from any course at Wayne State is the end of the 10^{th} week of the semester. Therefore, the course withdrawal deadline for our course will be **Saturday, March 24**. Any course withdrawal request on Pipeline after this date will be automatically denied.

ACADEMIC INTEGRITY: All forms of academic dishonesty are forbidden in this class. Examples of academic dishonesty include all variations of 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.

Excerpts from the University's Student Due Process Policy regarding disruptive behavior are outlined below. This policy will be enforced during all academic activities relating to PHY 2130, especially lecture and quiz classes. A student who is being disruptive in quiz class will lose 10 points per occurrence from their total score. A student who is disruptive during lecture runs the risk of losing one exam score. Repeat offenders will have their course grade down-graded and if necessary, they will receive an F for the course. Lastly, a student may be brought before the Dean of his or her College for further action.

The most important consequence of cheating/plagiarism or any other form of academic dishonesty, 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 course work. The ability to step up in the outside world and say with confidence, "I can do that!" is surely one of the primary benefits of a college-level course, and is the source of many of the other benefits. You may "get away" with cheating 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 (and most expensive!) things you can do for yourself, will not have the benefits you are looking for.

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.

STUDENT DISABILITY SERVICES: If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS) for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

Please be aware that a delay in getting SDS accommodation letters for the current semester may hinder the availability or facilitation of those accommodations in a timely manner. Therefore, it is in your best interest to get your accommodation letters as early in the semester as possible.

TENTATIVE CLASS SCHEDULE (Subject to change)

Date	Lecture Topic	Suggested Reading
Jan 9	Electric Charge; Coulomb's Law; Conductors and Insulators	16.1 – 16.3
Jan 11	Electric Fields; Field Lines; Motion of Point Charges; Equilibrium	16.4 – 16.6
Jan 16	HOLIDAY, UNIVERSITY CLOSED	---
Jan 18	Electric Flux; Gauss's Law	16.7
Jan 23	Electrostatic Potential; Potential Energy	17.1 – 17.3
Jan 25	Conservation of Energy; Capacitors; Dielectrics	17.4 – 17.7
Jan 30	Energy in a Capacitor; Electric Current; EMF; Resistance; Ohm's Law, Kirchoff's Rules, Circuits	18.1 – 18.2, 18.4 - 18.7
Feb 1	Power and Energy in Circuits; RC Circuits	18.8 – 18.10
Feb 6	**EXAM 1**	16 – 18
Feb 8	Magnetic Forces and Fields	19.1 – 19.5
Feb 13	Magnetic Force on/by currents; Motional EMF	19.6 – 19.8
Feb 15	Faraday's Law; Lenz's Law	20.1 – 20.4
Feb 20	Inductance; AC Circuits	20.9

		21.1 – 21.4
Feb 22	Maxwell's Equations; EM Waves	22.1 – 22.4
Feb 27	EM Energy Transport; Polarization; Doppler Shift	22.5 – 22.8
Feb 29	Reflection; Refraction	23.1 – 23.5
Mar 5	**EXAM 2**	19 – 22
Mar 7	Geometric Optics I	23.6 – 23.9
Mar 12	SPRING BREAK	—
Mar 14	SPRING BREAK	—
Mar 19	Geometric Optics II	23.6 – 23.9
Mar 21	Interference	25.1 – 25.5
Mar 26	Young's Double Slit Setup; Diffraction	25.6 – 25.8
Mar 28	Birth of "Modern Physics"; Blackbody Radiation	27.1 – 27.2
Apr 2	Photoelectric Effect; Photons; Compton Scattering	27.3 – 27.5
Apr 4	Spectroscopy; Bohr Atom	27.6 – 27.7
Apr 9	**EXAM 3**	23, 25, 27
Apr 11	Wave Particle Duality; Uncertainty Principle	28.1 – 28.4
Apr 16	Quantum Bound States; Hydrogen Atom; Nucleus	28.5 – 28.7 29.1 – 29.2
Apr 18	Nuclear Binding Energy; Radioactivity; Equivalent Dose	29.3 – 29.5
Apr 23	Revision	

Withdrawal Deadline: Saturday, March 24, 2012

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

Room 150, General Lectures, Main Campus, Detroit

TIPS FOR SUCCEEDING IN INTRODUCTORY PHYSICS:

There is no "secret" to succeeding at Introductory Physics. The things you must do to achieve your best results are amazingly clear and should not be unknown to you. Previous experience with many, many students has shown the following traits/habits seem to be common to most students who excel in the introductory physics course.

1. **Come to class.** At every university I have been associated with studies have been taken to find out what best predicts student success. Regular class attendance is the thing that is most associated with student success. Perhaps this is obvious, but many students do not show up and wonder why they are doing poorly.

2. **Get a book.** Read it. Use it. There are LOTS of very good hints and ideas in the Preface. Most students do not read the Preface, but in it the authors have given you their best advice on how to use the text successfully.

3. **Actually read the text.** This is preferably done before the class lecture, and if possible, afterward as well. Make sure you read the "Master the Concepts" section at the end of each chapter – it is critical to summarize what you've learned.

4. **Put in the time.** The text book recommends (and we agree) that you should be spending at least 2 hours outside of the class for every hour of lecture. This is at least 6 hours per week. It is best to spend time both before

class getting familiar with the material, and after class reviewing the material.

5. **Practice, practice, practice.** Do the assigned homework, do the extra credit problems, and do book problems. You can watch Michael Jordan play basketball for 3 hours a day, every day, and you will never get better at basketball – not unless you yourself put in the practice.

6. **Strive for understanding.** Many students feel if they just "get the answer" from a TA or help center person, they have accomplished the task. This is incorrect. You have accomplished your task when you truly understand the problem, how to set it up, how to solve it, and what it is asking. Just completing the problem to get some random answer is not enough. Realize that we provide you the formulas you will need, thus memorization is not terribly helpful.

7. **Attend your instructor's office hours.** This will be most effective if you bring your book and your homework problems and ask him/her to help you identify your "sticking points." Open-ended statements like, "I don't get any of it," will not be helpful in this setting.

8**. Do a self-evaluation (and be honest).** If you really want to know how you will do on the exam, give yourself an honest evaluation. Pick a few problems randomly from the text that you haven't done before. A friend or family member can help with this. If you can solve it without any other help, you are ready. If you have no idea how to do it, you are not ready.

9. **Do not memorize.** Memorizing previously worked problems is NOT studying. Many students feel exam preparation should consist of just "looking over" old problems and old exams. That is incorrect. An exam will generally consist of new, unseen problems. While completely understanding the assigned problems is a good idea, your best strategy is to try to work as many new problems as possible (this is accomplished by practicing, as suggested above).