Instructor: Hugh Gallagher
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Office Hours: T, F 12:00-1:00 PM, W 11:00 AM-12:00 PM or by arrangement
Web Page: http://employees.oneonta.edu/gallagha/

Class Time and Location: M, W, F 10:00 to 10:50 AM in Physical Science Room 121
Lab Time: Section 01, M 2:00 to 4:50 AM
Lab Location: Physical Science Building 103 (or 109 as announced in class)
Final Exam: Friday May 13, 2011 8:00 to 10:30 AM

Required Text: Physics, 6th ed. By Douglas C. Giancoli

I recognize that textbooks are expensive. They are also very valuable for maximizing your educational investment. The above text is available in the bookstore will be used for both PHYS 103 and 104. The textbook is available in a two volume set. If are not required (and choose not) to take PHYS 104, the first volume of the above text is available through the normal commercial venues and is satisfactory for PHYS 103. The companion web site to the book (http://wps.prenhall.com/esm_giancoli_physicsppa_6) that contains supplementary material including practice problems and questions.

Science Discovery Center: http://www.oneonta.edu/organizations/sdc/

The Science and Discovery Center of Oneonta is located in the basement of the Physical Science Building on the SUNY Oneonta Campus. This highly regarded interactive science museum provides you a unique opportunity to observe, feel and experience many of the principles and concepts that we will be discussing in this course. While we may occasionally use this facility for demonstrations and assignments, I highly recommend that you also visit the Science and Discovery Center on your own time. FOR THE AMBITIOUS STUDENT, THERE ARE SIGNIFICANT VOLUNTEER OPPORTUNITIES AS A GUIDE AND DEVELOPER FOR PARTICIPATION IN THE SDC (ASK HUGH GALLAGHER FOR DETAILS).

PR²EPS Tutoring Center: http://www.oneonta.edu/academics/pr2eps

As part of a large National Science Foundation (NSF) recruitment and retention grant obtained by faculty from the Chemistry and Biochemistry, Physics and Astronomy, and Science Secondary Education, we have created a walk-in tutoring center. The center will be staffed by faculty and upper level majors from the above department who will be available to help you enhance your work in your chemistry and physics classes. Visit early and often to work with
experts and peers on general questions and difficult concepts. Or, start working in the library and visit us when you run into difficulty. The center will be open in the Physical Science Building Room 122 on Tuesday and Wednesday evenings from 5:30 to 8:30 PM.

**Technology Instruction Program for Students (TIPS):**

TIPS is a new program designed to provide support for students who need help with common software applications used in computer-based assignments. TIPS can provide help with Microsoft Office applications (including Excel). TIPS is open Monday, Wednesday and Thursday from 1:00 to 5:00 PM and 6:00 to 9:00 PM.

**Course Description:**

A study of motion, force, work, and mechanical energy. Heat and fluids are covered as time permits. Includes laboratory. **COMPETENCE IN HIGH SCHOOL ALGEBRA, PLANE GEOMETRY, AND PLANE TRIGONOMETRY IS ASSUMED.**

This rigorous algebra based course is designed to provide a fundamental background in physics and quantitative analysis to scientists training in fields for which knowledge of underlying physical concepts is essential but the rigor of a calculus based class is not critical (e.g. Biology, Earth Sciences, Health Sciences, Secondary Science Education). At almost all other schools (e.g., SUNY Delhi, SUNY Cobleskill, SUNY Albany, SUNY Oswego, Cornell University, Skidmore College, Saint Anselms College, Bloomsburg University of Pennsylvania, University of Rhode Island, Russell Sage College, Mohawk Valley Community College, etc…), the algebra based general physics course when taken with lab is a four credit hour course (three hours of lecture, a three hour lab and sometimes a recitation section). (Note that since some schools do not have an algebra based course, students from the above disciplines are required to take the calculus based course). Thus the content and level of this course is well established and the textbook by Giancoli designed for this course.

In the past, the algebra based general physics course at SUNY Oneonta is only three credit hours (two hours of lecture and a two hour lab). This is the first year that General Physics (non-calculus) will be a four credit hour course at SUNY Oneonta. Still, students going to graduate school in Earth Science, Biology or for Health Sciences are advised to check the physics requirements of these schools. Students completing Physics 103 and 104 should now have the eight semester hours of physics required by many graduate schools.

**What I Desire of You:**

I enjoy teaching PHYS 103 because of the content and the students. In past student evaluations, many students indicated that the material in course is quite challenging and they worked much harder in this course than in other courses. Many of you are here because this is a required course. In my opinion this requirement is justified because the skills that you will develop in this course will help you become better scientists, educators and problem solvers. Despite the need to fulfill a requirement, I have found that most students are motivated by a sincere desire to understand and apply physical principles. This is why I enjoy working with you.
This course can be difficult and I will not hide my desire that you work hard on the material. It is reasonable for me to expect you to spend up to 8 hours per week outside of class on the material. As most of you are scientists (science teachers and health professionals are scientists), I would like you to:

- Be motivated by a desire to understand nature
- Be diligent and creative in reading the material, asking questions, answering questions, working and reworking problems, evaluating answers and tracking mistakes leading to answers that do not seem reasonable
- Be conscientious, meticulous and creative in your lab work
- Ask frequent questions directly or indirectly related to the material
- Consider how the concepts we discuss are at work in your fields of study
- Evaluate your own progress and see me quickly about difficulties you are having with the material
- Pace your work so that you are not trying to digest difficult material too quickly (cramming generally doesn’t work in preparation for physics exams)
- Realize that all of us struggle with physics. Do not be afraid to make mistakes, they are a valuable part of the learning process

