

PHYSICS 142

Fall 2015

Section 150: 2:30-3:20 PM Monday, Wednesday, Friday.

Instructor: Dr. Orhan Yenen

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Any e-mail to the instructor must contain the words "Physics 142" in the subject line! The use of e-mail must be minimized and e-mail should certainly not be used for setting up appointments (it is inefficient!) All requests for extension and waivers should be made in person at the instructor's office during his regular office hours.

Office Hours: M-W-F 10:35-11:30 AM; M 3:35-4:30 PM, T: 1:30-4:00 PM, or by appointment. Appointments cannot be on regular basis. No office hours during the test days of 141 or 142.

Textbook: Required: 9th Edition of *Physics* by J.D. Cutnell and K.W. Johnson

Prerequisites: Math 102 or equivalent, Phys 141.

Course Objective: This is the second course in a sequence of two courses on the basic principles of general physics. An understanding of algebra, simple geometry and trigonometry are required. The objective of the course is for the students to acquire skill in using basic physical principles to analyze **both qualitatively and quantitatively** the behavior of simple physical systems which are **similar to, but not identical** with those systems explicitly discussed and studied in class, in recitation, in the laboratory, or in the textbook. Class Participation and Homework assignments provide opportunity to develop and practice this skill. Quizzes and exams attempt to determine to what extent it has been achieved.

Class

Participation: The University wide PRS (Personal Response System) will not be used. You should also bring your book and calculator to every lecture and participate in classroom activities. In a way similar to swimming or bicycling Physics is learnt by doing and not by reading or listening only.

Recitations: To overcome the difficulties encountered in solving problems, you are required to attend an informal discussion section called "the recitation". As explained below, the recitation grade will be based on your participation to recitation activities (attendance is required.) At the end of the semester your recitation instructor will forward to me a percentile score based on your attendance and participation which I may use to subtract non-participation-points from your total. During the recitation your instructor will help you in solving some of the assigned problems,

Laboratory:

some of the sample test problems or new problems he/she brings to class. Held in Jorgensen Hall, the laboratory sessions begin the week of August, 24, 2015. You are required to attend all scheduled sessions. Failure to attend the labs without my consent will result in a grade of F regardless of other considerations. The Laboratory manual is *Humanized Physics Labs 2, Fall 2015*. If you have previously taken 142 and are satisfied with your previous lab grade, you will need to fill a form. After my approval, you will have to give the signed form to the lab manager (Shawn Langan) at Jorgensen 139. At the end of the semester he will forward your previous grade to me. This form in pdf format is in the Course Documents part of the Blackboard. Under very special circumstances (such as sickness, family emergency etc.), you may reschedule one lab as described in page v of the Laboratory Manual. If rescheduling is not possible because the emergency occurred the last day before the experiment is put away, fill in the “Request to Get Excused From Lab” form that is in the Course Documents Section. Bring this form to me along with supporting documents (a doctor’s note for example) for my approval signature. Give the signed form to the laboratory manager (Shawn Langan) in Jorgensen 139. Note that you have to have a really valid reason to miss a lab. As a general rule no more than one excuse will be accepted and only under strict guidelines.

Homework assignments:

See the pertinent part of the “**Schedule and more**” pdf file in the course Documents section of the Blackboard.

Exams:

(a) Two 1 ½ -hour exams as scheduled. Room assignments will be announced later. You will be allowed to use your personal calculator but you cannot share it with another student during a test. No laptops or calculators in PDAs or cell phones, or other communication devices are allowed. **No cheat sheets will be permitted.** However, a set of physical expressions and/or principles will be appended to each test by the instructor. Your solution of each test problem **should start** from one of these expressions or principles.

(b) One 2-hour final exam as scheduled. Room assignments will be announced later.) Approximately 3/8 to 1/2 of the questions will cover the last few chapters, and the rest will be on all of the material presented in the course.

NO MAKE-UP EXAMS WILL BE GIVEN!

A missed test will be scored as zero. You may be excused for documented emergencies such as sickness, etc., at the discretion of the instructor.

Time is scheduled to go over the correct solutions to the tests. That day you will receive your graded exam back. It is your job to keep the tests until you are done with this course.

