

Syllabus: Fall 2012 PHY 2130 Section 901, CRN 14248

This Syllabus covers algebra-based General Physics 2130 Section 001, CRN 22979 and the associated Discussion/Quiz sections. The course covers Motion of Bodies in straight line, Newton's laws of Motion, Law of Gravitation, Circular motion, Kinetic and Potential energies, Fluids, Harmonic motion, Kinetic theory of gases, and laws of Thermodynamics. The prerequisite is High School algebra and trigonometry.

Schedule of regular classes at the Oakland Center

Class and Time	Section	CRN	Instructor	Room
Tuesdays and Thursdays 6:00 PM	901	14248	Jagdish Thakur	708

Laboratory: The Lab course, PHY 2131, is a separate course, with a separate Syllabus, schedule, Instructor and grades. The content of the labs is consistent with PHY 2130, but the sequence is different. The experiments in PHY2131 are designed to complement the material covered in PHY2130. Your laboratory manual is to be purchased at the University Bookstore. *Lab sections of PHY 2141* begin week of 10-14 September 2012.

LATE START? If you registered for this class after 8/27, you need to:

1. Email me (Jagdish@wayne.edu) with your WSU AccessID so that I can set up your WebAssign account
2. (depending on date) email me to open up any past-due WebAssign assignments so you can do them
3. (depending on date) catch up on past class notes and readings, including reading this Syllabus

NOTE: Last Day to withdraw is Saturday, Nov. 10

PHY 2130 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:

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
Tuesdays, 7:35 PM	902	14249	Jagdish Thakur	708
Thursdays, 7:30 PM	903	14250	Jagdish Thakur	708

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. *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 questions 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 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.

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. 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.

Below is a Class Key for each section of your

Section : **wayne 6954 6871**

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 with the first three tries, you get 100% score for that problem. If you get correct answer for the 4th try, you get 75% of the points and 5th try, you get 50 % and for 6th try, you get 25%.

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.
- Institution: wayne (just that, not Wayne State University or anything else)
- Password: AccessID,

In addition, each week, six non-credit problems and four non-credit conceptual questions will be posted on Blackboard. The problems will be similar to the multiple-choice problems that will be on the Exams, except that the choices will be removed. These problems can be worked out in the Quiz Sections in complete detail.

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.

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.**). 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 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) out of 7 total quizzes	60 points
Final Exam	200 points
WebAssign homework	20 points
Attendance plus questions	20 points
Total	600 points

Extra credit

- 3 points extra credit for Planetarium visit

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.

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

Week	Date	Day	Lecture Topics	Reading assignment
1	Aug. 30	Thursday	Introduction, scientific notations, significant figures	1.1-1.6
2	Sept. 4	Tuesday	Units, graphs, displacement, velocity, acceleration, Motion along a line, constant acceleration	1.7-1.9, 2.1-2.4
2	Sept. 6	Thursday	Free fall, Vectors , Velocity,	2.5, 2.6, 3.1-3.3
3	*Sept.11	Tuesday	Acceleration, motion in plane, Force, Newton’s 1 st law of motion	3.4, 3.5, 4.1, 4.2
3	Sept. 13	Thursday	Newton’s 2 nd and 3 rd laws of motion, gravity, constant forces, Tension,	4.3-4.7
4	*Sept.18	Tuesday	Applications of Newton’s 2 nd law Uniform circular motion	4.8, 4.10, 5.1
4	Sept. 20	Thursday	Review	Ch. 1-4
5	Sept. 25	Tuesday	EXAM1(Ch. 1-4)	
5	Sept. 27	Thursday	Radial acceleration, orbits, apparent weight	5.2, 5.4, 5.7
6	*Oct. 2	Tuesday	Work, Kinetic energy, potential energy	6.1-6.5
6	Oct. 4	Thursday	Variable forces, elastic potential energy, Power Momentum	6.6-6.8, 7.2
7	Oct. 9	Tuesday	impulse, conservation of momentum, center of mass Motion of center of mass	7.3- 7.6
7	Oct. 11	Thursday	Collisions, Rotational kinetic energy, torque, work, equilibrium	7.7-7.8 8.1-8.5
8	*Oct. 16	Tuesday	angular momentum, conservations, vectors	8.6, 8.8-8.9
8	Oct. 18	Thursday	Review	Ch. 5-8
9	Oct. 23	Tuesday	EXAM2(Ch. 5-8)	
9	Oct. 25	Thursday	Fluids, pressure, Pascal’s principle, fluid pressure	9.1-9.6
10	*Oct. 30	Tuesday	fluid flow, Bernoulli’s equation, viscosity, surface tension	9.7-9.9, 9.11
10	Nov. 1	Thursday	simple harmonic motion, Pendulum, damped oscillations and resonance	10.5-10.6, 10.8-10.10
11	Nov.6	Tuesday	Waves and energy transport, transverse and longitudinal waves, sound waves, amplitude and intensity of sound waves	11.1-11.3 12.1-12.3
11	Nov.8	Thursday	Standing sound waves, Timbre, The human ear, beats, Doppler effect	12.4-12.9
12	Nov.13	Tuesday	Review	Ch. 9-12
12	Nov.15	Thursday	EXAM3 (Ch. 9-12)	
13	*Nov. 20	Tuesday	Temperature and thermal equilibrium, thermal expansion, molecular picture of gas ideal gas law , Kinetic theory of ideal gas,	13.1-13.6

13	Nov. 22	Thursday	Holiday	
14	Nov. 27	Tuesday	temperature and reaction rates, diffusion Internal energy, heat, Heat capacity, Specific heat of ideal gases	13.7-13.8, 14.1-14.4
14	Nov.29	Thursday	Phase transition, thermal conduction, convection and radiation, First law of thermodynamics, Thermodynamic processes,	14.5-14.8 15.1-15.2
15	*Dec. 4	Tuesday	Ideal gas, reversible and irreversible processes, heat engines, reversible engines and heat pumps , entropy, third law of thermodynamics	15.3-15.9
15	Dec. 6	Thursday	Review	All
16	Dec. 11	Tuesday	Study day, no classes	
	Dec. 18	Tuesday	Cumulative Final Exam(1:20-3:50 PM) in 100 General Lecture	

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

- 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 as 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.