**If you have clearly tried and are struggling, I will to the best of my ability and availability try to help.**

**What I Hope You Receive From This Course:**

I strongly believe that your experience in this course will help you become better scientists, educators and problems solvers. Through successful completion of this course you should

- Obtain a fundamental understanding of the principles governing the behavior of nature on macroscopic (and in some cases microscopic) scales. Often these principles are the basis of phenomena studied in other disciplines.
- Enhance your mathematical and algebraic skills.
- Develop skills and confidence in quantitative analysis that may be applied to all areas of science.
- Become more versatile in secondary education. This may be very important to schools that are struggling to find teachers in Physics, Mathematics, Chemistry and Earth Science.
- Enhance your ability to communicate difficult concepts verbally and in writing
- Gain confidence in your ability to understand and apply difficult material.
Evaluation:

- Participation: 5%
- Homework/Online Questions: 5%
- Homework Quizzes: 10%
- Lab Reports: 15%
- Exams (3): 45%
- Final Exam: 20%

Your course average will be approximately related to your final grade in the following manner:

- 100 > A > 93 > A- > 90 > B+ > 87 > B > 83 > B- > 80 > C+ > 77 > C > 73 > C- > 70 > D+ > 67 > D > 63
- D- > 60 > E

Participation: During this course, students should expect to spend up to 8 hours per week outside of class on the material. Your work outside of class will be evident in your homework assignments, laboratories, and performance on homework quizzes and exams. While work outside of class is extremely important, diligent work in class will help you master the material more efficiently and enhances your work outside of class. Consequently, students are expected to be in attendance, on time, and attentive. Students are also expected to participate in class by asking and answering questions and providing their own insights related to physical principles and applications that are being discussed. The participation grade will be based primarily on your daily attendance record. To monitor attendance, a daily attendance sheet will be distributed. Be sure that you sign the attendance sheet for each class and lab.

Homework, Online Questions, and Homework Quizzes: Homework, consisting of about 7-10 problems and questions, will be assigned approximately weekly as announced in class. This homework will be collected and checked for completeness. Additionally, you will be assigned online questions from the companion website prior to the beginning of each chapter. You should complete these questions to the best of your ability and submit the results via email to gallagha@oneonta.edu. The purpose of these questions is to make you aware of key concepts that will be discussed in the upcoming classes. These assignments will also be evaluated on the basis of completeness. The homework/online question grade will be determined by the fraction of completed homework and online assignments.

In order to provide you with some detailed feedback on assignments in a timely fashion, a brief quiz closely related to the homework problems and questions will generally be given on the day that homework is due or as announced in class.

While students are encouraged to discuss homework, be careful not to become too reliant on seeing someone else’s solutions. If you discuss a problem with another student, it is a good idea to write up the solution independently and to try to solve similar problems on your own so that you are sure that you understand the material. In the case of solutions that are copied exactly from another student, all parties will receive a score of 0 for that problem.

Homework assignments should be written up in the order that they are assigned. If you omit a problem, number it and leave a blank in the appropriate space. Write on only one side of the page. Assignments torn from a spiral bound notebook will not be accepted. Be sure to include your name, homework number, homework assignment and due date at the top of each page. For substantial partial credit, be sure that solutions are neat, clear, and well organized. Write the
homework problems as if you are explaining the solution to a peer without the use of words. For each problem:

1. Provide a physical description of what is occurring (including a diagram).
2. State explicitly what is given in the problem and what is to be determined (include a free-body diagram where appropriate).
3. Brainstorm in words, symbols or diagrams about the physical relationships between the various quantities in the problem.
4. Provide a detailed step-by-step solution to the problem (including comments is helpful for exam preparation).
5. Clearly indicate your final answer (including appropriate units). Comment on whether or not your answer is reasonable.

Exams: Three major exams and one cumulative final exam will be given. Exams will be based on lectures, reading assignments, homework assignments and labs. A sheet of pertinent formulas will be provided for use during the exam. You will be given an opportunity to review this sheet ahead of time and suggest that additional information be included. These exams make up 65% of your grade and thus are the dominant factor in determining your grade. It can be argued that the greatest impact diligent work on homework and labs can have on your grade is through the enhancement of your performance on exams.

Lab Reports: We will do 8 or 9 experimental activities. A hand out describing the experiments will be available on my web site before each laboratory. (There may be some last minute changes in the labs so hand-outs will be distributed in class the day of the lab.) What is expected for each Lab Report will be specified in each lab handout and may consist of sections describing the experiment and relevant physical principles, presenting the data (tables and graphs) and analysis, summarizing the results and discussing possible errors, answering questions and solving problems. The style of the report will generally be up to the students, but it should be neat, well organized and complete. In general, lab reports are due at the beginning of the lab following the lab (as announced in class). When we are not conducting a formal lab, the lab period will be used for lectures, questions related to the homework and exams.

A detailed evaluation (on a 20 point basis) will be made of at least 5 of the labs. If on occasion, I am unable to provide detailed feedback on labs in a timely fashion, I will make a cursory review of the work and provide a grade (out of 10 points) based primarily on the completeness of the work. The final lab grade will be determined by the total number of points subject to an appropriate scale to be determined by the instructor.

Making Up Missed Work: MISSED OR LATE WORK IS A BURDEN TO THE INSTRUCTOR AND THUS DETRACTS FROM THE ATTENTION GIVEN TO THE REST OF THE CLASS. Late homework and lab reports may be penalized 10% per day late up to three days and then will be given a zero. After this time, no makeup for missed homework is permitted unless in the case of documented and authorized absence. If you are struggling with a homework assignment, a little extra time may be given provided you notify the instructor. Makeup of an exam or lab experiment will be permitted only for a documented, authorized absence or with the permission of the instructor.