Grading:	Two 1½ -hour exams (2 X 150)	300
	One 2-hour final	200
	Recitation/WebAssign homework	100
	Laboratory	100
	(- Non-participation Points)	-N
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	TOTAL (Maximum)	700

Letter grades are determined only after all information is available to the lecturer. As a general rule, an average score will receive a grade of (B-) unless the class average is above 76%. In general if you cannot do one out of three problems (<30%) you will receive an F. To pass the class in P/N or earn a C you will need to be able to do more than one out of two (>50%) regardless of the class average. Historically in the last 6 years or so, solving 2 out of 3 (about 67%) resulted in a B-, and, 3 out of 4 (about 75%) resulted in a B. Again historically, solving 9 out of 10 problems resulted in a grade of A. **No incomplete grade (I) will be given as a substitute to poor performance (University Policy.)** For the University policies about drops and withdrawals please consult the Schedule of Classes.

The Use of Class Participation Data:

Attendance in class is required since there are learning activities during lectures. Your non-participation (due to absenteeism or refusal to participate, or lack of effort, etc.) will be subtracted from your total at the discretion of the instructor. The instructor reserves the right to subtract up to 35 points (5% of the total possible points) from your total score because of your absenteeism or your lack of participation in class activities.

Preparation: Before each lecture, it is advisable to read the material to be covered that day. After the lecture you should go carefully over the material, specially the examples. Work the problems (including some unassigned ones) to test your understanding, referring back to the textbook and lecture notes in case of hurdles. Keep in mind that finding the correct answer by just plugging numbers in equations found in the textbook does not mean that you have **understood** the concepts. Use the optional problem book for supplemental problems to increase your experience.

Honor Contracts: No Physics 142 H contracts are possible this semester.

Policy for Cell Phones: The use of cell phones **including texting** is prohibited during lectures, tests, recitations and labs. Failure to comply will be considered as an attempt to cheat and will result in disciplinary action.

Academic Dishonesty:

All forms of academic dishonesty including Cheating, Fabrication and Falsification, Plagiarism, Misrepresentation to Avoid Academic Work etc. will be dealt according to the rules of Disciplinary Procedures of the Student Code of Conduct of UNL.

Students with Disabilities:

Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.

ACE Certification

(i) the ACE Outcome(s) for which the course is certified.
 Student Learning Objective 4: Use scientific methods and knowledge of the natural and physical world to address problems through inquiry, interpretation, analysis, and the making of inferences from data, to determine whether conclusions or solutions are reasonable.

(ii) the opportunities the course will give students to acquire the knowledge or skills necessary to achieve the Learning Outcome(s)

The students will have the opportunity to learn how to analyze physical systems through a combination of exposition, directed inquiry, and problem solving. The main focus of the course is on the appraisal of physical systems arriving at a thorough understanding of relationship between the system and its behavior. This process can be separated into four distinct phases. The first phase consists of an inquiry into what is the system and its essential components, what are the available data (which are obtained from laboratory measurement, or the statement of a problem, or diagrams or graphs, or reference tables, or some combination of these), and what are the key physical principles and laws governing the system. The second phase is to interpret the physical principles and laws and data in order to develop a plan – what inferences can be drawn from the data, what is the best way to approach the problem, that mathematical relations and methods are required, what intermediate information must be obtained -- and define goals for a solution. This plan is implemented in the third phase through detailed analysis, with careful attention to accurate execution of the mathematical relations representing the underlying physical principles. Critical evaluation of the reasonableness of the solutions and conclusions is the essential fourth and final phase of problem solving. This evaluation includes checking units, recalculating some quantities

by a different route, and judging whether the magnitude of the answer is within reasonable physical limits.

- (iii) the graded assignments which the instructor(s) will use to assess the student' achievement of the Outcome(s).

Student abilities for mathematical problem-solving applied to physical situations is assessed in several ways. The course grade is based on a cumulative score that is derived from the following components, which are all graded and weighted according to the breakdown given in the syllabus. Basic mathematical skills are assessed through (i) numerical or simple analytical computations during lectures, (ii) Web-graded homework exercises and problems, (iii) weekly recitation problems worked individually and in teams, (iv) midterm exams, and (v) a comprehensive final exam. All of these focus on specific knowledge, basic computational skills, and grasp of key concepts. The students' integrative understanding of physical principles and problem-solving is assessed with lab reports, homework and exams.

Students may ask that their work is not used as examples for the ACE assessment process, which consists of collecting samples of student work and submitting it online.